

Responses to Consultation Paper on Differential Pricing

February 14, 2016

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1 Background and Introductory Notes

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To Be Written

1.2 Marketing Campaign by Facebook

To Be Written

2 Comments on Consultation Paper

2.1 Telecom Service Providers

2.1.1 Idea

Annexure A

Idea Cellular Submissions on TRAI consultation Paper on Differential Pricing

At the outset, **we would like to state that Idea Cellular is fully committed towards supporting the Digital India vision for the proliferation of Internet.** Our submissions on the issue of Differential tariff are summarised below:

A. Drivers of Voice Mobility success in India

1. The Authority would appreciate that the Indian wireless industry, especially the private sector, over the last two decades, has perhaps built the finest and widest services infrastructure in form of a mobile voice highway which today connects over 5 lac towns and villages across 550 districts including deep rural interiors and hinterlands across Bharat. This infrastructure, entailing investments of over Rs. 7.5 lac crores, is the backbone that delivers high quality voice services to nearly 1 billion Indians today, catapulting India to the 2nd largest mobility country in the world in terms of number of mobile users, and generating over 10 billion voice minutes on a daily basis. The sector is a vital driver of the country's GDP and has contributed nearly 3% directly to the economy over the last decade.
2. **One of the key factors responsible for this growth and contribution from Private sector is the policy of forbearance of retail tariffs adopted by TRAI since 2002, wherein the operators have been given flexibility to tariff their products.** This policy coupled with the stiff competition introduced by TRAI in the sector has translated into a sharp decline in tariffs (from Rs 16/min in 1999 to Rs 0.50/min currently) which in turn has contributed in achieving the high growth rate of telecommunication subscriber base.
3. **This has spurred innovation and customization of solutions in the market. In fact all the benefits that can come from effective regulation, such as economic and technological growth, increased investment in the sector, cost reduction with improved efficiency, better quality of service, improved customer satisfaction, affordable prices delivering better value for money and improved access and availability of services, have got delivered under the prevailing Light touch regulatory regime of TRAI.**

B. The Wireless Broadband challenge

4. Multiple models for growth of voice services have been tried and implemented by the Industry and TRAI has been a supporter throughout. **It is thus necessary for the TRAI to adopt the principle of Light touch Regulation while on cusp of next great challenge – wireless broadband (mobile data) penetration across the country.**
5. While the Mobile Data journey of the Indian telecom sector commenced in 2010 with the auction of 2100 and 2300 MHz spectrum, the ecosystem was not fully developed with lack of affordable 3G devices and limited applications for consumers to realize the need of internet. As a result, the mobile broadband population coverage was slow to expand with only 300 – 400 million Indians being covered over a span of five years, from 2010 to 2015.
6. However, all antecedents seem to indicate that India is now on the cusp of a digital revolution that will permanently transform the lives of Indians and the way we work, play and interact. In last 2-3 years, operators have invested heavily in acquiring broadband spectrum. Today, the top 3 – 4 mobile telecom operators are working at breakneck speeds to deploy high speed mobile data networks on 3G and 4G platforms to expand wireless broadband coverage from current 300 – 400 million to **over a billion Indians in 2020**, estimated to require an additional investment of Rs. 5 lac crores over this period.
7. The ecosystem is also undergoing rapid transformation. 3G and 4G handsets have become increasingly affordable with prices starting from as low as Rs. 3,000/- for a 3G smartphone and Rs. 5,000/- for a 4G smartphone. A number of internet connectivity based applications have been developed across several spheres, addressing varying needs of the Indian consumers, making the mobile data services more relevant for them. The potential opportunities arising out of increasing digitization of the Indian masses have already sowed the seeds of a fast growing internet economy.
8. With these fundamentals beginning to fall in place, the coming era from 2016 to 2020 will witness mass mobilization to a digital world and telecom analysts are already projecting over 500 million wireless broadband users in 2020 from current 90 million 3G users.

C. 300 million Indian Internet Users – Myth or Reality?

9. As per latest report published by the authority, India has over 319 million internet users as of June 2015, out of which 300 million users are wireless internet subscribers (Source: TRAI, "The Indian Telecom Services Performances Indicators, April – June 2015). However, due to the ubiquitous nature of 2G services, a large proportion of Indian internet users continue to use the 2G platform to access internet services. 2G technology has not been designed for providing broadband access to users and therefore attracts a lot of casual users of internet, with negligible monthly usage between 1 to 100 Megabytes. Users of 3G and 4G technology which is specifically designed for providing broadband access to users is therefore a better reflection of the serious internet users in the country.
10. As of June 2015, **only 93 million subscribers were using wireless broadband internet services**, indicating that despite the launch of wireless broadband services like 3G in 2010, under 10% of existing wireless subscribers and around 7% of India's population have adopted wireless broadband technology and therefore qualify as serious internet users consuming global average of 600 to 700 Megabytes of data on a monthly basis. In fact, according to a UN report, **India is ranked 155th out of 189 countries on active mobile broadband subscriptions¹**. Besides low broadband penetration, India also fares poorly on other crucial factors for driving internet adoption in the country, including parameters like Social development Index where it is ranked 102 out of 132 nations Literacy levels, Purchasing power, etc.²
11. With mobile broadband penetration in India around 7%, the top priority from Indian policymaker's perspective should be to extend the benefits of the internet to the balance "1 Billion Indians" and make Internet available to all strata of society, especially the "Unconnected ones".

D. Making India truly 'Digital'

12. To make broadband internet access available to over a billion Indians, top 3 – 4 mobile telecom operators are rapidly expanding their broadband coverage by launching 3G and 4G networks. Along with this, increase in affordability of 3G and 4G handsets is also propelling Indians to

¹ (Source: http://articles.economictimes.indiatimes.com/2015-09-22/news/66792390_1_cent-penetration-broadband-penetration-internet-connectivity)

² (Source: http://articles.economictimes.indiatimes.com/2014-04-04/news/48866878_1_gdp-brics-india-and-china),

upgrade their existing handsets to smartphones which will enable them to access mobile broadband services. However, simply improving broadband coverage, availability of affordable devices and low pricing of mobile data services alone will not enable the massive digital transformation that the Indian government is envisaging.

- 13.** Unlike voice services where the consumer was largely homogeneous, was already aware of benefits of these services, and required only coverage and affordable devices to adopt mobile voice telephony services, internet adoption in India is a far more complex task. Besides providing mobile broadband coverage and making affordable handsets available to users, consumers need to be educated about the benefits of internet with relevant vernacular and regional content made available for their consumption. Further, given the heterogeneity of the Indian market, consumers across different geographies, socio-economic profiles and demographics will have need for different types of internet based services across different genres.
- 14.** **The Authority needs to appreciate that today, only the serious 75 to 100 million (these are generally elite knowledge workers) customers who have access to high speed broadband are able to effectively understand and utilize the applications such as e-mail, commerce, instant messaging, entertainment, governance and social media applications.** An onerous exercise entailing consumer education, handholding and building relevance will have to be completed by means of trials and experiments, leading the balance 1.2 billion Indians on the path of discovery and generate sustainable demand for mobile broadband services in the country.
- 15.** Enabling this discovery process will require a synergistic approach between various stakeholders in the larger ecosystem including TSPs, Content providers and Application service providers. While a lot of foreign MNCs have displayed interest in providing content and applications for Indian consumers to try, learn and use, hundreds of digital startups are mushrooming as they attempt to build up the ecosystem which would translate every physical aspect of our lives into the digital space.
- 16.** If the internet adoption in the country remains weak, and middle and bottom end of Indian consumers do not see relevance of internet in their lives, not only telcos' massive broadband infrastructure investment would be left idle, the digital vision of Government of India would not accelerate at the pace of objective articulated by Prime Minister and Telecom ministry.

E. Key drivers for data growth

17. Innovative pricing in India is a crucial tool to every sector. The consumer needs to benefit from the high speed, consistent quality and great value services, while the investors in the telco sector need to make adequate returns to stay interested, allowing for the reinvestment in the sector to continue. The telecom sector over the last 20 years has played a vital role in creating over a billion connections in spite of several hurdles, but a fiercely competitive landscape has resulted in among the lowest rates for airtime in the world, and indeed this has been recognized globally, making the India telecom growth story the cynosure of the rest of the world.
18. As the industry is now poised to bring the benefits and advantages of the internet to the already connected, while at the same time continuing to expand coverage and services to connect the unconnected, the single most important Regulatory legislation was “forbearance of tariffs” which has provided an excellent platform of self-regulation while growing the ever expanding need for voice connectivity, and the growth in minutes of use is testament to this fact. This fact has rightly been recognized in the Consultation Paper and it is this factor, coupled with the far sighted TRAI policy decisions like MNP etc. that has played a stellar role in growing the telecom market equitably.
19. **As the Indian consumers embark on the journey of discovering the world of internet and how it can transform their world, they will need to be educated. The demand for internet will be built up as it happens in every sector, through the process of trial packs bundled with applications, content and promotion/price offers. The trial pack and acquisition offer in the voice era was directly controlled by the telecom service provider, but in the internet world, as we transition the customer from the physical to a digital way, pure price discount on mobile data or on applications/content will not deliver the desired results. Combo or bundled packs like watching first 10 minutes of a movie free, first 10 songs free, 2 days of mobile banking services at no data cost or Education sector and health services trial packs at discounted or subsidized data rates will have to developed and promoted to consumers as they try and discover these internet services. As such differentiated data tariffs are a critical need to grow serious internet users in the country. Any restriction on this could be detrimental to the growth of data in the country, and the eventual vision of a Digital India will become more difficult to achieve.**

20. Presently most of the content is English language based, and there is development underway to create content that caters to local needs. This will happen through innovation, tie ups with existing service providers to sample and try out, and this needs to be encouraged. The present penetration of data users is far smaller than the large overall base of users, and a free and open environment that fosters innovation and entrepreneurship will permit for the proliferation of content and services aimed at the large numbers of non-data users.

21. Considering that telecommunication services are vital for overall economic development and the sector has significance both as a direct independent economic activity in itself and also as a major means of facilitating and enhancing the activities in almost all other economic and social sectors on both an individual and collective basis, the Government and the Regulator need to create an environment of innovation and flexibility for operators as well as application providers while balancing the same with principles of tariff forbearance, transparency and non-discrimination.

22. Internet adoption can only be driven by non-standard offering – flexible, differential pricing approach to pricing of services. This activity cannot be driven by one single entity and can only be done when both telecom operators and application providers work together to create innovative product offerings and motivate the non-users to use internet and applications. The large heterogeneous Indian market will have several consumer segments with varying needs, for e.g. younger generation who would prefer entertainment like movies and songs, messaging and communication to older generation who may be more interested in health services, fishermen in Kerala may be interested in weather updates while the farmers in Maharashtra may be more interested in agriculture related applications, students may prefer educational content while migrants may want banking services. Undeniably multiple applications across genres such as education, health, banking, governance and many more will need to be developed and promoted so that consumers with varying socio-economic, demographic and geographic profiles can try and adopt the ones best suiting their requirements and no single entity will be able to meet all these varying requirements. Further, to assume that a single large entity will be able to monopolize the data markets by providing free internet etc. is a figment of imagination and practically implausible in complex, large, well regulated Indian market. The Indian legal system and the various existing laws are well equipped to ensure that no monopolistic, anti-competitive behavior is practiced by market players.

1. While Idea Cellular fully supports the principle of tariff forbearance as enunciated and practiced by the TRAI for last several year, we do not support any concept designed to benefit single

application providers and do not intend to participate in these programs. Such programs expect Telco to bear the full cost of running the program, making telecom offer free data services. There is no business case for telco to offer free data services for any platform or program. The same is apparent by the fact that most major telecom service providers in India have chosen to distance themselves from such programs. Also, in our view, the Regulator should not link the decision on Differential Tariff with any current event as no leading Indian telecom operator has joined such a program.

2. While there has been a lot of heated debates on 'Zero Rating Plans' being used to build market power / monopolies, in our view, Zero rated plans may be essential in India's journey towards 'Universal Internet Adoption'. Telcos can provide their distribution reach especially in hinterlands and deep interiors to promote and support young mushrooming digital startups in the country who have limited geographical reach and financial muscle to compete with established players. The new startups by definition have innovative and unique ideas and only through discovery and partnership process of working with telcos diverse, large base and wide reach can these new ideas reach the target segment of the startups.
3. We however recommend that Authority allow multiple options for reaching and serving the customers, provide adequate opportunities for trials of products, so that customer can start using the products. Such flexible approach was allowed by Authority earlier in case of voice telephony – local calls were aided by multiple VAS products, roaming, sms etc. Same principles need to be applied for data growth too. The TRAI needs to bear in mind here that it is this strategy of offering segmented plans and wide choice to the customer that has helped Indian consumers adopt mobile telephony at a fast pace making India the fastest growing telecom market in the World.
4. It is thus essential that we need to adopt differential pricing and create relevant proposition /offerings for non-users by roll-out of massive infrastructure across the country , and most critically by enabling huge demand generation, sales and marketing efforts including sampling, trials and education efforts, customized product offerings and large scale network, service and sales and marketing investment by TSPs.

In light of the above, our submission to TRAI Consultation Paper on Differential Pricing for Data Services is as below.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Idea Response

Yes, differential pricing is necessary, important and perhaps the only solution given the colossal task ahead of connecting 1 billion Indians through Internet and making Digital India vision a reality.

Following are the reasons to substantiate our views.

I. Current Internet Scenario India

- A. While the Mobile Data journey of the Indian telecom sector commenced in 2010 with the auction of 2100 and 2300 MHz spectrum, the ecosystem was not fully developed with lack of affordable 3G devices and limited applications for consumers to realize the need of internet. As a result, the mobile broadband population coverage was slow to expand with only 300 – 400 million Indians being covered over a span of five years, from 2010 to 2015.**

- B. Internet adoption in India is still in its nascent stage with only about 7% of Indians having access to broadband internet.** While over 300 million Indians are reported to be accessing wireless internet, most of them do so on the 2G platform with limited consumption (1 to 100 MB per month). **The Authority needs to appreciate that even today only 75 to 100 million (these are generally elite knowledge workers) customers having access to high speed broadband are able to effectively understand and utilize the applications such as Videos, Photos, Commerce, Banking, Education, Health, etc.** Rest are either casual or intermittent users and 700 million have never connected to Internet. The digital divide is vast with Internet users concentrated in cities and urban areas, due to lack of access and education. **India is ranked 129th out of 166 countries in the ICT Development Index (IDI)**³; amidst SAARC nations too, India fares worse than Sri Lanka, Maldives and Bhutan when it comes to Internet penetration. It fares way poorer when compared to other three nations in BRIC where lowest penetration is close to 50%. Needless to say, there is a need to kick-start programmes that would accelerate Internet acceptance and reach amongst unconnected populace.

³ <http://www.financialexpress.com/article/fe-columnist/data-pricing-differentiation-isnt-discrimination/180478/>

- C.** In India Internet usage is primarily driven through mobility, since fixed line penetration level was never high. Most Indians get their first experience of the Internet on a mobile phone. This is unlike other countries in Europe or US etc. where internet proliferation happened predominantly through fixed line route. In those countries internet through cable and fixed line options like landline, DSL etc. had been the mainstay for a long time. Also, in US and Europe there is competition amongst 3-4 well capitalized telecom players **while in India there is hyper competition between 7-8 players who are financially stretched and operate on significantly lower quantities of spectrum as compared to US and European operators.**
- D.** **Internet access in India is presently based on the platforms of 2G technology, which is largely ubiquitous and is available to most Indians, and 3G technology which covers around 300 – 400 million Indians.** This has resulted in only 93 million Indians currently using broadband internet services, a meager 7% of population and under 10% of wireless mobility subscribers, despite the introduction of mobile broadband technology five years ago in the country. All this is slated to change with the massive investment planned by top 3 existing telecom operators on 3G and 4G platform and a new entrant on 4G platform which would drastically improve mobile broadband population coverage. Further, competition will keep the prices at world's lowest levels.
- E.** The TSPs in conjunction with application/platform/ Web providers thus have a massive task ahead – that of connecting 1 Billion subscribers at minimum speed of 2 Mbps with average consumption of 1 GB per month, which would generate 1,000 Peta Byte traffic per month. This would also require covering 4 to 5 Lakh villages through a wide network of towers, optic fibre across length and breadth of country at affordable prices. This infrastructure deployment will require an additional investment of Rs. 10 - 15 lac crores (over next 10 – 15 years), besides the existing Rs. 7.5 lac crores that have been deployed for making mobile voice services available to nearly all Indians, in spite of low returns in the sector.
- F.** **To attract such a large investment, freedom / flexibility in pricing and continued forbearance policy are essential since any TRAI intervention/ control on differential pricing would have adverse impact on TSP business models leading to greater uncertainty of investment return. This, clearly, would shake the confidence of investors in the sector thereby delaying fresh investments, resulting in weak infrastructure, in addition to promoting an oligopolistic market structure.**

II. Internet market in India not mature and requires Innovation & Regulatory flexibility for growth.

- G. **Internet has to grow – if the Indian economy has to grow** – Internet has the power to bring real transformation to Indian economy. The Authority is aware that as per Analysys Mason, an increase in broadband penetration of 1% will contribute INR 162 billion or 0.11% to Indian GDP in 2015. Global economists are indicating that 1% improvement in broadband penetration will have 2.5% impact on GDP over a decade.
- H. **Digital India is a vision of the present Indian Government that aims to transform India into a digitally empowered society and knowledge economy by 2018.** This programme will ensure that government services are available to all citizens electronically. Broadband and Internet access, thus, are critical to the nine pillars of Digital India vision. To realise the dream of digital India, there is a massive investment underway in rollout of 3G and 4G services. Such massive roll-out would require huge demand to sustain the investments and that can only come from allowing operators the flexibility to offer customized tariff plans. It is now well-proven that given the hypercompetitive nature of the Indian telecom market, only 4 telecom operators have been able to build a business around it while remaining 6 to 10 operators are making significant losses. In case the ability of the operators to offer differential tariffs is restricted it would be very difficult for incumbent operators, who are presently investing in the sector for long term, to sustain the infrastructure that the Indian telecom market has built over the years and businesses would become unviable rendering the sector unattractive for investors and resulting in NPAs for banks
- I. While Internet gives high visibility to social networking, entertainment and video streaming sites, however these actually constitute only a minuscule number, if compared with the total mass of the 900 million subscribers. **Internet's power is thus bigger and more potent in the sense that it can deliver essential services like health, education, banking, e-governance services to the last mile.** **Millions in India are bereft of these benefits as they are unaware of the relevance and use of Internet.** The real challenge ahead is thus, not only to get the next billion access to internet, but also to be able to prompt the current & prospective internet users to be able fully use applications for e-commerce, health, education and e-governance. **This activity thus can only be done in collaboration with application providers and requires both telecom operators and application providers to work together for creating innovative product offerings so that all players in the Indian telecom eco-system can bring the enormous unconnected citizens to the world of Internet.**

J. To generate Internet trials and to bring them online, collaborative efforts of TSPS, application/platforms/website providers is imperative. Differential pricing is the stepping stone for various Internet stakeholders to come together; without this key initiative, there is no scope for any partnerships to take Internet forward. In short adoption of B2B2C model would be essential for bringing relevant and cost effective solution for attracting the masses to the use of internet and helping the cause of digital India.

K. In addition to the importance given to global companies, there are a lot small Indian start-ups that are coming up with innovative solutions for localised problems. Owing to low Internet penetration, most small start-ups neither have geographical reach nor the distribution muscle to reach the masses of India, especially in Bharat. Unless there is a push from partnerships between TSPs and content/application providers to support innovative, diverse and regional/vernacular content and applications, the Internet economy in India will be stuck with low demand, thereby delaying the pace of internet adoption and meeting the Prime Minister's vision of Digital Indian for the masses rather than the classes.

III. Differential Pricing is essential

L. Innovative pricing in India is a crucial tool to every sector. The consumer needs to benefit in form of not only affordable prices but also consistent, high quality, high speed wireless broadband access and trial packs of multiple diverse applications, while the service provider needs to make an adequate return on his investment, allowing for the reinvestment in the sector to continue. The telecom sector over the last 20 years has played a vital role in creating over a billion connections in spite of several hurdles, but a fiercely competitive landscape has resulted in among the lowest rates for airtime in the world, and indeed this has been recognized globally, making the India telecom growth story the cynosure of the rest of the world.

M. With the introduction of smart phones and connectivity through data capabilities to the internet, the mobile operators are in the process of providing high quality, wide scale, deep access to emerging data users, and enabling them to choose the content of their preference. However, the consumer adoption of broadband services is growing at a slower than desirable rate. The demand for broadband internet access will happen as it happens in every sector, through the process of trial packs, bundled offers and price promotions. It is akin to elasticity of pricing in the homogenous voice market. As such differentiated broadband data tariffs are a critical need to grow this segment of the user. Any

restriction on this could be detrimental to the growth of data in the country, and the eventual vision of a Digital India will become more difficult to achieve.

N. Standard mobile data offerings do not generate interest in non-user/casual user who is still discovering the role internet in his life and society - Typically the data rates for 1 GB of data in US, is ~USD \$20 to \$30 or ~Rs. 1250 to 1850 (India equivalent). India is already amongst lowest levels at Rs.250 and Rs.175 for 2G speed. Consumers in US/ Europe have a longer history of a stable fixed line broadband, 3G and 4G platform services, high laptop and desktop penetration, higher education and better income portfolio, and are early adaptors of new technology. Given the need for internet application is well established in their lives, they see value in high mobile data prices for better services.

In comparison, the Indian market is price sensitive, and possibly misses the significance of buying a monthly data pack, which explains Internet being limited to 93 million elite users, while the rest remain casual users or do not access internet. The zero and intermittent users need to discover the transformational power of internet through programmes that encourage regular usage. **A standard offering of mobile data without any differentiation in terms of bundle or application, content or access will not be beneficial in driving adoption as straight jacket solutions will not work.** For a billion Indians, “one size fits all” approach has never worked in the past and it will stifle growth. Every Internet user is different with different usage needs for e.g. younger consumer may be focussed on messaging and communication, while an older consumer may have higher need for health or commerce (similarly rural consumer will differ from an urban consumer), the principle of “Different strokes for different folks” clearly needs to be applied. Customers benefit when they need to pay for what they choose instead of a standard rate for all. Differentiated pricing helps those who cannot pay a high price and those who want to pay for additional content and service.

O. Majority of people are still adopting to mobile technology and are in early stages of the Internet learning curve. They have to be taught the relevance of Internet and encourage adoption. Developed markets had access to computers and fixed line networks; their movement to wireless was only a shift in technology. In Indian market majority of people are still adopting to internet. **Unless we adopt differential pricing and create relevant proposition/offerings for non-users, the adoption will not accelerate as much as we want. Internet adoption can only be driven by non-standard offering – flexible, differential pricing approach to pricing of services.**

- P. We re-iterate that our aim of being an information society can only be fulfilled through all-inclusive digitization by providing accessible Internet services through mobility. **Differential pricing is the powerful tool that can be used by all players in the digital ecosystem to bring about this radical change.**
- Q. **Differential pricing and forbearance have been key enablers in pushing the Indian mobile and voice telephony market more than 1 billion users.** TSPs have been offering differential pricing on Voice and value added services since last 20 years and they have utilised it well to drive mobile adoption.
- R. **The fear that differential pricing can be misused or for gatekeeping is not substantiated and across the globe, these fears have found no basis.** In any rare circumstance, where such fears come true, there are enough laws, competition commission and consumer laws to check any form of aberration.
- S. A regulated market without a free hand in deciding tariffs and customer offering in terms of bundling content and data, has limited incentive for TSPs to make further investments. Controlled and regulated prices impact business models in a competitive telecom industry with no innovation possibility and will reduce the ability of the TSP to attract investors, severely impacting the ability to garner huge financial capital needed for the sector and internet in India. Given the financial health of the Industry, all the stake holders i.e. Government, policy makers, TSPs, need to come together to create robust frame work for connecting 1 Billion Indian with high speed Internet and work with a missionary zeal to achieve it.
- T. While Idea Cellular fully supports the principle of tariff forbearance as enunciated and practiced by the TRAI for last several year, we do not support any concept designed to benefit single application providers and do not intend to participate in these programs. Such programs expect Telco to bear the full cost of running the program, making telecom offer free data services. There is no business case for telco to offer free data services for any platform or program. The same is apparent by the fact that most major telecom service providers in India have chosen to distance themselves from such programs. Also, in our view, the Regulator should not link the decision on Differential Tariff with any current event as no leading Indian telecom operator has joined such a program.
- U. While there has been a lot of heating debates on ‘Zero Rating Plans’ being used to build market power / monopolies, in our view, Zero rated plans may be essential in India’s journey towards

'Universal Internet Adoption'. Telcos can provide their distribution reach especially in hinterlands and deep interiors to promote and support young mushrooming digital startups in the country who have limited geographical reach and financial muscle to compete with established players. The new startups by definition have innovative and unique ideas and only through discovery and partnership process of working with telcos diverse, large base and wide reach can these new ideas reach the target segment of the startups.

In view of the above, Idea Cellular feels that the Indian Internet market is still in its infancy, the national roll-out of broadband services on 3G and 4G platform is still in transition, and neither the data market has matured enough nor the consumer adoption reached a satisfactory penetration level. Hence it would be advisable to have a flexible, differential pricing approach to drive Internet adoption. It is further re-iterated that:

- i. **Differential pricing and forbearance have been key enablers in pushing the Indian mobile and voice telephony market more than a billion mobile users.** Price differentiation has been a core element which has allowed telecom operators to provide customised tariffs based on differential such as usage pattern etc., thereby meeting specific needs of customers resulting in higher acceptance and more users adopting mobile voice usage. **The Regulatory flexibility is thus essential for data adoption and growth.**
- ii. A regulated market without a free hand in deciding tariffs and customer offering in terms of bundling content, application and mobile data will impact TSP's ability to generate consumer demand, especially for large 1.2 billion non digital Indians and in the long run impact ability of telecom operators to sustain/commit large capital resources needed to build Digital India. Controlled and regulated prices will not attract investors and this will severely impact the growth of internet in India. **Given the financial health of the Industry, all the stake holders i.e. Government, policy makers, TSPs, need to come together to create robust frame work for connecting 1 Billion Indian with high speed Internet and work with a missionary zeal to achieve it .**
- iii. **Idea Cellular fully supports and endorses the existing TRAI principles of transparency, Non-Discrimination, Non-predatory, No Anti -competitive behavior, Not misleading and No ambiguity and these should remain the bedrock for the country's data tariff policy.**

- iv. **The Authority also needs to appreciate that differential pricing is a common phenomenon in various industries, airline and hospitality being a couple of examples** and allows a free market place where companies let consumers decide the price they are willing to pay for a product or service. In fact the Government run BSNL itself has traditionally always had 2 kinds of tariff plans – one for the rural customer and the other for the urban users. Another example is freeways, which come with toll charges, as compared to normal roads; they provide same benefit and are available for anyone to use; users take a call on whether they want to pay a charge for faster commute or make a trade-off with free but slower facilities. Yet another example is the Indian Railways, wherein there are additional charges for reservation, different fares for different classes and different types of trains, based on the ability to pay and the grade of service being sought by the consumer.
- v. **The Authority also needs to appreciate that all input costs for the telecom companies are based on a free market mechanism. Even spectrum, where the rights are given by the Government is given through an auction mechanism, which represents the highest form of free market pricing (in fact prices have been higher than fair market prices due to artificially constrained supply and auction designs which have caused predatory bidding in many cases). In such an environment, when all input costs are based on free market principles, it is essential that market forces are allowed to determine pricing and if the market accepts differential pricing, then that should be allowed.**
- vi. **Differential Pricing is recognized in law** – Differential / dual pricing is recognised under law in several judgments and is backed by regulatory precedents from other sectors such as water, electricity / power, oil and gas and airlines etc. where consumers are classified into different categories based on certain indicators and factors like usage and consumption and type of subscribers / consumers. For instance:

Electricity

- a. Distribution companies provide electricity at different rates to different categories of consumers.
- b. Part VII (Tariffs) section 28 (7) (a) of the Delhi Reforms Act, 2000 reads as under –
*“The tariff implementation shall not show undue preference to any consumer of electricity, **but may differentiate according to the consumer's load factor or power factor,***

the consumer's total consumption of energy during any specified period, or the time at which supply is required."

- c. The basis for fixation of tariff is based on the nature of supply and the purpose for which the supply is required without showing undue preference. In a catena of judgments,¹¹ the Courts have held that favourable treatment to a certain class of consumers on account of economic disparity does not violate Article 14 of the Constitution of India.

Water

Various state agencies such as the Delhi Jal Board differentiate between Residential, Partly Residential and Industrial / Commercial consumers. The rate and volume of water supply is dependent on the categorization:

- a. **Residential:** Water supplied to and used purely for residential purpose.
- b. **Partially Residential / Mixed:** Water supplied to residential buildings where commercial activity having non-intensive use of water exists, such as private clinic, consulting chambers, shops, property dealer's office etc. For Group Housing Societies and Apartments with one bulk connection for water, the dwelling units which have mixed use activity, are charged at tariff applicable for mixed use rates after taking average consumption for each unit. The office bearer with meter reader will assess such units after every two billing cycles.
- c. **Industrial/Commercial:** Water supplied to property where intensive use of water is envisaged such as hospitals, schools, offices / office complexes, Railway Stations, Police Stations, Airports, Bus-stand, Petrol Pumps, Hotels, restaurants, marriage halls, industry / factories, amusement parks etc.
- d. Notwithstanding that all these categories use the same standard and quality of commodity i.e. water - there is differential pricing.

Gas

- a. The LPG distribution model followed by gas companies such as Indian Oil Corporation, Bharat Petroleum etc. recognises and makes a distinction between a Commercial and Domestic

Consumer (like in the broadcasting sector where there is a commercial subscriber and ordinary subscriber).

- b. Commercial consumers include LPG used by non-manufacturing establishments or agencies primarily engaged in the sale of goods or services such as hotels, restaurants, wholesale and retail stores etc. The cost of purchase is directly linked to the market forces.
- c. Domestic consumers include usage by private dwellings, including but not limited to apartments for the purposes of cooking, heating and other household usages who are given gas via LPG cylinders/pipeline at a reduced rate.

Applying the same principles, internet can be made accessible to all and can narrow the digital divide in India. Therefore, price flexibility and / or differential pricing is vital. In fact, even under the TRAI Act differential pricing is recognised under Section 11 (2) wherein different rates can be levied. Relevant part of Section 11 (2) is extracted below:

"PROVIDED that the Authority may notify different rates for different persons or class of persons for similar telecommunication services and where different rates are fixed as aforesaid the Authority shall record the reasons therefor."

Thus, differential pricing is backed, supported, and recognised by statute and Courts. This has benefitted consumers, subscribers and all other stakeholders.

- vii. **It needs to be kept in consideration here that Differentiation is separate from discrimination and that differentiation, if implemented in the right manner, can in fact help in enhancing customer welfare.**

Thus we feel, differential pricing is the way ahead to include more and more Indians in the Internet economy, and that the **TSPs should be allowed the freedom to have differential pricing for data usage for accessing different websites, applications or platforms with the TRAI playing the same role of overseeing and scrutinizing tariff proposals to check for their consistency with the regulatory principles.**

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Idea Response

1. Regulatory experience over the last few years indicates that competitive intensity itself results in the manifestation of the best and most competitive tariffs for customers. Further, forbearance policy has stood the test of time. It has helped India to add millions of customers to mobile telephony. At present, various voice, value added services and combo offering are marketed in various forms of differential pricing and the Regulator has not felt the need for intervention , based on principles of transparency, Non-Discrimination, Non-predatory, No Anti -competitive behavior, Not misleading and No ambiguity. If TRAI feels that any of the principles are being violated, they can seek explanation from operators and take necessary action under the TRAI Act.
2. Thus, like TRAI scans the tariff landscape to ensure voice tariff offers are reasonable, transparent, non-discriminatory and are not anti-competitive, it can continue the same practice for differential pricing in data as well.
3. Further, our country already has adequate rules/acts in place to take care of any disadvantage resulting from price differentiation in case of data services. The existing legal regimes provide sufficient protection against any monopolistic or distortive behavior by operators without stifling innovative offers that enable smaller competitors to enter the market. All Internet transactions are governed by the same laws that govern other commercial transactions. Some of these safeguard laws include :
 - i. Competition Act, 2002
 - ii. Information Technology Act, 2000
 - iii. Consumer Protection Act, 1986
 - iv. Indian Contract Act, 1872
 - v. Indian Penal Code, 1860
 - vi. Intellectual Property Rights (especially Copyright Act, 1957)

It is thus felt that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation would be sufficiently addressed through existing statutes and laws.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Idea Response

Idea Cellular feels that there is no other option other than differential pricing and B2B2C model that can bring the power of Internet to the enormous size of unconnected population in India.

Education campaigns have been run, but that has not been able to create the required push to change 90 million 3G casual users to regular users. Unless differential pricing method is implemented, we will never see the change we want to see in the Internet revolution.

The alternate options suggested in the consultation paper are not sufficient to provide connectivity to a billion Indians in a short span of time.

We feel that differentiated pricing for data services is the only method by which universal access to data services can be promoted. The TRAI needs to bear in mind here that it is this strategy of offering segmented plans and wide choice to the customer that has helped Indian consumers adopt mobile voice telephony at a fast pace making India the fastest growing telecom market in the World.

It would thus be counter-productive to now move to a tariff regime that stifles innovation and takes away the flexibility of the operators to create segment-specific tariff offerings that cater to different needs of the constantly evolving internet customer segments in the Indian telecom market. **Hence, the need for continuity of the same for data tariffs.**

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Idea Response

TRAI act was created for the interest of consumers and to ensure orderly growth of the telecoms sector. Under the prevailing Light touch regulatory regime of TRAI, all benefits that can come from effective regulation, such as greater economic and technological growth, increased investment in the sector, cost reduction with improved efficiency, better quality of service, improved customer satisfaction, affordable prices delivering better value for money and improved access and availability of services, have got delivered. Multiple models have been tried and implemented by the Industry and TRAI has been a supporter throughout.

The Authority needs to now appreciate that the cost of providing Internet has gone up with inflationary pressures, hyper competition, expensive spectrum auction with disruptive telecom technologies are a constant threat to the business model of a TSP. TRAI is aware that massive investments have been made in building India's pan nation voice network, and further commitments are being made to build a deep and wide mobile broadband infrastructure – while spectrum prices need to be rationalized and quantum availability needs to be increased. At the same time, it is also well-acknowledged that the prices of voice and other value added services have gone down substantially. While making any decision, TRAI should take overall health of industry into account – how to attract capital from Indian and Foreign investors and banks, how to assist demand generation for the number of new start-up who would be harbinger for major employment generation in the country and evolving a spirit of entrepreneurship all round while keeping the Internet ecosystem balanced so that all players are thriving.

Considering that telecommunication services are vital for overall economic development and the sector has significance both as a direct independent economic activity in itself and also as a major means of facilitating and enhancing the activities in almost all other economic and social sectors on both an individual and collective basis, the **Government and the Regulator need to create an environment of innovation and flexibility while balancing the same with principles of tariff forbearance, transparency and non-discrimination.** This is possible through creation of a policy framework that promotes collaborative efforts and working together of all stakeholders / market players, including start-ups into the scheme of things so that it enhances overall Internet welfare or benefit as well as facilitates bringing customers from the bottom of pyramid into the Internet fold.

2.1.2 BSNL

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To,

Advisor (F&EA),
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg, New Delhi

No. Regln/1-10/2012/ 2689

Dated: 31 -12-2015

{Kind attention: Sh. Vinod Kotwal }

SUB: - TRAI's Consultation Paper on "differential pricing for data services"

Kindly refer to the TRAI press release no.70/2015 dated 09-12-2015 vide which TRAI has released Consultation Paper on "differential pricing for data services" dated 09-12-2015. In this context, Question wise BSNL's comments are as follows.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Ans: Yes, TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms. Prices are always used as a means of product/ service differentiation as same is normal business practice across the various industries. Allowing the TSPs to provide different pricing for few appealing services will help in increasing the data adoption in the country. The existing regulation framework if required may be suitably amended to facilitate above.

Differential pricing is a move towards building a transparent relation between customers & service provider. With differential pricing, TSPs can accurately predict what a customer's wants & can offer as per their needs/ requirement.

However, in order to have a uniform end user experience among all customers of all TSPs, it is required that such differential charging especially free or near zero charging cases should be provided by all TSPs simultaneously. As such any free offer being provided by a third party should be open for all TSPs on same terms and conditions.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Ans: Differential pricing is a practice of charging customers different prices for the same service. General idea behind differential pricing is to set prices based on demand or what

1/2

customers are willing to pay. With this, discount/ offer may be given to different demographic groups, as with discounts for senior citizens, students, institutions etc. Differential pricing model is purely transparent, affordable, and competitive as the subscribers are getting data packages as per their need. It is also beneficial for TSP point of view as it is for the both segments price sensitive customers & for those who willing to pay more.

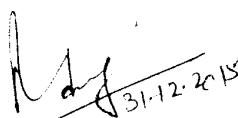
Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

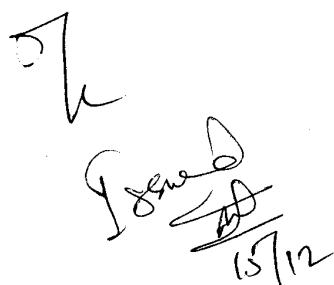
Ans: There could be some methodologies/ business models, but it could not be as effective as differential pricing.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Ans: No comments.

This is for your kind consideration please.


31.12.2015
for (Raghuvir Singh)
AGM (RegIn-II)


15/12

2.1.3 Zee Network

Response to Consultation Paper
On
Differential Pricing for Data Services (8/2015)

Response of Zee Network



॥ VASUDHAIVA KUTUMBAKAM ॥
THE WORLD IS MY FAMILY

From:

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In Response to Consultation Paper on Differential Pricing for Data Services (8/2015)

1. Introductory Comments

- 1.1 Zee Network has reviewed the extant consultation paper on differential pricing of Data Services. We note that TRAI had previously issued a consultation paper on Net Neutrality (Consultation Paper on Regulatory Framework for Over-the-top (OTT) services March 2015). The responses as uploaded on the TRAI website were overwhelmingly negative on any policy that violates net neutrality. Zee network had also responded to the Paper on any policies or workarounds which violate net neutrality.
- 1.2 The present consultation paper on differential pricing of data services (for different websites) is in fact raises the very same questions which were sought in the previous consultation paper, where it was stated that the Data Service Providers , (referred to as TSP's) derive revenues primarily from data, which originates from OTT services. We believe that the very same questions have been reframed while avoiding the use of the term net neutrality but leading to the very same outcomes where there is a differential tariff for different websites and applications, leading to the violation of net-neutrality.
- 1.3 The questions posed by the TRAI in this paper are essentially whether the content providers could be made to compensate the TSPs to provide differential pricing, which in our opinion does not differ from the previous consultation paper, as the very basis of differential pricing in an environment where net-neutrality does not exist would be the fact that the sites the access to which is offered by TSPs at zero (or lower rates) would need to be compensated. This is borne out by the statement of TRAI itself in the consultation paper on Net Neutrality Para 4:

"The characteristics of OTT services are such that TSPs realise revenues solely from the increased data usage of the internet-connected customers for various applications (henceforth, apps). The TSPs do not realise any other revenues, be it for carriage or bandwidth".

It would have been more appropriate if the TRAI had in fact clarified its response and views on the previous consultation paper and detailed reasoning for issuing another consultation paper with similar questions and objectives, by merely omitting the use of the word net-neutrality.

Please find our response to the questions as framed in the consultation paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Zee Response:

The TSPs merely provide the data services infrastructure using the network which they have been licensed to operate. They price their data services by volume, data rates, network type (2G, 3G and 4G or WiMaX) which is then offered to all customers.

Differential pricing is completely contrary to the concept of net neutrality.

We are of the clear view that differential pricing cannot be on the basis of type of services consumed, rather the basis of pricing ought to be only on the amount of data consumed. It is akin to electricity consumption – consumers are charged the same per unit consumed. The more you consume the more you pay – you either pay for

- time used (as in cyber cafes)
- data consumed (as in our personal plans).

As already pointed out, differential pricing is innately against the concept of net neutrality, and competition, and can have the impact of throttling the fledgling digital space in the country.

There is already a differential of pricing built in by pricing the bandwidth by volume slabs. For example, if a streaming Content Delivery Network (CDN) uses 1000 GB of data usage a day, it can have a different pricing slab vis-a-vis another customer who uses 1GB per day. The end customers, when they access such websites (say Youtube or Facebook) however pay the same price per GB of usage as per their own data plan without discriminating which website they are accessing/visiting.

However the current question is whether for the same volume, customers can be offered differential tariffs, and the difference be bartered from the Content provider or application provider website.

This leads to the same outlook as violation of net-neutrality as the dominating Content or application providers can make their access free, and thereby causing severe disadvantage to the newer startups which do not have the muscle to pay charges to TSPs on behalf of customers.

Non-Discriminatory Access

It is the principle that calls for the Internet to remain free and open - with no “fast lanes” that would allow some content providers to take priority over others. The core principles that best outline the scope of the concept are:

- (i) **All sites must be equally accessible:** ISPs and telecom operators shouldn't block certain sites or apps just because they don't pay them. No gateways should be created, in order to give preferential discovery to one site over another.
- (ii) **All sites must be accessible at the same speed (at an ISP/Telco level):** This means no speeding up of certain sites because of business deals. More importantly, it means no slowing down some sites.

Non-discriminatory access is the heart of net neutrality. Differential pricing if allowed would result in discriminatory regime thereby violating the very essence of net neutrality. It is

Zero Rated Plans

The cost of access must be the same for all sites (per Kb/Mb or as per data plan): This means no “**Zero Rating**”. In countries like India, Net Neutrality is more about cost of access than speed of access as Internet speeds in India have not yet caught up with the developed world. Zero-rating which is also known as toll-free data or sponsored data, is the practice of TSPs to not charge end customers for a well defined volume of data by specific applications or internet services via the TSPs mobile network in limited or metered data plans and tariffs. The practice involves TSPs, through a prior agreement with specific content providers, offering free mobile data to allow customers to access particular online content or services at no additional cost.

Zero-rating, by granting free access to some websites but charging for others, entails preferential treatment of certain sources of content. If normalized, it would prompt TSPs to launch similar discriminatory deals on the premise of maximizing their revenue at the expense of smaller businesses. The most prevalent zero-rated programmes involve giant US-based providers such as Facebook, Google and Twitter makes the issue more contentious as it also poses a threat to local content development.

Zero-rated mobile traffic is blatantly **anti-competitive price discrimination** designed to favor TSPs own or their partners' apps while placing competing apps at a disadvantage.

While the TRAI has not used the term Zero Rated Plans, the fact remains that the outcome of differential tariffs, if permitted will lead to the following:

(i) One or more Application Providers (Whatsapp, Google, Facebook , Expedia (just examples) will offer Zero rated plans

TRAI is well aware that Internet services like Facebook, Wikipedia and Google had built in the past, and have practice of building special programs to use zero-rating as means to provide their service more broadly into developing markets.

It is a different matter that regulators in different countries have declared such plans as illegal and these had to be ceased, such as Chile.

(ii) One or more TSPs (such as Airtel,Idea, Reliance, Vodafone) may offer Zero Rated Plans

T-Mobile in USA has offered Zero rated Plans as a major strategy to win over customers by providing Zero priced access to all streaming websites such as Hulu, Netflix, Youtube etc. The customers of all these websites did not have to make any additional payment over and above their regular data plan for unlimited access to streaming, and such data usage was not debited from their internet pack and was free.

Under the T-Mobile Uncarrier initiative:

-T-mobile made all Video services such as Netflix, Hulu and Youtube outside the data plan (They are free).

- Removed the Subscription Plan periods (anyone can unsubscribe any time).

-Removed the Roaming Charges. (Data and Texting is free in 140+ Countries), Voice is only 20 C per min.The result was that T-Mobile added 30 Million customers up from 30 Million to 61 Million.

-launched the biggest single initiative of Mobile Video Binge where it made 24 Video streaming services completely free, apart from doubling the size of mobile data packages.

The consultation Paper issued by TRAI in March 2015 on Net-Neutrality largely appeared to address (i) above (Zero rating by Application providers) while the current consultation paper has changed tracks to address the same issue under (ii) above i.e. Zero rated plans by TSPs. The question posed by TRAI is whether the TSPs can offer such plans and obtain in barter the charges from the Application providers.

As TRAI is aware, Zero Rated plans are in fact permitted by some regulators specifically in developed countries, these are in fact not favored in developing countries. **However selective Zero Rating is not permitted.**

For example T-Mobile offers Zero rated access to 24 Streaming providers, and any other providers can join at Zero Cost. Hence it was held not violating Net Neutrality by the FCC. As indicated by T-Mobile:

"This is not a net neutrality problem," T-Mobile US CEO John Legere said during t announcement. "It's free, the providers don't pay, the customers don't pay. Most importantly... you can shut it off, it's complete customer choice."

However any Zero rated plan or discriminatory pricing has been opposed in EU, OECD and other countries. Details are given below.

European Union

(i) As reported by World Wide Web Forum, In Europe, ten small member states put forward a net neutrality proposal that, if adopted, would ban harmful price discrimination practices such as zero-rating. The proposal is fiercely opposed by big EU member states and their dominant telecom groups. **The Netherlands and Slovenia, two countries that have already enshrined real net neutrality in their national laws, issued enforcement orders for zero-rating violations.**

(ii) In January 2014, the Dutch Consumer and Markets Authority, ACM, fined Vodafone for zero-rating HBO Go mobile video streaming while the Slovenian regulator ordered Telekom Slovenia and Telekom Austria to stop zero-rating music streaming and cloud storage applications. Chile's 2014 net neutrality legislation also bans price discrimination practices such as zero-rating. **In 2014, the Norwegian, German and Austrian telecom regulators publicly asserted that zero-rating infringes net neutrality.**

(iii) **Canadian telecom and media regulator (CRTC) has banned zero-rated mobile video streaming services** while in the US the Federal Communication Commission (FCC) has released its much anticipated draft net neutrality rules. The FCC has proposed to reclassify broadband internet access service as a telecommunication service under Title II of the US Communication Act and centred its net neutrality proposal on three so called Bright Line Rules: 1) no blocking 2) no throttling 3) no paid prioritization commonly referred to as 'fast lanes'.

(iv) The European Parliament's and President Obama's interventions in April and November 2014 respectively tipped the scales against paid prioritization and internet 'fast lanes'.

On the same lines, Zee Network would like to oppose any selective Zero rating or differential rating plan where, for example, one Streaming Website of content is offered at Zero Cost, but other Streaming Websites which offer similar streaming are charged. In this context, it is pertinent to point out that the network cannot differentiate between different types of data (the fundamental principle of net neutrality)

The reasons are as follows:

(i) Internet is dominated by some large international players in all fields (Search (Google), Apps(Facebook, WhatsApp), Social sites, Streaming (Netflix, Hulu etc). Because of their scale and valuations they can completely dominate and smother any small startups if zero rated plans are permitted.

(ii) Non-discriminatory internet access Internet is key to India's startups and innovative service providers. We need them to grow to global levels, rather than allow the Indian landscape to be dominated by selective international players who are able to pay for content.

The views of the Zee Network have been very clear on this issue vide our response to the net neutrality issue. In summary we would like to state that any differential pricing is undesirable at

this stage, and in no case there should be differential pricing which is not equally applicable to all sites which provide the same application or service.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Zee response: We have partially addressed this in the previous question, and the Zero rated plan by T-Mobile as a TSP where it does not charge either the Application provider or the users for such plans, as per FCC does not violate net-neutrality. For example, Services that don't count against data caps are Netflix, HBO Now, HBO Go, Hulu, Sling TV, Sling Box, ESPN, Showtime, Starz, Movieplex, Encore, Vevo, Vessel, Univision Deportes, Major League Baseball, Fox Sports, Fox Sports Go, NBC Sports, Crackle, Vudu, and Ustream. It works either in the providers' apps, or in mobile Web browsers. Other providers can join at Zero charge as well.

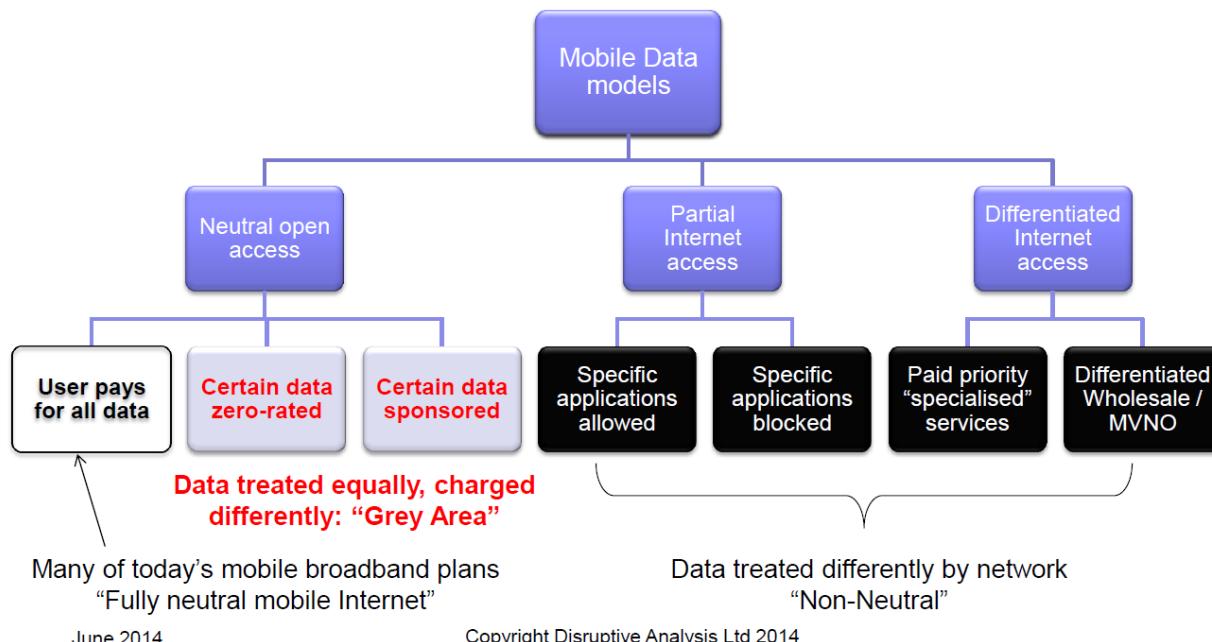
However the same is not true for other providers which provide discounted plans for their own services and the FCC view on this matter is expected to announce the same. "zero-rating" services aren't outlawed by the Federal Communications Commission's net neutrality rules. The rules allow for complaints against zero-rating schemes, with the commission judging on a case-by-case basis whether a practice "unreasonably interferes" with the ability of consumers to reach content or the ability of content providers to reach consumers.

Zee Network would like to specifically caution against:

- (i) A TSP selecting one (or more but not all) particular Site(s) or application(s) for a Zero rating Plan or a discounted tariff plan. Hence all such reduced or differential tariff plans should be non-discriminatory for all similar sites.
- (ii) Any discriminatory pricing plan offered by companies compensating for consumers usage by a scheme similar to "Toll-Free"



Application-based mobile data models



Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

If differential pricing is offered it would nominally follow one of the following models:

- 1) TSPs providers cover the costs to users of accessing certain hand-picked sites and apps which are their own. (This is a TSP and Content Owner combination) and should under no circumstances be permitted.
- 2) A company pays to provide access to a suite of different services; - Zee Network View is that this should not be permitted as the data charges are very high in India and only very large well established International players can afford the same killing competition.

Hence we would like to coin the term **Equal rating** for similar services and products.

The principle of Cross ownership between TSPs and their own sites for Application or content needs specific attention and should be specifically prohibited. In some cases, TRAI may need to lift the “Corporate Veil” and ensure that the rules are not being violated by restructuring entities.

3) A company pays to subsidize access to only their services.

Such subsidy, if offered by a company should be on their subscription or content usage charges, and not the data medium charges. For example, a company which streams movies may offer free access via one of the TSPs and this would be discriminatory. Under the “Equal Access” proposed by us, such discounts should propagate to all TSPs or providers without any discrimination.

4) Device Specific Discriminated Tariffs

Some providers have been known to offer low or Zero tariffs against user devices supplied by them. It is possible that in near future, some providers may offer Zero rated plans provided used by their own locked devices, say for access to streaming video etc.

This would be highly discriminatory and distort the market. We would like to support a Bring Your Own Device (BYOD) regime to be well defined and institutionalized by TRAI.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

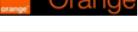
We need to understand that while India is still developing its technologies and has a vibrant start up market, there are well established companies which would easily pay for user access for access to their own websites or content. Hence:

- (i) Net Neutrality should in no case be violated.
- (ii) Creation of network owning companies where they own their network and also create content repositories should be entirely prohibited.
- (iii) Zee Network would also like to strongly advise against device specific discriminated tariffs.

Annexure-1- Zero Rating Plan – Approaches in EU and Other Countries

As reported by WWW Forum

Back in April 2014 in a GigaOM op-ed, we warned that zero-rated traffic is blunt anti-competitive price discrimination designed to favour mobile operators' own or their partners' services while placing competing internet services at a disadvantage. A zero-rated app is an offer consumers can't refuse, I wrote. The telecom industry dismissed our assertions as fear mongering and was quick to highlight the positive side of zero-rating. Indeed, zero-rating enables poor and disadvantaged communities that do not have access to affordable fixed broadband or cannot afford mobile internet subscriptions, to gain access to parts of the internet. Or to be more precise, to gain access to Facebook or ISPs' walled gardens. Zero-rating data-light applications such as Facebook in emerging markets where even the tiniest volume of open mobile internet (e.g. 500MB per month) is unaffordable to the masses causes consumer and competitor harm. In OECD markets, where open mobile internet usage prices are, generally speaking, more affordable for data-light applications such as Facebook and Twitter than in emerging markets, ISPs eye the data-hungry mobile video and cloud markets. As shown in the table below, by zero-rating their own mobile TV & film store services, operators are foreclosing the mobile internet video market by placing all other competitors (e.g. Netflix, Vimeo) at a disadvantage. Zero-rated video offered by mobile operators is an offer consumers cannot refuse.

DIGITAL FUEL MONITOR MONITORING MOBILE CONNECTIVITY COMPETITIVENESS By Rewheel				  	  
Operator group	EU market	Price & Gigabytes Smartphone plan with unlimited mins & SMS	Price additional Gigabyte	Telco zero-rated video (TV/films)	Open internet video (max allowed time to watch HD video in open internet plans)
 TeliaSonera	Finland	€25 (50 Gigabytes)	€0.2	No	Practically unlimited 
 Hutchison 3	Austria	€36 (14 Gigabytes)	---	Yes (Unlimited 24/7)	5 hours per month Not allowed to buy more! 
 Orange	Spain	€40 (5 Gigabytes)	€10	Yes (Unlimited 24/7)	2 hours per month (€30 per additional hour) 
 Deutsche Telekom	Hungary	€45 (5 Gigabytes)	---	Yes (Unlimited 24/7)	2 hours per month Not allowed to buy more! 
 TELEKOM AUSTRIA	Bulgaria	€55 (10 Gigabytes)	---	Yes (Unlimited 24/7)	3 hours per month Not allowed to buy more! 
 vodafone	Romania	€59 (6 Gigabytes)	€10	Yes (Unlimited 24/7)	2 hours per month (€30 per additional hour) 
 TELECOM ITALIA	Italy	€86 (13 Gigabytes)	---	Yes (Unlimited 24/7)	5 hours per month Not allowed to buy more! 

Telecom groups are foreclosing the internet video market by overpricing mobile internet Gigabytes while prioritizing (zero-rating) their TV/film services!

© REWHEEL DIGITAL FUEL MONITOR 2014.

Digital Fuel Monitor has shown in November 2014 that in many OECD markets where mobile operators launched zero-rated film stores and TV services, consumers are either not allowed to buy more than a few (5-10) gigabytes at all or most likely, they cannot afford to buy more because the price of additional gigabytes is prohibitively expensive (e.g. €10 per gigabyte). Consumers are harmed because their choice of internet video services is severely restricted. Zero-rating is particularly harmful in mobile internet access markets where ISPs collectively set low volume caps. In most fixed internet access markets where gigabyte volumes are unlimited and as well in few mobile internet access markets where gigabyte volumes are very accommodative (e.g. Finland) zero-rating poses a benign threat. However, this could soon change. In 2013, Deutsche Telekom announced a plan that will cap the volume of fixed internet access connections but it will exempt its own IPTV (zero-rated) video service. The reaction from German authorities was swift. A German court blocked Deutsche Telekom's plan on the basis of consumer protection law while the German telecom regulator Bundesnetzagentur carried and investigation and warned Deutsche Telekom that zero-rating could infringe net neutrality.

2.1.4 Star India Pvt Ltd

30.12.2015



To

Ms. Vinod Kotwal Advisor (F&EA)

Telecom Regulatory Authority of India

Jawahar Lal Nehru Marg,

New Delhi – 110002, India

SUB: Consultation Paper No. 8/2015 on Differential Pricing for Data Services dated 9th Dec 2015

RE: STAR India's Response to the above.

Madam,

We are thankful to the Authority for affording us an opportunity to respond to the aforesaid Consultation Paper ("CP").

We hereby tender our Response to the aforesaid CP.

The same may be read together with our earlier Response dated 8th May 2015 to the "Consultation Paper on Regulatory Framework for Over-the-top (OTT) services" dated 27th March 2015.

We request your kindself that the same may be taken on record and considered. We would also request a personal audience before any final view is taken on the subject by the Authority.

Kindly revert for any clarification.

Yours Faithfully

For Star India Private Limited

(Pulak Bagchi)

Senior Vice President – Legal and Regulatory

Encl: As above

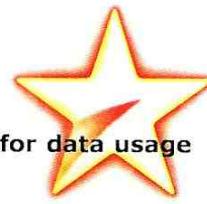
Star India Pvt. Ltd.

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CIN : U72300MH1994PTC076485

Address for Correspondence

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Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No, TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms. The arguments against differential pricing are clear and substantive.

Firstly, ***allowing differential pricing violates the core principles of tariffing***: that they are non-discriminatory in nature and that they are not anti-competitive. Allowing the TSP to charge differently for different uses of data (or different "termination points" of data) essentially creates a tariff regime where the TSP creates different classes of subscribers based on the kind of content they want to access. In addition, by allowing the TSP to determine different prices for different websites, applications and platforms, the regime allows TSPs to fundamentally alter the nature of competition between these websites, applications and platforms in a manner not linked to the quality of the services they deliver to consumers, and the business models of their choosing.

Secondly, ***giving TSPs the power to do differential pricing fundamentally alters and distorts the role of TSPs*** from that of providing a telecom service (provision of data), for which it has been licensed and for which it uses public resources like spectrum, to that acting as an interested party intermediating between consumers and the websites, applications and platforms that these consumers choose to use. Not only is this counter to the license under which TSPs provide services but it also introduces the damaging potential of TSPs being incentivized to extract unfair value from its presence as an intermediary with the power to dramatically change the nature of the relationship between users and service providers. Focus on playing this intermediary role is also likely to distract the TSP from its primary role of providing better and cheaper access to telecom services (including data) for a larger and larger number of users in India.

Thirdly, differential pricing from TSPs will ***open the door to unholy alliances between TSPs and content providers to play the role of gatekeepers*** for both consumers as well as other content providers. Differential pricing will enable large incumbents to create a framework with TSPs that allow them, covertly or overtly, to create different versions of the Internet: an Internet that they package and control, available at a lower price and including only the content and service providers that have chosen to play by the rules established by the large incumbents, and a less privileged Internet: expensive, more difficult to discover,



and occupied by the smaller players who don't have the financial ability and muscle to take on powerful incumbents. The most likely scenario is that bigger websites, applications or platforms will be able to strike deals with TSPs while the smaller players will be left in the cold. The premium that shall be paid by the larger players to the TSPs would provide the necessary incentives for TSPs to differentially price data whereby the bigger players will have better traction with users owing to the resultant subsidy that shall be factored in the data costs.

We have already seen the harmful effects of such arrangements between carriage and content playing out in the cable and satellite space. MSOs instead of consumers have been prioritising the content to be carried in their cable platforms. The basis of such prioritisation on the part of the MSOs is the Carriage and Placement fees being paid by content owners. This anticompetitive behavior by MSOs have led to small content providers being hit the most as carriage and placement fees act as entry barriers for new content providers. Given that the MSOs own the last mile, they are in a position to abuse their dominance by squeezing as much carriage and placement fees possible from content providers. Instead of consumer choice shaping retail packaging by MSOs, it is carriage and placement fees that prompt MSOs to deliberately prioritise, package and push unwanted channels to the detriment of the consumer. The consumer ends up paying for content that he has no desire to subscribe for, in the first place.

In addition, it is almost guaranteed that TSPs will differentially price data to promote their own in-house applications, websites and platforms to the detriment of better, cheaper applications, websites and platforms from competing providers.

Nothing will stifle innovation more decisively than enabling such a scenario to emerge.

As the consultation paper suggests, just like in the early days of the voice regime, the same principles should apply to "on-net" as well. Given the data usage and ecosystem is still very early, it is imperative that the non-discrimination applies equally to on-net and off-net.

It also violates the basic tenet of Internet access: that the flow of information is free (subject to the laws of the country) and no private player can determine what information can be accessed and what is less easily available. In fact, it is pretty obvious, as is evident in the mass disinformation campaign around the idea of a "free Internet" in the last few



weeks, that such a framework is but a naked offer to large, for-profit, self-interested incumbents to present themselves as arbitrators of what is “essential” and “basic” and what is not. We have seen the power of a single social media company to present an entirely new definition of the Internet with a level of marketing spend and lobbying that is unprecedented in the country. The effort seems to be to hoodwink the regulator into allowing a practice that is clearly discriminatory in nature. **History teaches us that no government or regulator should ever allow the definition of public good to be set, managed and controlled by interested private parties.**

Fourthly, **we already have a system in which net neutrality is under attack in many ways; where consumer choice is stifled and incumbents set the rules of the game; allowing TSPs to do differential pricing will sound the death knell on the idea of a free and neutral Internet.** It is remarkable that in a country where most people access the Internet from a mobile, we have a dominant mobile operation system that pre embeds a large number of its own applications on devices sold in the country that are then not easily removed, thus constraining the ability of consumers to download new applications of their own choice. This becomes especially important in a middle income country like India where most devices that are affordable have limited storage capacity and most users have only a few applications they can keep on the phone. The country, thus, has allowed the dominant OS provider to continue a system that dramatically limits consumer choice on the device.

The same exploitation of dominance extends to search as well. A dominant search provider is the gateway to the Internet in India with search neutrality not even up for discussion.

Lastly, it must be pointed out that, even with moderate expansion in access to data, we have seen an explosion in websites, applications and platforms that have had a dramatically positive impact on the country’s GDP growth and in generating employment. Creating a new regime that has the potential of introducing artificial distortions at a critical stage in the evolution of the data economy may have a **devastating impact on the number and diversity of applications and services, and therefore on GDP growth and employment.**

Our strong stand on net neutrality and differential pricing from TSPs is not meant to stifle companies from doing what is right for their consumers and what is right to grow their private enterprises. **We strongly believe that websites, applications, and platforms**



should have the full freedom to provide incentives to their users, whether financial or non-financial in nature, based on their own economic models and investment principles. But these transactions should be firmly between the consumer and the website/application/platform. Such incentives are a regular order of business in the offline world as well and limiting the ability to provide such incentives will have a devastating impact on innovation and the emergence of new business models. However, we do not see any role for a TSP in any such transaction.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

As explained in the response to Question 1, if differential pricing is permitted, then all the principles of non-discrimination, transparency, affordable access, healthy competition and innovation are likely to be severely violated. In fact, it will represent a big reversal in achieving the vision of Digital India.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

We are deeply supportive of the underlying objective evident in the consultation paper: expanding Internet access to the largest number of consumers in the country as possible in the shortest period of time.

Instead of using differential pricing to employ this goal (and it is quite clear that differential pricing will only lead to reduced access) with the attendant risks of market distortions, we suggest that a more direct path be employed to achieve it. Many alternate routes are possible to expand free Internet access to consumers, including:

- **Free access for rural consumers.** Creating a public subsidy program to enable TSPs to provide free Internet access to rural consumers, along the lines of other national social security programs currently used by the country.





- **Time based models.** Allowing TSPs to provide free Internet access to all consumers, at certain time periods when the network utilization is low.
- **Introductory models.** Allowing TSPs to provide free Internet access to new consumers (those who are new to the Internet or are using data on the TSP's network for the first time).
- **Public or community networks.** Building access points around the country geographically selected to provide access to those consumers who cannot afford to buy private services.
- **Income targeting.** Enabling TSPs to provide free Internet access to consumers below a certain income level.
- **Direct compensation.** Allowing TSPs to provide free Internet access to new consumers (those who are new to the Internet or are using data on the TSP's network for the first time).

It is obvious that there are many routes available to dramatically expand access to the Internet and enable a digital India. But what is under discussion, the route of TSP-led differential pricing, is clearly the one option that will not enable expanded access and instead will introduce new market distortions that will favor incumbents, stifle innovation and dramatically lower choice for consumers.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Though not directly connected with the question on differential pricing for data services, we are compelled to raise a fundamental concern that has been at the heart of the creative industry in all ongoing discussions and deliberations on "Net Neutrality". It must be noted that the owners of copyrightable works are granted the exclusive right to exploit or authorise the exploitation of their works in accordance with market practices. This time tested feature of copyright law prevalent internationally, is also recognized under the Indian Competition Act where an exception has been carved out for agreements under copyright law. Such exclusive rights are granted in order to incentivise authors to create and disseminate copyright works. Further, under the Act, copyright owners can enter into exclusive licensing agreements and grant rights to a single party. It is also important to note that while the Copyright Act recognizes this principle it also already imposes obligations on copyright owners to ensure that the general public can access copyrighted



works via "exceptions provisions" (Section 52) and involuntary licensing provisions contained in the Copyright Act. It must further be noted that even under the Competition Act exclusive licensing arrangements are not treated as being presumptively anti-competitive in nature. This would there mean that exclusive licensing would be subject to a case to case examination for an appreciable adverse effect on competition (AAEC). Consequently, this would mean that instead of being subject to broad brush and overarching regulation or rules which impose restrictions or are in conflict and in effect unwind or defeat the statutory rights granted to the owners of copyrighted works under copyright law, the legislature has determined that such conduct would be subject to a case to case examination. Clearly there is no justifiable and cogent reason to change this policy at this time. Whilst the principles of net neutrality are of utmost importance to ensure a transparent world wide web, it is pertinent that market forces should determine the relationship of TSPs, content providers and other parties active in the digital environment to foster innovation, creativity and the development of a hyper competitive yet nascent content industry. In a nascent industry still coming to grips with business models, pricing strategies, consumption patterns, it is imperative for the TRAI and the DOT to understand that the economics of industries dependent on Intellectual Property rights for value creation are very different from economics of TSPs/ ISP's and other distribution pipes and thus superimposing a Network centric regulatory construct on content creators would be akin to putting a square peg in a round hole. In effect the net neutrality principle has never been applicable to or determined how content is licensed but rather to the behaviour of distribution pipes and network service providers. We will therefore urge both the TRAI and the DOT to shape and delineate the debate and discourse on Net Neutrality accordingly.

2.1.5 Sistema Shyam Teleservices Ltd



a step ahead

Comments:

Consultation Paper on Differential Pricing for Data Services

Sistema Shyam TeleServices Limited (SSTL) welcomes the opportunity extended by TRAI to comment on its consultation paper on "Differential Pricing for Data Services".

The Internet is one of the defining innovations of the late twentieth century and has redefined the way businesses are conducted. The pricing of a product including that of internet is based on cost, competition, demand/ supply etc. Price differentiation is often adopted in competitive market scenarios and is an inherent feature of pricing mechanism. The overwhelming conclusion from the empirical study across many markets, is that price differentiation is often found to be welfare enhancing.

The data services in India are at a very nascent stage and do not require to be regulated. The Telecom Service Providers (TSPs) offering differential tariff plans i.e. zero or discounted tariffs to certain websites/applications/platforms as noticed by TRAI is primarily to encourage more people to explore usage of data services. The platform's success depends on consumer adoption of the platform. Such differential tariffs should be allowed to offer as long as they are consistent with various regulatory principles/guidelines including Non-Discriminatory, Transparency, Not Anti-competitive, Non-Predatory, Non-Ambiguous and Not Misleading.

Flexibility in pricing and adopting innovative business models are required for wireless network operators to fund their next generation deployments while keeping prices affordable for subscribers. The disallowance on price differentiation will more importantly likely to reduce the pace and scope of innovation in product offerings, and detrimental to consumers and can have a significant deleterious effect on the incentives of service providers to undertake necessary investments in network innovation and expansion.

The operators have been offering free access to popular services such as Wikipedia, Facebook and WhatsApp etc. in a bid to encourage users to start using their mobile broadband services. The free access to these popular services is pitched to the customers based on the factual data. The proponents of zero or discounted tariffs take cognizance of the high price sensitivity of Indian consumers. The zero or discounted tariff could also make an impact in driving the adoption of mobile broadband, especially in a country like India. The role of



a step ahead

the regulator is to strike a balance between competition and consumer welfare. At this early stage, regulators should only ensure that the proponents of platforms offering zero or discounted tariffs to certain websites/applications should become more transparent with the selection criteria of the content partners and services that are to be offered through such platforms.

The differential pricing based on capacity usage and quality of service has been the norm in several industries. For instance, airlines charge differently for the space usage and provide priority check-in and specialised service according to the class. The amount of the highway toll varies by vehicle type, weight, or number of axles, with freight trucks often being charged higher rates than cars. On this basis, operators have a rationale to charge for different applications according to the data traffic generated and the type of connectivity parameters (high availability, reliability, security, etc.).

The Indian telecom market is highly competitive and MNP being in place customers have the flexibility to migrate to another telecom service provider. The measures to ensure that the principles of nondiscrimination, transparency, affordable internet access and innovation are automatically addressed.

In short, the price differentiation, if not implemented, would needlessly interfere with the promotion of competition and the benefits to consumers that it delivers. Ultimately it must be customers, not regulators, network operators, or application developers, who decide which pricing model succeeds.

The present issue of protecting certain content providers under the helm of differential pricing is similar to the issue of Android and Non Android/ Proprietary platforms. This is a pure commercial issue, the market forces will determine the survivors and no regulatory interference is required.

Our specific comment on the issues raised in the consultation paper is as below:

Q1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

There is no need to change the existing tariff regime of forbearance. Further, The Telecom Tariff Order 1999 already lays down the principle of Non-Discriminatory, Transparency, Not Anti-competitive, Non-Predatory, Non-Ambiguous and Not Misleading. In fact the growth of the market has been fuelled by the various innovative tariff plans that have been

designed by the TSPs to meet the wide and varied requirements of their subscribers. Therefore, the TSPs should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms as long as they are consistent with the aforesaid principles.

- Q2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?**

A more efficient and effective solution is already in place whereby the Authority monitors that the tariff for various services being offered is consistent with various regulatory principles/guidelines including Non-Discriminatory, Transparency, Not Anti-competitive, Non-Predatory, Non-Ambiguous and Not Misleading through the reporting mechanism put in place.

- Q3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?**
- &
- Q4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?**

If proliferation of Mobile Broadband has to go up there has to be a high push from both telecom service providers and the government.

The recent initiative of the Government of India with regard to Bharat Net, is pointing out in the direction of providing affordable broadband for all.

Further, a stage is likely to come wherein certain section of the society would have to be subsidized by the Government like the LPG subsidy, wherein cheaper access needs to be provided for browsing certain Government/ Agricultural pricing sites. This will lead to price differentiation. These are best addressed by market forces rather than by regulatory interferences.

* * *

2.1.6 Tata Teleservices



TTL Response to TRAI Consultation Paper on Differential Pricing for Data Service

Q1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TTL Comment:

TTL believes in providing non-discriminatory access to the internet for all consumers and also ensure access to different websites and applications etc. consistent with applicable laws, rules and regulations. TRAI is seeking views on the possibility as well as feasibility of differential pricing for data services for accessing websites. TSPs already have the freedom and ability to provide diverse price packages for various data usages. These are essential tools for effective competition in the market. One view could be allowing differential pricing as indicated in the question above so long as there are clear safeguards to prevent discrimination against consumers and in a manner that does not interfere with a free and fair ecosystem for data access for all consumers.

In a highly price sensitive market like India, tariffs have been a key element of differentiation for operators, especially challengers. If an operator uses price as a lever to attract customers to their data access service vis-à-vis that of their competing service providers, this should not be prevented. In fact, differential pricing can empower consumers to pay only for what they want to use, thus spurring growth in adoption and continuous usage of digital services.

Globally, free market business norms, across categories are built on marketing differentiation based on consumer affordability and feature expectations. Restricting the freedom of TSPs to differentiate by way of price or features would stifle free competition which would, in the end, hurt the consumer.

To prevent abuse of the system by any of the players in the ecosystem, existing anti-competitive, non-discrimination and anti-trade legislation that already exists can be reviewed and strengthened as needed.

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed.



TTL Comment:

Given how rapidly the data-driven industry is growing and evolving, it would be very difficult to predict with any certainty the exact shape it will take in the future. In such an environment, minimal “light-touch” regulation would ensure the maximum flexibility to evolve and adapt to any change.

The principles of non-discrimination and transparency in tariffs have been central to telecom services for the last 20 years in the country and many safeguards already exist in current legislation and processes such as the prevailing tariff filing provision by the Authority. These and other practices will ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry as well as innovation are addressed. TRAI can always review tariff plans on a case by case basis and make modifications as necessary through an adjudicatory process to be specified by the regulator and after giving a reasonable opportunity to the operator of being heard.

Further, the principle of “Reference” offers as has been used in certain categories in the past can be explored. Under this mechanism, operators are required to compulsorily make available certain (one or more) pre-configured (terms/specs stipulated by regulation) plans/offers/bundles to all consumers. In addition to that, they are free to provide any variants of these that they so wish.

This way it is ensured that the interests and freedom of both consumers and operators is not compromised.

Q3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Q4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TTL Comment:



In order to bridge the digital divide and ensure that all Indians have affordable access to the Internet, it is important that all concerned stakeholders come together to work towards universal and affordable access. In this regard, innovation in tariff offerings must be seen in the context of broader policy reforms required to promote this objective.

Protection to consumers in terms of existing anti-competition, non-discrimination and unfair trade practices law exists and can be reviewed or strengthened as felt necessary.

The opportunities being thrown up by the explosive growth in recent times of the internet are tremendous and still evolving. Newer and newer businesses and models are appearing every day and it is difficult to predict, with any certainty, all the directions in which the industry will evolve. Ensuring the maximum flexibility to adapt to change by not seeking to limit any part of the industry in any way, while ensuring a free and fair ecosystem, would be crucial to its continued evolution for the betterment of all.

2.1.7 Telenor



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(Erstwhile Telewings Communications Services Pvt. Ltd.)
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07 January, 2016

**Smt. Vinod Kotwal,
Advisor (F&EA)
Telecom Regulatory Authority of India
Mahanagar Doosanchar Bhawan
Jawahar Lal Nehru Marg
New Delhi 110002**

Subject: Consultation Paper on Differential Pricing for Data Services

Dear Madam,

This is with reference to the above referred TRAI consultation paper No.8/2015 dated 9th December 2015. In this regard, please find enclosed herewith our response to the consultation paper as an Annexure.

We hope that the TRAI will find our response useful and consider our inputs while formulating the regulation on the subject.

Thanking you,

Yours sincerely,
For Telenor (India) Communications Pvt. Limited

(Pankaj Sharma)
Sr. Vice President and
Head Corporate Affairs

Encl: a.a

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Commercial Tower, Windsor Place, New Delhi-110001
CIN: U64200DL2012PTC231991



**Telenor (India) Response
on
TRAI Consultation paper - “Differential Pricing for Data Services” (No. 8/2015)**

Preamble

TRAI in this consultation paper wishes to clarify the existing regulatory framework for tariff in the context of data services. The paper has explained the impact on the data tariff structures due to dynamics of market, changing consumer behaviour, advancement of technology, increasing role of content providers and also raised concern on transparency towards end customers. This consultation is a positive step towards better clarity and applicability of existing tariff regulations for data services.

Under the present regime of tariff forbearance, existing regulatory framework provides the **freedom and flexibility to telecom service providers (TSPs) to design various tariff packages and bundling of services** as per the prevailing market demand and to meet the varied needs of their customers. These tariff plans (voice and data) are *self-checked by TSPs to ensure that the tariff plan(s) is/are consistent with the regulatory principles in all respects which inter-alia include IUC Compliance, Non-discrimination & Non-predation*. These are also subjected to *consistency checks by the Authority on these regulatory principles and other regulations around publication, transparency, non-misleading and consumer protection*. This existing practice is robust and ensures that TSPs do not offer any misleading or non-compliant tariffs in the market place.

We recommend continuing with the existing approach of regulatory principles and oversight to ensure that Tariff plans (both voice and data) are:

- *Published in a transparent manner that are easily understandable and comparable*
- *Publication/advertisement of tariffs in prescribed format as prescribed by the Authority*
- *Such tariff plans are available for the subscribers at the Customer Care Centres, the points of sale, retail outlets and also on the website*
- *Every time there is a change in any of the tariff plans, same should be updated at all customer touch points (point of sale, retail outlets, website)*
- *Publish tariff in local and national newspapers as per frequency prescribed by the Authority*
- And various other instructions from time to time.

The above principles are being followed by all and in case the Authority has found a deviation in a particular case, then it should be made consistent without any delay.

A mere perusal of the above would abundantly clarify that the existing regulations governing tariff and consumer protection are comprehensive/ exhaustive. **They do not need any modification, at best some clarification/ re-iteration in the context of data.**

At the same time this provides flexibility to TSPs to offer a.) a combination of services bundled for various segments of the customers, b.) a combination of products bundled for various segments of the customers. In principle, any policy should not restrict innovation and flexibility of TSPs to offer packaging/ bundling of services/products, as market segmentation is elementary to marketing practice. Such classification should not be arbitrary as enshrined in the TTO.

Therefore, to ensure that customers will be able to get the tariff offerings and bundling schemes as per his/ her usage and content/ applications requirements, TSPs should continue to have the flexibility to develop and offer bundled services based on the market segmentation in order to enhance users' options and increase choice at affordable price.

It is a well known fact that Internet adoption and broadband usage is critical for the success of Digital India as well as important for the achievement of broadband targets as envisaged in NTP 2012. Thus, this has to be accorded highest priority for expanding internet access to include unconnected masses and low usage customers. India being a developing country, there is a **need to educate un-served / under-served customers for the relevance of Internet services**, which can be achieved by offering relevant data services bundling with relevant content/ application free or with minimal charging for a limited trial validity period to encourage usage adoption which is **within the ambit of existing regulations**.

There should be no element of compulsion in such differential offerings nor any blocking or throttling. Even the US Regulator “Federal Communications Commission” (FCC) vide its Internet Order dated 26.02.15 has noted that data sponsored schemes in some instances provide benefits to consumers, increases their choice and lower the costs. Considering this, **FCC has decided to look at and assess such practices** under the no-unreasonable interference/ disadvantage standard, based on **the facts of each individual case, and take action** as necessary.

Issue wise Response

Q1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Telenor (India) Response:

The term differential pricing can be quite subjective based on the context in which it is used. Charging a premium or providing free can be one interpretation, while packaging / bundling or market segmentation can be another such interpretation. All such future scenarios cannot be envisaged at this stage in a two-sided market as the business models and market place is ever evolving.

We should not be averse to words and phrases as this approach has its likely pitfalls; hence the principled approach taken by FCC as explained in the Preamble. Hence, we recommend a **principle based case to case approach towards differential pricing** which does not restrict the flexibility of market oriented pricing.

For example one operator may decide to provide free weather updates (application), another example can be free access to annual matriculation Board results on a specific day (website), yet another example can be night data packs for chatting designed specifically for student community (platform / market segmentation).

In view of the reasons explained above, differential pricing for data usage should be allowed, as market segmentation is an essential marketing tool. TSPs should have the flexibility to design products, these plans/ offers should continue to be self-checked for compliance to all tariff regulations prescribed by the Authority. The Authority should also continue to check for consistency and compliance.

We at Telenor (India) don't differentiate any customer basis price, quality of service and usage pattern and maintain same service level for all applications / platforms / websites. All the data tariff offers and bundled data schemes are available for all our customers without any pre-condition and discrimination. None of these bundled data schemes are on auto-renewal, customers availing such schemes need to subscribe again after expiry of the validity / committed usage. Further, **we are not doing any content filtering or controlling i.e. no restriction on content for any user subscribing any of the available bundled data schemes at all times**. This ensures protection of customer interest and availability of all content without any restriction and / or additional charge. Even the customer complaints related to all data charging issues in all our operational circles together constitute on an average only ~ 5% of total complaints out of which complaints for service data packs are minuscule (<1%).



Differential pricing has varied connotations; hence all such plans should be checked by Authority on case to case basis as being followed by FCC.

Following are the reasons in support of our response:

- The flexibility of pricing, packaging and bundling of services with data usage provide benefits to consumers, increases their choice and lower the cost.
- Freedom and flexibility to telecom service providers (TSPs) to design various tariff offerings and bundling schemes as per the prevailing market demand and to meet the varied needs of their customers.
- Allowing the TSPs to compete freely along many dimensions such as pricing of service tariffs and devices, minutes and data allowance, bundled content and applications, network quality and coverage will provide a wealth of choices and innovative services for customers. This will also be instrumental in faster proliferation of Broadband services.
- TRAI's current "light-touch" regulatory approach gives TSPs incentive to innovate and at the same time provides sufficient safeguards to deal with any potential anti-competitive or discriminatory behavior.
- For example, applying the existing Telenor(India)'s bundled data offering ensures compliance to key principles of tariff regulations specified in para 9 of the consultation paper as follows:
 - **Non-discriminatory** – all the packaged / bundled data services with application/services/ websites currently on offer in the market are available to all the customers. There is no restriction / artificial entry barrier been put for any of these packs.
 - **Transparency** – The terms and conditions are transparently informed to the customers subscribed to any of such data packs via printed material, SMS, POS, USSD and website.
 - **Non anti-competitive** - Consumers are free to use the same application/ service with / without the special pack.
 - **Non-ambiguous pricing** – We have very simple pricing schemes and none of the packs are on auto-renewal.
 - **Not-misleading** – While promoting any of our packs, we never use terms / words which entice / mislead the customers. Due to this practice, we have very low percentage of complaints on service packs pricing.



- **Non-predatory** – found no adverse evidence in market till date

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Telenor (India) Response:

As per the response to Question1, Telenor (India) strongly believes that there are already sufficient safeguards to deal with any potential anti-competitive or discriminatory behaviour, so we do not foresee the need for TRAI to adopt any additional measures.

At best, the regulatory principles in force may be reiterated in the context of data. In case, if any such scheme / bundled offer is found non compliant to the principles of tariff regulations by TRAI, same should be disallowed with immediate effect.

Q3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/ technologies/ business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Telenor (India) Response:

The alternative methods as suggested by TRAI in the paper are not required as existing practice is working well within the existing tariff framework. However, alternatives can emerge in future in line with the consumer requirements and evolving business models which are the domain of marketing.

A principle based approach is the essence of forbearance.

Q4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Telenor (India) Response:

None

2.1.8 Atria



30-12-2015

To

Mr. Vinod Kotwal

Advisor (F& EA)

Telecom Regulatory Authority of India

New Delhi – 11002.

Sub: Response to TRAI consultation paper dated 9th Dec 2015 on “Differential Pricing for Data Services” – Reg.

Atria Convergence Technologies Private Limited (ACT) is a licensed Class – A, Internet Service Provider (ISP) and have been providing internet broadband services in the cities of Bangalore, Hyderabad, Chennai and few other cities in the state of Andhra Pradesh.

In response to the consultation paper, we request the authority to take note of our reply against each of the questions raised by the Authority.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

We are of the opinion that business models should be allowed based on market opportunity rather than legislating. However, while doing so care should be taken to ensure level playing field to all stakeholders including customers, platforms and content providers. Differential pricing is a means of allowing resource mobilisation for service provider in order to build expensive networks to be utilised by all for unfettered access.

However, care should be taken not to allow differential pricing for accessing individual web sites –instead differential pricing may be promoted for accessing different platforms and applications. For example, forbearance should not be applicable for individual web sites but can be made applicable for content provider platforms



Atria Convergence Technologies Pvt. Ltd.

Hyderabad Office: 8-2-618/1/2, Road No.11, Banjara Hills, Hyderabad, Telangana - 500 034. Ph.: 040-42884288

Registered Office: 2nd and 3rd Floor, No.1, Indian Express Building, Queens Road, Bangalore - 560 001. Ph.: 080-4288 4288

CIN No.: U72900KA2000PTC027290



Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

To ensure principles of non-discrimination, transparency and affordability, legislation should be made that a positive promotion is allowable but not a negative exclusion/ experience degradation. For example, TSPs should not throttle the speeds of few web sites or platforms which is against the principles of internet freedom. However, a positive experience of quick and latency-free surfing should be allowable for ensuring positive experience to the customers.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

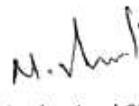
No Comments.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Any service that is chargeable by the TSP for providing better experience or better content should be excluded from the purview of legislation as there is a commercial consideration involved even if such consideration is notional or nominal.

Thanks & Regards

For Atria Convergence Technologies Pvt. Ltd.


Authorised Signatory

Atria Convergence Technologies Pvt. Ltd.
Bangalore

Atria Convergence Technologies Pvt. Ltd.

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2.1.9 Bharti Airtel



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Letter No. RP/FY 15-16/087/069

Dated: 7th January 2016

To,

**Ms. Vinod Kotwal,
Advisor (F&EA),**
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
J.L. Nehru Marg, Old Minto Road
New Delhi – 110002

Subject: Bharti Airtel Limited Response to the Consultation Paper on Differential Pricing for Data Services.

Madam,

This is with reference to your above mentioned consultation paper. In this regard, please find enclosed our response for your kind consideration.

Thanking You
Yours Sincerely

For Bharti Airtel Limited



Ravi P. Gandhi
Chief Regulatory Officer
9871106558

Bharti Airtel Limited's Response to Consultation Paper on "Differential Data Pricing"

At the outset, we thank the Hon'ble authority for providing us an opportunity to submit our views on this consultation paper.

India ranks¹ 131st in fixed broadband penetration and 155th in mobile broadband penetration despite being the 10th largest economy of the world in terms of GDP². This positioning is a way below than some of our neighboring countries like Bhutan and Sri Lanka. The Government of India has listed 'Digital India' as a national priority/objective with 'Broadband for All' as one of the most important pillars.

India is one of the most competitive telecom markets in the world, with nearly one billion wireless voice customers. This growth has been made possible by light touch regulations, private entrepreneurship and tremendous innovation across a large ecosystem of networks, devices and applications/VAS, which has resulted in customers enjoying the best of services at the lowest of tariffs in the world.

To connect a billion data/broadband customers, we need to continue with the same spirit and expand the complete eco-system. Therefore, we believe that the following principles, which have contributed to the growth of voice services should also be applied for data services:

1. A light touch regulatory approach on tariffs:

The mobile industry in India has scaled dramatically over the past few years to become one of the country's biggest success stories. A light touch regulatory approach (tariff forbearance regime) has been the key factor in the proliferation of voice services in our country.

India is now at the cusp of data revolution. Although data is growing strongly due to affordable tariffs, devices and growing uptake of new applications and services, 70% Indian population still has no access to Internet services. The average data service revenues, as compared to voice revenues, are below 15%, compared to more than 30% in other countries. In an intense competitive market where TSPs have invested thousands of crores for creating the broadband network and buying spectrum, a rigid tariff framework will slow the data penetration to a great extent. At this stage, when

¹ <http://www.broadbandcommission.org/documents/reports/bb-annualreport2015.pdf>

² <http://www.thehindubusinessline.com/news/in-terms-of-gdp-indias-economy-is-10th-biggest-world-bank/article6196736.ece>

the technologies, services and commercial models of the Internet ecosystem are evolving, the best way is to allow the market forces to work freely to meet customers' expectations.

2. Differential data tariffs encourage innovations:

Pricing flexibility is a core tenet of marketing and innovation. The differential pricing or marketing innovation is critical for the growth of data services. Customers find differential offerings, a great value proposition as these enable them to use various products/services of their choice at a much lower price. Thus, TSPs should continue to have the flexibility to offer a variety of packages to consumers. Needless to say, the existing legal and regulatory framework in India provides for adequate safeguards against any potential concerns arising out of differential charging.

In India, barely 30% of the population currently has access to the Internet. With approximately 1 billion people who are yet to be connected, a majority of customers are price sensitive. Therefore, Internet access cost needs to be low enough for its adoption by the masses. Differential pricing allows the telecom operators to create the suitable/targeted tariff packages which suit the need of various types of users and hence, such differential tariffs should be continued.

Globally, differential tariff plans/ STVs are quite popular and are not seen as anti-competitive or discriminatory to any content provider. Some of the telecom markets which have encouraged differential tariff plans/STVs are Singapore, Hong Kong, Thailand, Malaysia, New Zealand, UAE, Bangladesh, and Philippines.

3. Regulatory Intervention to ensure that the differential tariffs are non-discriminatory and transparent:

We believe that marketing interventions such as free sampling, try to buy, toll free, zero ratings or sponsored data should continue to be encouraged to allow more and more users to come online and use Internet services.

Regulators across the world have acknowledged the potential benefits of sponsored data arrangements. While mindful of possible anti-competitive concerns, they have chosen to review such arrangements on a case-by-case basis (FCC, 2015³ and EU,

³ FCC Open Internet Order, 2015 available at <https://www.fcc.gov/document/fcc-releases-open-internet-order>

2015). We firmly believe that sampling of the Internet and allowing free experience of sites is core to Internet adoption. Pricing innovation such as zero rated websites holds great socio-economic merit, and as such must be evaluated pragmatically. However, TRAI can review all such schemes to ensure that the differential charging/zero rating is provided in a non-discriminatory and transparent manner.

A para wise, detailed response to the questions posed in consultation paper is as under:

- Q1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?**
- Q2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?**

Airtel's Response:

1. We believe that the questions posed in the current consultation paper are only confined to differential charging for Web browsing (access of the Internet through websites/applications) hosted by various content providers and do not cover the differential charging based on 'content type' such as VoIP, M2M etc.
2. At present, there is a huge pricing arbitrage, of the order of 1:6, between VoIP (data services) and Voice Services. Differential charging for VoIP is required to eliminate the arbitrage which leads to subsidization of rich data customers using smart phones by the customers using voice through ordinary feature phone. VoIP/OTT Voice also creates a non-level playing between licensed TSPs providing voice services and OTT Communication Service Providers providing same services. Therefore, we believe that any regulation on OTT communications and/or charging of underlying data services should follow the principle of "**Same Service, Same Rules.**" Further, M2M requires a creation of a differential quality network to meet the technical requirement of M2M/IOT. Therefore, any disallowance to such differentiation would stifle innovation in M2M domain and will disincentives TSPs to upgrade their network to meet requirements of M2M. Since the consultation paper is confined to content side tariff differentiation of web browsing, therefore, we have confined our response to this classification only.
3. Currently, the voice tariff plans of TSPs allow differential charging to the customers based on type/destination. Such voice differential charging is done based on local call, STD call, ISD call, on-net and off-net, day and night, national roaming and international roaming. If TSPs are mandated to offer a uniform tariff for all types of voice call (local, STD and ISD), it will increase the tariffs of local calls, and the local call users will end up subsidizing the users of STD and ISD calls. Therefore, such differential tariffs have enabled TSPs to provide affordable services, and have benefited the industry & consumers at large while not being found as anti-consumers, misleading or ambiguous.

4. Therefore, we firmly believe that the differential pricing, trial packs, STVs/rate cutters are critical for promoting innovation in the Internet eco-system.
5. It is not practically feasible to foresee every innovation in the Internet eco-system and deals with it through regulatory intervention. While, there could be some issues with differential pricing from competition and level playing field perspective, these can be addressed by placing adequate safeguards.
6. An appropriate and reasonable approach would be to outline certain broad principles **{(Fair, Reasonable and Non-Discriminatory (FRAND))}**, which not only foster the growth of Internet eco-system and innovative business models, but also empower TRAI to address any genuine concern related to competition, level playing field, transparency, etc. TRAI may prescribe that the business practices of TSPs adhere to these broad principles, and their differential tariffs are tested against these principles on a regular basis (as already being done by TRAI under the existing tariff regime).
7. Currently, every player in Internet eco-system is experimenting with various marketing innovations and business models to promote their content/website/services. Furthermore, enterprises world over for a long time have been trying to get more customers on-board by providing a method to connect with them. Some of these examples are; toll-free voice, business paid postage, etc. Similarly, free sampling mechanisms for the Internet will certainly play an important role in bringing more and more customers on board for Internet services.
8. As per our estimates, sponsored data allows Internet companies to cut their marketing budgets to 30%, especially since such arrangements are cheaper than direct advertising. The ultimate goal for any edge provider is to attract users to its service/content/application, and sponsored data offers a cost-effective alternative to traditional marketing efforts. Therefore, any policy framework should not take away the pricing innovation and flexibility in Internet eco-system and telecom service providers should not be barred from using zero/discounted platform.
9. Connecting a billion Indians to the Internet will only be possible if cost of access is low enough for price sensitive customers. Innovative pricing, such as zero-rating, and other commercial constructs will be critical for making services affordable enough for large-scale consumption, and should be permitted.

10. Toll free or zero rating enables first-time users and marginal customers, who cannot afford Internet services, to experience them for free and later on, such users become regular data users, which is good for both the government and the industry. There is evidence to show that if structured appropriately, Zero Rating may drive innovation and competition in the Internet economy⁴.
11. Any TSP's zero/discounted rating platform should be open to all application developers, content providers and Internet sites on a completely transparent and non-discriminatory basis. All business practices of TSPs related to their zero/discounted rating platform must be held up to the Fair, Reasonable and Non-Discriminatory (FRAND) standard.
12. To conclude, differential charging is an effective mean of bridging the digital divide, and we believe such arrangements should be continued. Additionally, it is important to note that in the case of zero rating, social welfare increases because benefits are directly passed on to consumers, and not to commercial entities such as in the case of paid search. Such pricing innovation holds great socio-economic merit, and as such must be evaluated pragmatically.

Q3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Airtel's Response:

1. We believe that differential data tariff plans are important to promote innovations in the Internet eco-system and to cater to the needs of different segments. Any concern of market abuse/discrimination to any specific party, should be addressed on a case to case basis rather than imposing a blanket ban on any particular business model/pricing innovation.
2. We firmly believe that Direct Benefit Transfer (DBT) has the potential to be misused for bypassing the non-discriminatory nature of zero/differential rated content.

⁴ FCC Open Internet Order, 2015 available at <https://www.fcc.gov/document/fcc-releases-open-internet-order>

3. A DBT done by TSPs is no different from zero rating. While, DBT also achieves zero rating but it comes with one significant disadvantage, i.e. it only targets digitally-enabled customers. Whereas in case of zero ratings provided by TSPs, customers are allowed to see zero-rated content without being Internet customers. Therefore, zero rating is a better way to promote digital inclusion.

Q4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Airtel's Response:

1. Differential pricing is recognised both in law and by courts. It is a well-established principle applied across sectors with respect to water, electricity, gas, railway etc.
 - a) Electricity
Tariff rates are fixed based on nature of supply, and the purpose for which the supply is needed. Courts in various judgments have held that differential pricing is not a violation of Article 14 of the Constitution.⁵
 - b) Water
Various agencies such as the Delhi Jal Board make a distinction between different consumers, rate and flow. This includes:
 - Residential
 - Partially Residential/Mixed
 - Industrial/Commercial
 - c) Gas
Gas companies distinguish charges on the basis of consumer and purpose of use. The distinction is based on-
Usage -
 - Commercial, such users are provided no subsidy, and their cost of purchase is directly linked to the market forces and global cues.

⁵ Coimbatore Stock Exchange Ltd. and Ors. Vs. Tamil Nadu Electricity Regulatory Commission and Ors. 2013(6) SCALE408, Rohtas Industries Ltd. and Ors. Vs. Chairman, Bihar State Electricity Board and Ors.

1984(1)SCALE465, Association of Hospitals Vs. Maharashtra Electricity regulatory Commission and Reliance Energy Ltd. (Now renamed as R Lnfra), Reliance Energy Centre 2011ELR(APTEL)1612, Association of Industrial Electricity User Vs. State of Andhra Pradesh and Ors. (2002)3SCC711

- Domestic, such users are given gas via LPG cylinders/pipeline at subsidized rates. They are not linked to the global market rates.
- d) Railway
The railways also follow the practice of price discrimination.
- e) Coal
The principle of dual pricing can be found in the coal industry.

2.1.10 Reliance Communications

**Reliance Communications Limited's Response to the Consultation Paper on
Differential Pricing for Data Services**

Executive Summary

- A. Data tariffs be kept under forbearance permitting the TSPs to price their data services as per the market dynamics.
- B. The Authority should allow the offering of differential pricings within the scope of the existing regulations itself.
- C. Imposition of any further regulations on data services will only distort the market and could be to the detriment of the end users.
- D. It is imperative that TRAI takes a balanced approach towards differential pricing regime and ensures that the TSPs innovations for serving the larger good is not ignored.
- E. At no point is a TSP in a position to impose its will on the consumer and hence, the contention that the TSPs will indulge in selective disincentivized access is unfounded.
- F. Pay for use principle actually leads to more value for money for the consumer, whereas in the absence of discounted rates all subscribers pay at standard rate despite accessing only a limited set of websites / applications.
- G. TSPs should have the freedom of developing and promoting their own websites / apps as a value add to their services on their own network.. It is felt that the same should be permitted as a legal business practice.
- H. Just as voice and SMS services are considered as bearer services and have toll free services provisioned through them, data services too should be construed as bearer services and should be permitted to provisioned toll free services e.g. access to TSPs website for services such as down loading / payment of bills or registering of complaints, weather report, passport application status, railway enquiry, flight enquiry etc. without the requirement of explicit consent of the consumer.
- I. 'Differential Pricing' cannot be construed as 'Gate Keeping'; these two are totally different and the apprehension about TSPs employing differential pricing as a 'gatekeeping tool' is incorrect and unfounded and the same should not be considered even as 'Theoretical'.
- J. TRAI is empowered to examine the reported tariffs and take suitable action if the tariffs are against the principles of non-discrimination, transparency, predatory, vertical squeeze etc.
- K. TRAI therefore should persevere with its existing policy of forbearance which affords the flexibility of introducing innovative methods of aiding proliferation of data services.
- L. There are already available mechanism in the existing regulations of the Authority by which the principles of transparency, non-discrimination etc. can be taken care of. Imposing further regulations will not only hamper the growth of the data services but also put the subscribers in loss. Hence, we request the Authority to allow the TSPs to continue with their data tariff offerings based on the market dynamics and innovations.

Preamble

1. Within the first license cycle of the Indian telecom Industry, it has witnessed an exponential growth leading to a subscriber base which is about to breach the billion mark. This phenomenal growth has been possible due to the existence of a progressive regulatory regime and promulgation of balanced policies which aided in creation of an environment conducive for the operators and the subscribers alike.
2. The competitive intensity in the telecom industry in India is one of the highest in the world and has lead to offering of services to the customers at very reasonable tariffs. The increasing adoption of data services is now encouraging the operators to compete with each other and innovate with their data product offerings, as per their consumers' usage pattern to create more value for their money for them.
3. Recognising the existence of adequate competition in the Indian Telecom industry, TRAI, initiated its 33rd amendment to telecommunication Tariff Order, dated 8th December, 2004, thus,

"...Evidence on trends in retail tariff published by the Authority suggests that there is intense competition in the mobile service segment. Further, with the unified access regime already in place and with unified licensing regime on the anvil and the Authority having forbore the retail tariff in general, the concerns relating to inadequate competition have substantially abated...."

4. Having envisaged the intensity of the competition in the telecom market TRAI adopted the policy for keeping the tariffs at forbearance, even for data services, allowing the market to be driven by the competition. Ever since, this policy of forbearance has resulted in cheaper data tariffs to the subscribers. To illustrate, even if we take minimum rack rate of 2Paisa / 10KB, or 2 Rs / MB, then the consumer has to spend 400 Rs for its average monthly consumption of 200 MB for OTT services like FB / Twitter / Whatsapp etc, wherein the same is being provided in the 30 Rs pack by TSPs. Thus, any intervention to stop these discounted tariffs, will not only disrupt the innovation / packaging, but would be against consumer's benefit.
5. The faith that TRAI has reposed in the Indian Telecom Industry by allowing differential pricing for telecom services has been proven to be in the best interest of the consumers as the industry has lived upto its responsibility of pricing its services as per the principles of being reasonable, transparent, non-discriminatory, non-ambiguous, not anti-competition, not predatory and not misleading, defined by TRAI. Persevering with its earlier decision, TRAI should continue permitting differential pricing in data services rather than taking the regressive step of regulating the tariff for the data services.
6. Our specific comments on the issues posed by the Authority are given in the subsequent paragraphs.

Detailed Response

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Our Response

Yes. The TSPs should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.

1. **Tariff Forbearance.** The Authority's decision to keep tariffs under forbearance in the year 2002 and 2003, was indeed the tonic that contributed towards the superlative growth of the

Indian Telecom market by not only keeping the tariffs in check but also keeping them highly affordable. The resultant increased intensity of competition, that forbearance of tariffs introduced, created innovative products in the market wherein operators were able to provide variety of tariffs to the consumers keeping in mind the interest and usage pattern of the consumers. In the last 3-4 years, there has been a manifold increased in the usage of data services wherein consumers require the same innovation and customised data services as has been offered for voice services. Thus, it is highly recommended that Authority should continue with its time tested principle of forbearance for data services, the end beneficiary of which would be the consumer. Any intervention at this time would not let the fruit of data services to get matured and would defeat the Govt. own vision for increasing the broadband adoption in the Country.

2. Apprehensions / concerns expressed by TRAI for differential pricing.

- a. The Authority's apprehension that "*TSPs could come up with differentiated tariff offers wherein they disincentivize access to certain websites by putting higher tariffs for accessing them*". We would like to submit that TSPs provide either standard tariffs or discounted rate and all these tariff plans are offered to all the consumers of the TSP, without any discrimination. These are also open to all type of website / application in a non-discriminatory manner. It is brought out that the Telecom services products including data services are based on consumer's choice and are as per the market dynamics, wherein the TSPs are only offering the customised services. **At no point is a TSP in a position to impose its will on the consumer and hence, the contention that the TSPs will indulge in selective disincentivized access is unfounded.**
- b. TRAI has opined "*differential tariffs results in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content)*". It is submitted that internet is an ocean of content and most of the subscribers access a limited number of sites based on their preferences. Introduction of products based on the preferences of consumers is to their benefit as they pay for what they use most. These are similar to STVs / combo packs wherein TSPs offers different tariffs for the call or data charges at reduced rate or get a particular amount of data or voice quota against the STVs / combo packs. Since the Authority in the consumer interest has already allowed these STVs/rate cutters/toll free services/discounted tariffs in night calling/discounted data from BSNL wireline services, there should not be any objection for discounted/differential data tariffs packs provided to the consumers for their customised needs. This is similar to the DTH industry wherein TRAI has allowed packaging of various channels wherein consumers also have a choice to avail these channels in a-la-carte format, although the package is offering all these channels at a much cheaper rate compared to their a-la-carte value. It is the pricing innovation which drives the market and operators should have the flexibility to innovate the pricing of their services as per the consumer's desire. Authority may note that fact that **the pay for use principle actually leads to more value for money for the consumer, whereas in the absence of discounted rates all subscribers pay at standard rate despite accessing only a limited set of websites / applications.**
- c. TRAI's contention that the content providers may have difficulty in attracting users if substitutes exist for free. As per TRAI, "*this may thus, create entry barriers and non-level*

playing field for these players stifling innovation" It is submitted that the content on the internet is popular solely on its ability to appeal to the masses. The internet is replete with examples of start-ups having taken on goliaths viz., Google usurped yahoo as the preferred search engine, Facebook has succeeded against Orkut, WhatsApp proved better than Facebook Messenger and presently, Telegram is proving to be a formidable competitor to WhatsApp. Therefore, **the contention that such products create entry barriers is unfounded.** Authority may note that any intervention for such services would stifle the growth of data services and innovation in the market wherein various start ups and existing business units are eyeing on such services for their business growth. For example, banks have started using Apps provided at negligible data cost as a replica/substitute of customers stepping in banks at a much larger cost to them.

- d. Another contention of TRAI that the "*TSPs may start promoting their own websites / apps / services platforms by giving lower rates for accessing them*" viz-a-viz other TSPs"; It is submitted that the TRAIs concern seems uncalled for. In order to promote their services, TSPs provide handsets to their subscribers bundled with their tariff plans. However, the same tariff plans are also made available to all their other subscribers who do not take the bundled handset. Such promotions do benefit the customer purchasing the services bundled with the handset than otherwise. Similarly, **TSPs should have the freedom of developing and promoting their own websites / apps as a value add to their services on their own It is felt that the same should be permitted as a legal business practice.** At this stage, any regulation on operator's flexibility to drive innovation led internet adoption, in which pricing will play an important role, will only stifle country's digital growth. Cheaper data services will only ensure customer adoption, and competitive dynamics will ensure that operators will not charge high prices. Moreover, **TRAI is empowered to examine the reported tariffs and take suitable action if the tariffs are against the principles of non-discrimination, transparency, predatory, vertical squeeze etc.**
- e. **Free Access.** In this digital age, consumers prefer to access their tweeter and Facebook posts the first thing in the morning. Voice is considered as yesterdays' service and most innovations are occurring in data services. Today's consumers like to access services such as railway enquiry, status of passport, etc through the internet even though they are accessible through toll free voice service. Therefore, it would be in consumer's interest if a TSP decides to provision the access to such services like weather report, passport application status, railway enquiry, flight enquiry etc. **free of charge irrespective of their plans. Additionally, if a TSP decides to provide the access to its own website at no cost to its subscribers, especially for services such as down loading / payment of bills or registering of complaints, we see no reason why the same should not be permitted or why should it be considered as an exception of differential pricing which could lead to distortion of the markets?** It is submitted that TRAI is enabler of digitization and e-governance to people of India. The regulation of differential tariff should be enabling and not disabling TSP's freedom. Hence, **is it suggested that just as voice and SMS services are considered as bearer services and have toll free services provisioned through them, data services too should be construed as bearer services and should be permitted to provisioned toll free services e.g. access to TSPs website for services such as down loading / payment of bills or registering of complaints, weather report, passport application status, railway enquiry, flight enquiry etc. without the requirement of explicit consent of the consumer.**

- f. In fact the success of the programs like “Digital India”, are solely dependent on the rate of adoption of data services by the Diaspora. **Facilitation of free trials and testing of the data services would eventually result in increasing subscription to data services and not denial of access.** The concern that discounted / free data access could serve as a means to “*create entry barriers and non-level playing field for these players stifling innovation*” are misplaced as despite the existence of differential pricing regime these apprehensions have remained unsubstantiated. Albeit, **the industry has witnessed a very positive impact of such regulatory framework and the end users have been the ultimate beneficiary of such a framework.** Such products are purely a price based product differentiation from the competition and should be construed as a normal product offering business strategy from the TSP.
- g. **Gatekeeping.** We would like to highlight that ‘Differential Pricing’ cannot be construed as ‘Gate Keeping’; these two are totally different. In a mature and highly competitive telecom market as India, a TSP indulging in selective access practices would lead to preclusion of certain set of subscribers from its subscriber base, which the TSPs can ill afford. It is submitted that regulating a presumptive scenario, instead of aiding the growth of the data services proliferation, would in all likelihood prove to be prohibitive. As brought out earlier, it is the customer whose preferences define the products of TSPs and in no way can a TSP impose his will (which should not be termed as Gatekeeping) on the consumers. It is in TSPs business interest to facilitate a consumer to exercise his choice and provide the freedom to the consumer to decide what he wants to access, from where he wants to access and on the device he wants to access. Therefore, **it is felt that the apprehension about TSPs employing differential pricing as a ‘gatekeeping tool’ is incorrect and unfounded and the same should not be considered even as ‘Theoretical’.**
3. It is further submitted that TRAI can mandate that the data tariff charged to customers for any specific app/platform service should not cross the data tariff applicable to the subscriber. Any service which is being free or charged to the customer lower than the data tariff applicable to the customer should be kept under forbearance. This will ensure that TSPs do not charge customers higher tariff for any specific app/platform while allowing flexibility to TSPs to drive internet penetration through various innovative products & services.**Price Differentiation – a legitimate business practice.** Success in business is all about the ability to attract customers / consumers to buy the goods / services sold by the individual or an organization. Price differentiation is one of the innovations that businesses employ for attracting the buyer / consumer. The market place has plethora of examples, wherein the same services are priced differentially with the sole purpose of attracting the buyer / the consumer. Some of these examples are as given below,
- Differential prices for the same seat, in the same flight, to the same destination, under the same taxation conditions are employed by the air transportation services provider to ensure capacity utilization.
 - Differential prices for the same room, in the same hotel, in the same place, at the same instance, under the same taxation conditions are employed by the hospitality services provider to ensure capacity utilization.
 - Differential Sale discount percentage on the same product(s) is made available, at the same instant, over different e-commerce sites under same taxation conditions.

- d. Differential pricing being offered for various services if availed in bulk or otherwise.
- 4. Therefore, **TSPs too should be permitted to use price based differentiation of products as being a legitimate business practice.**

Our Recommendations

- 5. In a clearly competitive market there is no plausible reason to regulate the packaging and pricing of products and services. TRAI has always voiced the requirement of light touch regulations and wherever possible the same has been acted by the Authority. Any conditional provisions / intervention at the pricing and packaging of products will go against the principle of forbearance and will be seen as a paradox situation where with increase in competition, market is moving from forbearance to regulations hence, **it is recommended that, the data tariffs be kept under forbearance permitting the TSPs to price their data services as per the market dynamics.**

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Our Response

Existing regulatory framework along with the reporting requirement of tariffs is considered to be adequate for ensuring adherence to the principles of non-discrimination, transparency, affordable internet access, competition and innovation in the market.

Market is working smoothly, driven by competition and product innovation, under the existing regulatory regime. Stakeholders are working in consensus in this eco system and any alteration in this framework will only hamper the growth of the data services. Offering of differential pricing for data usage is well under the ambit of the current regulations. Further, any product / service offers by the TSPs to the subscribers are required to be reported to TRAI as per the Reporting Requirement. TRAI is empowered to examine such tariffs and if these tariffs are in violation of any of the above stated principles, TRAI can always direct the TSP to withdraw such tariffs. Hence, we believe that there is no necessity of imposing further regulations on the offerings of the TSPs.

Our Recommendations

It is recommended that for ensuring that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed,

- a. **The Authority should allow the offering of differential pricings within the scope of the existing regulations itself.**
- b. **Imposition of any further regulations will only distort the market and could be to the detriment of the end users.**

Question 3: Are there alternative methods / technologies / business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest / describe these methods / technologies / business models. Also, describe the potential benefits and disadvantages associated with such methods / technologies / business models?

Our Response

Yes, there are alternative methods / technologies / business models, other than differentiated tariff plans, that are available to achieve the objective of providing free internet access to the consumers and the industry is already exploiting them.

- 1. It is brought that both the alternative methods suggested by the TRAI are already being offered by the TSPs and websites viz,

- a. TRAI's has rightly observed that "*the TSP could provide initial data consumption for free, without limiting it to any particular content. Current examples of this approach include allowing free browsing or discounted tariffs for specified time windows, or giving away a certain amount of data daily for free*". Such initiatives have been adopted by the TSPs to decrease the digital divide between the connected and the unconnected.
 - b. Even the other suggestion by TRAI that of "*promoting access through the Internet could be initiated by the content providers wherein they could reimburse the cost of browsing or download to the customers directly irrespective of which TSP he / she has used to visit the website*", is already being offered by the websites (such as Freerecharge, PayTM, etc) to their subscribers. It is brought out that various businesses promote the use of web / apps for accessing their services by providing freebies in various forms such as HDFC promotes the use of web by providing privilege points on use of its cards online, Food Panda provides additional discounts on food ordered through its app, etc. It is pointed out that such mechanisms of attracting web access are provided to the customers who already have web access and are initiated to data services. However, for initiating the uninitiated, it is imperative that facility for access itself is provisioned without charges so that a seed can be sown by showcasing the utility of the data services.
2. However, it is brought out that such initiatives are limited in achieving the stated goal of enticing the unconnected subscribers to subscribe to the data plans due to the regulatory requirements of getting explicit consent of the consumer before activation of the data services.
 3. Some additional pitfalls with these initiatives are that,
 - a. They are subject to the subscriber subscribing to a data plan.
 - b. If such benefits are in the form of certain data quota free, then these content providers are required to be in agreement with the TSPs. It is not feasible for these content providers to be in agreement with all the existing TSPs. Further, it is not possible for the content providers to gauge the requirement of the subscribers based on their usage pattern.
 4. With the latest innovations of pricing that the TSPs are offering they are endeavouring to not only enhancing their own revenues but are also contributing towards bring the unconnected onto the connected world. Therefore, **it is imperative that TRAI takes a balanced approach towards differential pricing regime and ensures that the TSPs innovations for serving the larger good is not ignored.**

Our Recommendations

5. Based on the foregoing, it is recommended that,
 - a. **It is imperative that TRAI takes a balanced approach towards differential pricing regime and ensures that the TSPs innovations for serving the larger good is not ignored.**
 - b. **TRAI therefore should persevere with its existing policy of forbearance which affords the flexibility of introducing innovative methods of aiding proliferation of data services.**

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Our Response

1. TRAI has further raised the issue of transparency in data tariff offerings in the market. We are in concurrence with TRAI's concerns regarding informing the customers about their data offerings in a transparent manner; however, we would like to highlight certain points which can take care of this issue:
 - a. TRAI has issued Directions regarding misleading advertisements which is sufficient to take care the advertisement of the TSPs regarding offering of different data tariffs.
 - b. Recently issued TCPR (8th amendment) Regulations mandates the TSPs to provide alerts to the subscribers if he is consuming data beyond specified limits. This will ensure no excess charging to the customers for their data services is possible.
 - c. The annual audit mechanism of TRAI exists to ensure proper charging to the subscribers by the TSPs. In case of wrong charging TRAI have the power to impose penalty on that TSPs based on the audit report.
 - d. TRAI can always ask the TSPs to give a demo of their services where they are alerting/informing the subscribers if the subscribers will get charged to access certain content which is not free of cost against particular data pack/offerings.
2. **In view of the above, it is submitted that there are already available mechanism in the existing regulations of the Authority by which the principles of transparency, non-discrimination etc. can be taken care of. Imposing further regulations will not only hamper the growth of the data services but also put the subscribers in loss. Hence, we request the Authority to allow the TSPs to continue with their data tariff offerings based on the market dynamics and innovations.**

2.1.11 Aircel



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December 30, 2015

Ms. Vinod Kotwal
Advisor (F&EA)
Telecom Regulatory Authority of India
MTNL Telephone Exchange Building
Jawahar Lal Nehru Marg(Old Minto Road)
New Delhi – 110 002

Sub: Aircel Group Response to TRAI Consultation paper on “Differential Pricing for Data Services”.

Madam,

This is with reference to TRAI Consultation paper on Differential Pricing for Data Services dated 9th Dec'2015.

In this regard, please find enclosed our response to the above mentioned Consultation paper. We have also sent scan copy of our response through email at advisorfea1@trai.gov.in.

We hope TRAI will take our inputs into consideration.

Thanking You,

Yours Sincerely

For Aircel Limited & Dishnet Wireless Limited

Ashok Sharma
National Head – Regulatory

Encl: As stated above (3 PAGES)

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Aircel Response to TRAI Consultation Paper on Differential Pricing for Data Services

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models.

Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Aircel Comments:

At the outset, we would like to submit that this consultation is premature and the existing regime and prevailing tariff options do not warrant any intervention by the TRAI. The forbearance with TSPs to offer differential tariffs for Data services, have been used (with very limited offerings) for the benefits of consumers and with an objective to increase uptake and usage of data services.

It is pertinent to highlight that infact differential pricing is prevalent across industries/sectors and across private/Government PSUs. There is differential pricing in service sector, consumable products, FMCG, Cosmetic, Healthcare products, Automotive, Airline, Railways etc. depending upon the quality or quantity of the product being offered to the consumers.

Even in case of other regulated sectors like Banking, Securities, Insurance and Airline etc. there is availability of differential pricing for consumers depending upon volume or preferential services. This is on the sound economic principle that there is no 'One Size Fits All' solution which can be offered to varied sections of society having different consumption & usage patterns, paying capacities etc. The intention of ensure kind of socialism through a uniform pricing is an outdated concept especially for commercial services. Infact in a competitive market scenario, differentiation in products and services in all sectors is an essence forcing providers towards innovation. Hence, differential pricing provides boost for increasing penetration of services and should be kept under forbearance.

In this regard, we would like to highlight one of the differential tariff offerings, launched in market at various point in time and their value add to the Data ecosystem.

One of the campaigns launched by Aircel i.e. Free basic internet campaign (Not related to Facebook campaign or with any specific content provider) was launched with the objective of providing internet access to all customers. All new customers coming in to the Aircel network were offered free internet access at a specific speed & for limited time period in our 3G as well as 2G circles. The offering was designed to enable customers to do the following without any charging:

- Basic browsing
- Visit informative sites
- Experience social networking sites
- Basic e-commerce transactions like train and bus ticket bookings

Early results have indicated that mobile internet penetration rates on new customers have increased by 5% while it has a negative impact on data revenues.

Another such offering was launched 2014 with the objective of driving new users to use data services, by offering free access to popular OTT applications. The proposition was free Facebook and WhatsApp access to all Aircel customers. The result was an increase of 4% in data users as a result of this campaign.

Therefore, it can be seen that such differential pricing leads to increase in data user penetration and uptake of data services.

Furthermore, we would like to share our general observations on the differential tariff offerings as follows:

1. No instance of discrimination:

There have been few instances of differential yet beneficial tariff options being offered by few operators, at different point of times e.g. Facebook / WhatsApp / Wikipedia pack. These have been primarily focused towards the heavily used websites/apps, to provide volume discounts to the consumers for increasing usage & uptake and similar practices are available in case of Voice calls and SMS wherein volume discounts are offered to heavy users.

2. Differential tariffs only towards Heavy used websites/apps:

The offers introduced by operators are triggered from consumer consumption factors only which are primarily the heavily used social sites and applications. By providing differential pricing, it provides for varied economic sense to the public at large to use the sites/applications as per their need.

3. TRAI regulation on consent for Data services:

TRAI has issued regulation vide which customer has to provide consent before he is provided access to data services which is charged at base rate. Having implemented such regulation, it ensures that consumers are aware of the data access and would not be charged accidentally for such usage. Hence, there can't be any premise that consumers are not aware of data access charging.

Taking above into consideration and to address the concerns of TRAI as given in the consultation paper, there are light-touch regulatory ways, enumerated below, vide which TRAI can upkeep creativity and innovation in telecom services offering as well as ensuring that the offerings are non-discriminatory, non-arbitrary and transparent.

1. **Free play with Regulatory oversight:** TRAI may like to consider bringing in specific Reporting for differential data tariffs related to retail and wholesale offerings. Based on this reporting, TRAI may like to scrutinize and intervene, if the offerings violate its principles of transparency and non-discriminatory.
2. **Principles of Non-discriminatory, transparency:** TRAI should mandate that principles of transparency and non-discrimination should be followed for retail offerings as well as for the wholesale offerings (content provider based). It can be further ensured that the differential pricing is not offered exclusively to any segmentation of customers.

Additional Approach: There could be an additional approach of offering differential tariff towards a class/genre/bouquet of services. Few examples are quoted below:

1. Whitelisting all magazines/books to support education for differential tariff.
2. Whitelisting Agriculture related sites for differential tariff
3. Whitelisting Women safety helpline websites/apps for differential tariff

While differential tariff offering is without any differentiation towards class/segment of subscriber hence, non-discriminatory; above additional approach does not differentiate for content providers as well and should be freely available for TSPs to adopt apart from the differential pricing as enumerated in above response.

Final Submission:

Keeping all above in view, we urge TRAI not to intervene in the differential pricing, at this stage. We recommend TRAI to have a Regulatory oversight on the issue and introduce a reporting mechanism.

2.1.12 Tata Communications Limited

TCL Response to Consultation Paper on Differential Pricing for Data Services

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TCL Response:

“Non-discrimination” as defined in Clause 2(k) of the TTO is that service provider shall not, in the matter of application of tariffs, discriminate between subscribers of the same class and such classification of subscriber shall not be arbitrary. Clause 10 of the TTO provides that no service provider shall, in any manner, discriminate between subscribers of the same class and such classification of subscribers shall not be arbitrary. The provisions of TTO (33rd Amendment) inter alia provides that whenever differential tariffs are offered, it shall be the responsibility of the operators to define in a transparent and unambiguous manner, the eligibility criteria for availing such differential tariff. It is our submission that the concerned stakeholders in terms of TTO are the end consumers and licensed TSP. If the licensed TSP is providing free internet connectivity for content of a particular Content Provider on the internet to all its customers in a non-discriminatory and transparent manner then the same would be permissible under the present tariff regime as well as under Section 11(2) of the TRAI Act. Content Providers, Application Service Providers, Platform service providers and licensed TSPs are all part of internet ecosystem value chain and each of them operate as per their commercial considerations and business plans. In our view there is no reason to treat sponsored data services or zero rating cases as discriminatory to the end consumers of the services provided no preferential network access to any content is provided at the cost of other content available on the internet ie no throttling of any content on the internet. Internet value chain is a classic case of two sided market players where each member of internet value chain interacts with the other as per its business considerations. Any intervention in respect of regulated TSP’s tariff should be done only after a detailed study of internet eco-system and two sided market network impact on various players of the internet value chain.

Differential pricing for data usage for accessing different websites, applications or platforms should therefore be allowed.

This will enable:

- Consumers to pick and choose the pricing plan which suits their needs.
- Consumers to right-size their costs for internet access.
- Affordability to people who are unable to adopt internet access on the basis of general pricing plans.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

TCL Response:

The following measures are recommended:

- There should always be a general pricing plan available to all consumers. This plan should provide the consumer with access to the internet without any differential price point for different content/destination.
- The differential pricing plans should be available in general to all consumers as an option.
- The differential pricing plan must clearly articulate the destinations/content that qualify for the differential rate and under what applicable terms and conditions. It must also clarify the applicable rate for all other destinations/content. For example, access to abcdef.com will be provided at Rs. @/MB but access to all other destinations will be provided at Rs. ^/MB where @ and ^ may or may not be different – this must be clarified upfront.
- The differential price point should not be higher than the price point of general pricing plan.
- TSP shall not intentionally throttle consumer's access to promote one destination/content (say X) over another (say Y) because the TSP has commercial/other arrangement with X.
- Traffic management, whenever required, must be done fairly for all retail consumers and for reasonable reasons such as to cure or prevent network congestion that damages the network for all users, network protection, legal/regulatory compliance, data caps etc.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

TCL Response:

New methods/technologies/business models may evolve as the consumer market develops and matures both in terms of population penetration and sophistication of consumers in terms of specific needs.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TCL Response:

The power of the Internet has redefined the global economy for the 21st Century. As of 2015, over 3.2 billion people around the world were connected of which 2 billion are from developing countries with India having figure of 242 million. The corresponding boom in Internet based retailers, news and information providers, and online entertainment and video companies has been just as impressive. Businesses go where the customers are, and increasingly the customers are online or mobile.

Unfortunately, the online revolution is lagging in many of the least developed parts of the world. For every Internet user in the developed world there are 2 in the developing world. However, 4 billion people from developing countries remain offline, representing 2/3 of the population residing in developing countries. Consider that as of 2014, fewer than 30 percent of Africa's 1.1 billion population used the Internet. At the same time, relatively few African businesses have participated in the Internet business boom. Less than one percent of all existing domain name registrations in 2013 originated from Africa, meaning African-based businesses have very little local or global presence on the internet.

The problems are multiple. Building a broadband infrastructure to all homes, especially in rural areas, is too costly for many low-income countries. And mobile broadband service, while more broadly available, is also relatively expensive to provide and high-priced compared to incomes. As a result, broadband markets are limited in many poor and developing areas. In 2013, for example, there were 20 mobile broadband subscriptions per 100 people in the Philippines, and just three for every 100 people in Kenya.

At the same time, a low level of connectedness keeps the local Internet ecosystems stunted. Entrepreneurs are unwilling to start new Internet based businesses because there aren't enough customers online. Conversely, without local Internet-based businesses providing relevant information, content, and services, potential customers have less incentive to invest in expensive data plans for their smart phones.

Consider the obstacles facing a potential local business that would collect agricultural prices across a poor country, and post them online. Such Internet businesses have increasing returns to scale—expensive to collect the information in the first place, but relatively cheap to provide it to more and more customers. That means such a business—which would be very beneficial to farmers—is far easier to start and far more profitable if the pool of potential customers is large. But if the pool of potential customers is small, the business may never get started, and there will be even less reason for poor mobile phone users to buy a data plan.

Toll-free telephone calls are a well-known concept: customers can contact businesses free of charge, while the company receiving the call covers the communication costs. In today's highly mobile, data-driven world, consumers everywhere place a high value on the time-saving and money-saving facilities mobile data technologies allow. This is especially true in emerging markets, where a mobile phone is often the only "connected" device they own.

With these valuable benefits in mind, Bradesco, one of Brazil's top retail banks, launched "Acesso Grátis Bradesco Celular" in March 2014, enabling clients to access their bank accounts from their smartphones without using up their mobile data caps. By sponsoring clients' mobile-banking data use, Bradesco was able to shift more of its client's interactions to Internet-based self-service and dramatically reduce cost per transaction, since mobile banking is significantly less costly than any other banking channel. At the same time, it increased customer engagement, as clients now execute many more transactions through mobile banking than any other channel.

Indeed, one year after launching its Sponsored Data offer, Bradesco mobile banking users have more than doubled, and transactions over the mobile channel have quadrupled. From practically non-existent in 2010, mobile has become Bradesco's second-most used access channel and is likely to become the foremost one as mobile service usage grows.

The results of Bradesco's case are also particularly impressive since 75% of mobile users in Brazil are on prepaid plans and consume very little, if any, mobile data on a regular basis. Consequently, their broad adoption of this service is remarkable, and the impact that "1-800 Data" can have on other consumer and citizen-facing services promises to be disruptive.

Moreover, the customer support cost savings and goodwill achieved by Bradesco are completely transferrable across industries, making its experience an iconic success strategy for others to follow. For businesses and governments in general, the benefits offered by mobile technology are clear. By allowing their customers, employees, partners and citizens to gain anytime/anywhere access to compelling mobile services, Sponsored Data helps these firms improve productivity, lower operational costs, create new revenue opportunities, and increase customer satisfaction and engagement. As a result, these firms should expeditiously contact wireless operators for help deploying relevant Sponsored Data services and seizing these gains.

With Sponsored Data, third parties can provide end users mobile data access free of charge in exchange for (i) engaging with their brand, (ii) purchasing something, and (iii) interacting through a more economical service channel or other engagements. It may also be used not only by businesses, but also by governments to encourage users to access valuable information and basic services. There are many different ways to create value with Sponsored Data services:

- Customer service: With the growing trend toward online self-help, sponsoring mobile access to customer service can help companies significantly reduce costs with contact center services, as well as improve customer experience. Toll-free mobile data service also complements toll-free contact center services, which often block calls from mobile phones and are overloaded by high demand.
- Websites: Sponsoring access can be a great way to drive traffic to a website—whether to induce e-commerce transactions or promote ad-driven models, such as in the case of editorial content providers looking to boost mobile ad revenues. For Mobile Commerce websites, sponsoring mobile data is especially attractive as it encourages consumers to browse and purchase on the go, and can also be used as a reward for purchasing a product.
- Mobile marketing: A common application for Sponsored Data is offering consumers free Internet access for viewing advertisements or brand information such as instructional videos. Companies may also offer users free Internet as a reward for viewing an ad or engaging with the brand on social networks.

- Digital content delivery: Digital content can result in significant data consumption. By subsidizing mobile data costs for consumers (and possibly including them in subscription fees), digital content providers ranging from newspapers and magazines, to e-books, games, music and video streaming services, can drive adoption among consumers who might otherwise find the access cost prohibitive.
- Hardware vendors: Selling Internet-ready devices with bundled data can be a great way to differentiate a product with complementary services. For devices attached to a specific service, such as Connected Home and remote healthcare monitoring applications, Sponsored Data encourages service adoption, without which the hardware has little use, creating a new revenue stream for manufacturers.
- App developer: For app developers, sponsoring the data to download and use the app for the first few times can stimulate adoption of a new product. Moreover, since developers are getting paid for the content, it may be viable and prudent for them to pay for content download on an ongoing basis. A Sponsored Data offer can also be an excellent marketing strategy, aiding discovery through positive word of mouth.
- In-company use: Companies with many remote workers can reduce the cost of supplying employees with a mobile service and boost field force productivity by sponsoring access to tools such as productivity apps and the company website and Intranet.

In all these applications, businesses are looking to increase the efficiency of their operations by offering mobile based services. Sponsored Data provides these businesses with a tool for driving the adoption of their mobile based services, which significantly improves customer satisfaction without demanding a large investment of money, time or effort.

For businesses and government overall, the benefits of Sponsored Data are clear. By allowing their customers, employees, partners and citizens to gain anytime/anywhere access to compelling mobile services, it helps these firms improve productivity, lower operational costs, create new revenue opportunities, and increase customer satisfaction and engagement.

Source : Frost and Sullivan White Paper on “Sponsored Data: Connecting the Unconnected”

2.1.13 Vodafone

Vodafone response to TRAI Consultation paper on 'Differential Pricing for Data Services'

Vodafone welcomes this consultation by the Authority and we wish to submit as follows:

1. The Indian consumer is highly price sensitive. The availability of affordable and innovative data services will be key to driving the take up and growth of data and help deliver on the Digital India vision.
2. In the era of voice telephony, competition and choice was with reference to only the consumers of the respective service providers and various tariff plans were permissible subject to meeting the TRAI's principles of non-discrimination enunciated in TTO-99 and further the TTO-33rd Amendment.
3. However, now, with the growth of the internet and the proliferation of smart phones, telecom has become a two sided market with the internet content providers on one side and the consumers on the other.
4. Competition and choice is now also possible with respect to the content that is available on the Internet and consumers can equally benefit from innovative and customized data offerings that can be offered by its service providers either independently or through various innovative new services and business models based on mutual commercial arrangements with the content providers.
5. As long as such arrangements are not anti-competitive and transparency is ensured for informed consumer choice, they will encourage consumers to explore and experience the internet as much as possible and promote Internet growth.
6. The telecom industry requires a financial sustainable business model, an open and pro-innovative environment for all – device players, OTT and Telcos and an assurance of same rules for the same communication services.
7. There is a need to ensure regulation is fit for the Digital Age and introduce a concept of regulatory neutrality, i.e. the same services, same customer protection, whether offered by an OTT communication player or a TSP. The consumers have always been central to the success of the mobile industry and continue to be at the heart of all strategy and innovation by the operators.
8. The above mentioned 'same service same rule' principle is required for communication services. For data content (other than communication services), internet being a two-sided market, payment can come from either side of the market. The content provider may like to enter into commercial arrangements with the service providers to offer a differential tariff for its content. Such arrangements will be a win-win for the customers, the telecom operators and content/app developers as it will help defray the costs of infrastructure build-out, ensure

affordable services and high quality experience to end users, which in turn will fuel development and growth of the market.

9. We believe that given the intense competition in the market with the presence of atleast 8-10 established operators in each telecom circle and the presence of strong regulatory and legal safeguards, the concerns around discriminatory or anti-competitive behavior can be addressed through existing mechanisms. The competitive intensity of the market has resulted in largely self-regulatory mechanisms that have ensured the protection of consumer interests and have in fact created various innovative tariff offerings for consumers, all of which have significantly contributed in making the Indian telecom market one of the most competitive, innovative and affordable markets in the world.
10. We therefore submit that differential data content pricing should be permitted and the existing regime of forbearance should continue. The regulatory principles of non-discrimination and transparency should be equally applicable to voice and data content
11. The comments are only confined to the limited issue of Differential Pricing for Data Services (data content) and is without prejudice to our response dated 24.04.15 to an earlier consultation paper of TRAI dated 27.03.15.

Detailed responses to the questions raised are as follows :

1. **Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?**

Yes, for the following reasons:

- (a) **Operators should be able to offer consumers the services which best meet their needs.** Allowing differentiated prices will be in consumer interest and is commonplace in the wider economy. There is significant experience from other sectors (particularly where there are high fixed costs of production), where quality/price differentiation has been used in order to expand the market by making more attractive offers at the lower end of the market. Examples could include aviation, where users are offered different standards of service, hotels where users are offered a different standard of rooms, car manufacturing where the same basic model will be produced to a number of quality standards and TV services which may be provided on a standard or high definition service. Across virtually every service, consumers benefit as firms compete on levels and degrees of quality as well as service.
- (b) **Differentiated pricing also has societal benefits, ensuring that communications and internet services are accessible, affordable and available.** Differentiated pricing for data content expands participation in online content and applications to the underserved, while also increasing mobile wireless penetration. Increasing internet

access has been shown to increase productivity, support enterprise and innovation, increase employment and economic growth^[1].

2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

The regulatory principles enunciated for voice, will govern data content as well. We believe that given the intense competition in the market with the presence of atleast 8-10 established operators in each telecom circle and the presence of strong regulatory and legal safeguards, the concerns around discriminatory or anti-competitive behavior can be addressed through existing mechanisms. The competitive intensity of the market has resulted in largely self-regulatory mechanisms that have ensured the protection of consumer interests and have in fact created various innovative tariff offerings for consumers, all of which have significantly contributed in making the Indian telecom market one of the most competitive, innovative and affordable markets in the world. However, the non-discrimination requirements should prevent any exclusivity which could be anti -competitive.

3. Are there alternative methods/technologies/business models, other than differentiated data tariff plans, available to achieve the objective of providing free internet access to consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.

Any methods/technologies/business models that promote mobile data services usage should be encouraged as these would facilitate greater penetration of mobile internet and broadband and promote economic and social growth. Additional focus needs to be placed on promoting broadband growth through an enabling policy environment which encourages investment and innovation.

4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

- (a) The telecom industry requires a financial sustainable business model, an open and pro-innovative environment for all – device players, OTT and Telcos and an assurance of same rules for the same communication services.
- (b) The above mentioned 'same service same rule' principle is required for communication services. For data content (other than communication services), internet being a two-sided market, payment can come from either side of the market. The content provider

[1]

https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/TechnologyMediaCommunications/2014_uk_tmt_value_of_connectivity_deloitte_irland.pdf

may like to enter into commercial arrangements with the service providers to offer a differential tariff for its content. Such arrangements will be a win-win for the customers, the telecom operators and content/app developers as it will help defray the costs of infrastructure build-out, ensure affordable services and high quality experience to end users, which in turn will fuel development and growth of the market.

2.1.14 Citycom Networks Pvt Ltd

No.: CNPL/TRAI-L/50

Date: January 7, 2016

To,

The Advisor (F&EA),

Telecom Regulatory Authority of India

Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg,

New Delhi – 110002

Kind Attention: Ms. Vinod Kotwal

Subject: Response to Consultation Paper on Differential Pricing for Data Services (Consultation Paper No. 8/2015)

Dear Madam,

This is with reference to TRAI Consultation Paper on Differential Pricing for Data Services (Consultation Paper No. 8/2015) dated 9th December 2015, we are herewith submitting our response.

We have also sent the response by e-mail to advisorfea1@trai.gov.in

We hope that Authority will take our input into consideration.

Thanking you.

Yours sincerely,

For Citycom Networks Private Limited,

Brajesh Jain
(Brajesh Jain)

President



Consultation Paper No.: 8/2015; dated 9th December 2015

Consultation Paper on Differential Pricing for Data Services

The primary need is for Vibrant Broadband Ecosystem and facilitating for all citizens, urban and rural Affordable Broadband and Quality Broadband and should be such that leads from scarcity to abundance. The charges should follow the normal market practice of Unit consumption price should fall as base consumption volume grows. For this Broadband Ecosystem, TSPs and Internet Services and applications as relevant to India are needed. As we have diverse regions, there is distinct role for local regional entrepreneurs to develop such applications/services.

Flow of packets in the network has to strictly adhere to the principle of no packets getting preferential treatment

TSPs, as we are using also includes Internet Service Providers (ISPs).

We are giving as below our response to specific queries.

1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response:

Differential pricing for accessing web sites should not be allowed. Allowing such differential pricing would only be beneficial to existing large content companies and large TSPs. As Content Service Providers (CSPs) are not likely to offer similar terms to medium, small, and new TSPs. This would thus result in undesirable Competitive disadvantage to many TSPs and large CSPs. This would be hindrance to the growth of CSPs. TSPs, medium and small, not being in a position to get negotiated differential pricing deals would also be affected.

2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response:

'Differential data prices' has the potential of killing innovation in creating content and emerging CSPs in India. This innovation is very critical for India for development and

availability of relevant content. As we are all aware most of the content is originated abroad does not reflect the local culture, very diverse social needs etc. Very large numbers of CSPs are required and should be enabled with very competitive and innovative environment.

Any differential pricing can be based on location, time of day, Specific content like Audio, Video, Games, Browsing. Reducing data charges for entire classes of applications can benefit consumers. Also Fair Usage Policy (FUP) can come in effect as per the transparent package and tariffs. With transparent network services and nondiscriminatory flow, innovation by the CSPs should be left to them only. In case their innovation touches the needs of a customer then he will take it in a transparent and non discriminatory manner. TSP should have no role in deciding which content provider products should be pushed or throttled. The affordable internet is a must. But by providing free access to part of the internet (Branded internet), actually it is total cost to the consumer which is important. As user gets to use content other than Branded and locally more useful to him, consumption would be higher. And with this higher consumption, there is risk of higher unit price of consumption of Other Content.

In any case, any tariff plan should not be allowed to throttle traffic for specific content or a set of consumers.

- 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?**

Response:

Free Internet is not at all sustainable model. As explained above, we need to encourage the environment from scarcity to abundance. Free internet concept is contrary and would stifle supply and consumption. Only established CSPs/TSPs having deep pockets would resort to this tactics of free access in the beginning. And after free fixed small volume, incremental price per unit of consumption goes up drastically. Total cost paid by the consumers would actually turn out to be higher.

Actually as consumption grows, incremental unit cost should be lower.

TSPs also need to provide such incremental costs transparently. In the past there have been multiple instances of bill shocks, though effectively controlled by TRAI in

the past. With this free internet the pricing model would become very complex. TSPs would be expected to give detailed MIS transparently about type of usage and charges for the same since differential charges would be there. Such MIS also has the potential of infringing on Privacy.

There is need for affordable data price which is of high speed, good quality of experience and does not prohibit consumption. TRAI have already provided recommendations in its recommendation on delivering Broadband quickly in April 2015. There is need for once again reiterating and pushing the Government for speedy decision on the same. Namely No AGR for at least 5 years for Wireline Broadband, Unrestricted infrastructure sharing, Effective Right of Way policy would help in making Broadband more affordable.

4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response:

Vibrant Competitive universally available Internet Broadband throughout the country is needed. This is possible if Government looks at Broadband sector holistically like in the past for telecom voice services, regulatory intervention was to support the growth like license fees changed from fixed license fees to revenue share, calling party pays, spectrum being given on subsidized rates on administrative basis.

Innovation in Broadband constantly has faced roadblocks rather than easing. Innovations have been stifled, not allowing VPN, VOIP naming a few. Many large foreign companies, not in the ambit of Licensing, have taken all this business at the cost of local TSPs.

With encouragement of innovation, Internet can spread equal to the speed at which cable TV spread its business in a very short time covering most of the country.

* * * * *

Bijain



2.1.15 Videocon



VTL/Reg/TRAI/1601/4925

January 07, 2016

**Ms. Vinod Kotwal
Advisor (F&EA),
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg (Old Minto Road)
New Delhi — 110 002**

Subject: VTL Response on Consultation Paper on “Differential Pricing for Data Services”

Ref: TRAI Consultation Paper No. 8/2015 dated 9th December, 2015

Respected Madam:

Videocon Telecommunications Limited welcomes the opportunity to give our comments to TRAI's consultation Paper on "Differential Pricing for Data Services" Please find attached herewith our response on the same.

This is for your information and kind consideration please.

Kind Regards

A handwritten signature in black ink, appearing to read "Meena Bisht".

**Meena Bisht
Sr. Manager
Regulatory Affairs
Mobile #: 9310225538**

Encl.: as above

**Videocon Telecommunications Limited
Plot No. 296, Udyog Vihar Phase-II, Gurgaon - 122 016, Haryana, India
Telephone: +91-124-671 0600 Fax: +91-124-671 0700**

**Registered Office :
R H No. 2, Pratapnagar, Shahnoorwadi Road, Aurangabad - 431 001 Maharashtra**

CIN No. : U72900MH2007PLC204763

www.videocontelecom.com

VTL Response to Consultation Paper
On
“Differential Pricing for Data Services”

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response: Yes, the TSPs should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms, as TSP makes huge investments on Spectrum, infrastructure and Sales & distribution to provide mobile and data services to the customers.

However, differential pricing schemes should not violate principles of transparency, non-discrimination, non-predatory and competitiveness.

Different types of traffic belong to different classes with different delay and error tolerance characteristics. Some services are real time, time sensitive and others can be delivered with a time gap. Some services like enterprise based, commercial services having provision of SLAs. Some services may require high degree of security and integrity. Based on these differential classes, TSPs, should have the flexibility to charge differently.

Similar principle should be applicable in case of different content providers. No content provider should be allowed to deny access to the consumers of any TSPs.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response: TRAI may examine different data plans of the operators to determine whether a particular tariff plan conforms to the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed.

However, reasonable opportunity should be given to the operators to explain their tariff plans on a case by case basis.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?



Videocon Telecommunications Limited

Response: It is a fact that differential pricing is only one of the methods to promote broadband growth. Basic factor in promoting broadband growth is the affordability. Our first objective has to be to provide access to the consumers having no access at present. It can be achieved by facilitating easy Right of way and right policy environment for operators to invest and innovate. It can be further stimulated by encouraging local content services and raising consumer awareness about broadband usage by the Government. We are of the view that, some of the services may be subsidized by the Government e.g. E-Governance, E-Medical, E-education etc.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response: The objective of the Government is to bridge the digital divide and provide affordable access of internet to all the citizens. As already mentioned above, differential pricing of data services is one of the main methods to achieve this objective. To achieve this objective, Government should provide sufficient spectrum, facilitate easy RoW, uniform Tower Policy, speedy implementation of Bharat Net project.

2.2 Industrial Associations

2.2.1 ISPAI

1178/TRAI/ISPAI/16

January 7, 2016

Ms. Vinod Kotwal
Advisor (F & EA)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan,
Old-Minto Road, Near Zakir Husain College,
New Delhi – 110003

Subject: ISPAI response to TRAI Consultation Paper no. 8/2015 on "Differential Pricing for Data Services"

Dear Sir,

We congratulate the Authority to have come out with the consultation paper on the matter captioned above and sincere thanks for proving us the opportunity to submit our response on this matter.

We have enclosed our comprehensive response for your consideration. We believe that the Authority would consider our response in positive perspective and incorporate our concerns on the subject matter.

Looking forward for your favourable consideration.

Thanking you,

With Best Regards,
For Internet Service Providers Association of India



Rajesh Chharia
President
+91-9811038188

Encl: As above

ISPAI Response to Consultation Paper No. 8/2015 on**Differential Pricing for Data Services**

The primary need is for a vibrant broadband and Internet ecosystem, facilitating urban and rural affordable broadband with consistent quality for all users. The term quality includes the concept of net-neutrality in which all destinations, websites and applications are equally accessible with consistent speed and with no discrimination whatsoever. ISPAI is working towards creating an ecosystem that will offer an abundance of Internet access that has robust competition and is free from any kind of access discrimination. End customer pricing should follow robust competitive market practice of unit consumption reducing with consumption volumes.

For this Broadband ecosystem to be realized, TSPs and Internet Services and applications focused on India are needed. ISPAI believes that there is a distinct role for local regional entrepreneurs to develop such applications/services, given the diversity of our country.

Our responses to your specific questions are given below:

1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?**Response:**

ISPAI strongly opposes differential pricing for data usage for accessing different web sites, applications and platforms.

Differential pricing will skew the market forcing hundreds of thousands of websites and applications out of business by unfairly driving traffic towards lower cost destinations. Differential pricing will only benefit large content companies and large TSPs, since these larger players will have the resources and reach to work with each other. Content Service Providers (CSPs) are unlikely to offer similar terms to medium, small, and new TSPs or ISP's. This would skew the concept of 'level playing field' facilitating undesirable competitive disadvantage to many independent TSPs and CSPs and driving them out of business too.

A simple fact that is being missed out is whether for the purpose of transparency what is better?

- a) To be able to choose from millions of web sites as a free choice for a limited time, or,
- b) get unlimited access to limited (selected by TSPs as per deals) web sites.

It is also pertinent to mention that incase differential pricing is allowed the following scenarios are likely to occur:-

- A. Different TSP's will enter into different deals with their selected CSP's. Customers would have no choice but to go with what the TSP has selected as preferential content. Freedom of choice will be curtailed. In case the customer wishes to access other content or browse freely he will have to pay higher price.
 - B. TSP's will become indirectly the deciding factor as to what the customers should view. This is not good at all for a democracy like India. Vertical integration is harmful as differential pricing concept is neither open, plural nor diverse.
 - C. Focus of the TSP's will shift from meeting the needs of the customer to meeting the needs of their partnering CSP's.
 - D. Consolidation of data provisioning into hands of only a few large TSPs will take place. This will create anti competitiveness, monopolies and predatory practices. Smaller downstream ISP's who are providing services as part of the whole eco system would have to wind up.
- 2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?**

Response:

Differential data pricing will be impossible to regulate, monitor or measure and, therefore, any policies adopted to ensure principles of transparency etc. are bound to fail.

ISPAI is of the view that differential pricing will kill innovation in creating content and emerging CSP's in India. This innovation is very critical for India for development and availability of relevant content. As we are all aware most of the content is originated abroad does not reflect the local culture, very diverse social needs etc. Very large number of CSP's is required and should be enabled with very competitive and innovative environment. The startup innovation by the new stream of youth will be drastically curtailed and it will not be affordable for them to pay for the differential pricing of the TSPs. Otherwise in a way it is directly impacting Indian innovation by the new Start-ups thus defeating the concept in India.

- 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?**

Response:

ISPAI is of the view that free Internet is not a sustainable model but Service Providers should be free to adopt whatever business model they wish.

As explained above, we need to encourage the ecosystem from scarcity to abundance. Free internet concept is contrary and would stifle supply and consumption. Only established CSPs/TSPs having deep pockets would resort to this tactics of free access in the beginning. And after free fixed small volume, incremental price per unit of consumption goes up drastically. Total cost paid by the consumers would actually turn out to be higher. Actually as consumption grows, incremental unit cost should be lower.

TSPs also need to provide such incremental costs transparently. In the past there have been multiple instances of bill shocks, though effectively controlled by TRAI in the past. With this free internet the pricing model would become very complex. TSPs would be expected to give detailed MIS transparently about type of usage and charges for the same since differential charges would be there. Such MIS also has the potential of infringing on Privacy.

There is need for affordable data price, which is of high speed, good quality of experience and does not prohibit consumption. TRAI have already provided recommendations in its recommendation on delivering Broadband quickly in April 2015. There is need for once again reiterating and pushing the Government for speedy decision on the same. Namely No AGR for at least 5 years for Wire-line Broadband, Unrestricted infrastructure sharing, Effective Right of Way policy would help in making Broadband more affordable.

in case any free services have to be provided than those essential services should be provided by the respective state govts through Suvidha Kendras and other IT infrastructure network being set up for which huge funds for the same are being made available by the Central Govt.

4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response: This is possible if Government looks at Broadband sector holistically like in the past Government has supported the mobile industry by changing fixed license fees to revenue share and calling party pays etc. Innovation in Broadband constantly has faced roadblocks rather than easing. Innovations have been stifled, not allowing VPN, VoIP naming a few. Many large foreign companies, not in the ambit of Licensing, have taken all this business at the cost of local TSPs/ISP's. We should follow the principle of same license same service. Unlevel playing field where created due to own Govt. policies should be reconsidered and all players i.e. Indian licensed service providers and foreign OTT players should be brought up to the same level.

We have the curious case of a very large CSP wanting permission- based Internet in conjunction with a large TSP in India and other developing countries while in its country of origin it is strongly advocating permission - less innovation and Internet.

With encouragement for innovation, cheaper overall access to internet bandwidth and transparent policies, Internet can spread equal to the speed at which cable TV spread its business in a very short time by covering most of the country, a few years back. All players providing Internet Services be they small, medium or large have their respective roles to play and their interests be equitably looked after.

In India still there is long way to expand the proliferation of Internet especially in Rural India, connecting unconnected, and to bring them in main stream of development, bridging digital divide between Rural & Urban, which will result not only skill development in those area as well as job and employment opportunity also. Regional content is also one of the major requirements for large population having different languages and cultures.

2.2.2 C0AI AUSPI



Joint Industry Response to
TRAI Consultation Paper
On
Differential Pricing for Data Services

Released on December 09, 2015

Preamble

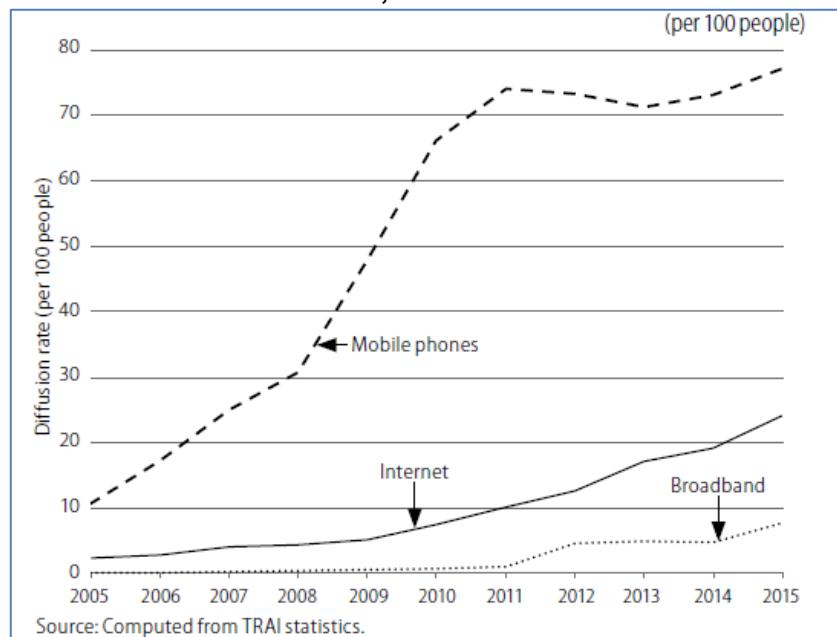
- 1. Introduction**
 - a. At the outset, we would like to state that **COAI and AUSPI are fully committed towards connecting the 1 Billion Unconnected Citizens of India and fully supports the digital India vision** of the government and suggests adoption of policies and promoting ecosystem which enables fulfilment of this vision. In order to achieve digital literacy, the broadband/internet must be made affordable.
 - b. Our submission to TRAI Consultation Paper on Differential Pricing for Data Services is as below.
- 2. A Progressive Data Tariff Policy is crucial for the development of Mobile Broadband and Internet Ecosystem**
 - a. In a price-sensitive market like India, the policy on data tariff will be a key determinant of take-up of data services usage. Data services usage means internet and broadband usage, which is the critical foundation of all the 9 pillars of Digital India and this therefore has to be accorded the highest policy priority. A flexible and progressive data tariff policy will lead to high mobile data services usage, which would translate into greater adoption of mobile internet and broadband services.
 - b. The roll-out of broadband services is at the inflexion of growth and it is universally accepted that India has one of the most competitive telecom markets in the world and therefore any tariff offering or pricing structure that boosts the internet ecosystem needs to be seriously

considered and not prejudged and forbidden through a blanket ruling on grounds of inapplicable apprehensions of discrimination. Such a ban would constitute a welfare-reducing measure of high concern by blocking a possible avenue for our less-advantaged citizens to move to increased economic growth and prosperity by harnessing the power of the Internet. In fact the growth of the voice market has been fueled by the various innovative tariff plans that have been designed by the TSPs to meet the wide and varied requirements of their subscribers. The fact that forbearance and hence differential pricing was permitted by TRAI was an acknowledgement of the existence of adequate competition and maturity level of the Indian market.

3. State of Broadband/Internet Penetration in India

- a. **Status of Broadband:** India is a market where 80% of the population still does not have the benefit of mobile data services. From the numerous indicators for measuring the development of broadband in India, we understand:
 - i. As per the State of the Broadband Report - 2014 by Broadband Commission, ITU, India is ranked 142nd in terms of broadband penetration, way below some of its neighboring countries like Bhutan and Sri Lanka.
 - ii. In comparison to other BRIC countries, India ranks the lowest with the Internet adoption rate in other three member-nations of BRIC on an average being more than 3 times the adoption rate in India.

Diffusion Rate of Broadband, Internet and Mobile Phones in India



- iii. In ICT Development Index (IDI), India ranks 129th out of a total 166 countries. Not only is our overall position in ICT Development extremely low, the situation is further

exacerbated by the fact that there is an enormous urban/rural digital divide which needs to be bridged rapidly to extend the benefits of ICTs to the common man. Towards this end, providing free/affordable access to data services has to be extended to the uncovered population.

- b. **Importance of Broadband:** Improved access to broadband and internet services would promote economic and social growth. As per a Brookings Research Paper, extending internet access to levels seen in developed countries today means that long run productivity could be enhanced by as much as 25% in developing countries. It is estimated that the resulting economic activity could generate \$2.2 trillion in additional GDP, a 72% increase in the GDP growth rate, and more than 140 million new jobs (**Refer to Annexure-1**). As per Analysis Mason, an “increase in broadband penetration of 1% will contribute INR 162 billion, or 0.11% to Indian GDP in 2015.

Economic and Social Impact of Improved Internet Access in the Developing World	
Productivity Gains	+25%
Total GDP Improvement	\$2.2 Trillion
GDP Growth Gain	+72%
New Jobs	140 Million Jobs
Personal Income Gains	\$600 Per Person Each Year
Number Lifted Out of Extreme Poverty	160 Million People
Lives Saved Through Improved Health Care	2.5 Million Lives

Source: *Brookings, Deloitte, Value of Connectivity: Economic and social benefits of expanding internet access, February, 2014.*

- c. **Affordable Broadband Services:** The immediate priority in India is to ensure that the affordable broadband services are adopted and utilized by a vast mass of unconnected and low net usage citizens. This is absolutely critical for the success of Digital India and for a speedier and inclusive economic development.
- d. **Investments Required:** The roll-out of Broadband and Internet services requires enormous investments to the tune of INR 500,000 crores over the next 3-5 years. Moreover, as per the Government Commitments, the Digital India Programme itself will require investments to the tune of Rs. 113,000 crores. Additionally, the Planning Commission’s 12th Five Year Plan requires an investment of INR 943,899 crores with 93% of the total investment expected to come from the private sector. It was the flexibility of service pricing that was permitted to the TSPs that led to the mass adoption of voice services. A similar approach is warranted for ensuring adoption of data services. However, the entrepreneurs are reluctant to start a new Internet based businesses when online customers are limited due to low adoption of data services. On the other hand, in such a price-sensitive market such as India, without local businesses providing relevant information, content and services in the local languages, the potential customers are unwilling to invest in expensive data plans for their smartphones. There is thus a serious danger of getting trapped in a low connectivity syndrome and slipping further behind other nations in the various connectivity indices. One of the ways to

break the spiral is to encourage a market friendly approach which allows price differentiation.

4. Price Differentiation – How is it beneficial?

- a. As noted by the Authority, the TTO 1999 provides that the TSP shall not discriminate between subscribers of the same class and such classification shall not be arbitrary. Thus, as long as there is a clear differentiation in the classification of subscribers, differential pricing is permitted even under the existing regime.
 - b. Both online content providers and mobile broadband services are characterized by dynamic competition – that is, both industries make large, non-recoupable investments in R&D and physical infrastructure. In such industries, the average cost curve is declining over the relevant range of output: Simply put, it always costs less to produce an incremental unit of output than it costs, on average, to make the previous ones. In such industries, consumer welfare can be increased if firms are able to identify and offer discounts to “marginal” customers, that is, those with lower willingness (or ability) to pay, thus expanding the size of the market and generating the additional revenues that can be used to defray the fixed costs of investment and innovation. It is widely agreed that such differential pricing is not only widespread, but generally improves economic efficiency and increases consumer welfare. Since, connected and poorly connected are two distinct classes, so price differentiation should be allowed.
-
- c. **The benefits of price differentiation are as follows:**
 - i. **Improves Economic Efficiency:** As per a Research Paper by Jeffrey A. Eisenach, Ph.D., bundling of wireless service and content is a mechanism by which mobile carriers engage in efficient price differentiation, thereby creating the ability for marginal consumers to pay a reduced price by choosing a differentiated product in the form of a “basic” form of online access. In doing so, it improves economic efficiency by supporting continuing investment and innovation in both networks and content while expanding Internet access to consumers who would otherwise be unserved (**Refer to Annexure-2**).
 - ii. **Increase in Broadband Penetration:** In the research paper by Economist Diana Carew, it has been shown that developing countries of sub Saharan Africa, Philippines, Turkey, etc. that had already adopted free access to data services show more people connecting to the internet in these countries (**Refer to Annexure-3**).
 - iii. **Enhance Social Benefits:** As per a Research Paper by Mr. Christopher S. Yoo, University of Pennsylvania Law School, when a market is two-sided, instead of bringing

together a single class of similarly situated users, networks bring together two completely different classes of users. In those cases, the value is determined not by the number of users of the same class, but rather by the number of users of the other class. As per the paper, it may be socially beneficial for content and application providers to subsidize the prices paid by end users. An advertiser's willingness to pay for an ad on a particular website depends on the number of end users viewing that website. Under these circumstances, the optimal solution may be for the website owner to subsidize the total number of end users by making payments to the network provider to help defray their costs of connection. The costs of subsidizing more users would be more than offset by the additional revenue generated by the fact that advertisers can now reach more potential customers. In the case of broadband, this would be both economically efficient and would be a boon to consumers both in terms of providing service in more geographic areas and in reducing the prices that consumers pay. (**Refer to Annexure - 4**).

- iv. **Reduction in Cost Borne by Customers:** Granting network providers pricing flexibility with respect to content and application providers would reduce the percentage of the network costs borne by consumers.
 - v. **Benefits Consumers as well as Increases Competition:** Differential tariff plans would benefit consumers as it provides more value for money for the consumers and increases competition.
 - vi. **Essential for Providing a Satisfactory Quality of Service to Consumers:** As per a Research Paper by Dr. Jeffrey H. Reed and Dr. Nishith D. Tripathi on Technical Challenges of Mobile Broadband Networks, differentiation among users and user services is required to provide a satisfactory quality of service to consumers (**Refer to Annexure -5**).
 - vii. **Provision of Essential services:** There are certain essential services such as healthcare and emergency services that operators need to provide to customers. These are typically provided free of cost (in some cases are mandatory to be provided free of cost) for the benefit of customers. Thus, provision of such services requires price differentiation.
- d. Thus, for developing world countries (like India), discounted plans can be an effective tool to bridge the digital divide and get millions on to the internet in a shorter timeframe. It can help deliver governance and services to millions. For a country like India, such innovation can only help replicate the mobile voice revolution in the data services/internet space. In the end, the customer should have the choice and should be free to decide what they want and the way they want. Our commitment should be to offer that content without discrimination. Thus, anything which facilitates the entry of unconnected citizens to the data services world should be permitted and encouraged.

5. Price Differentiation – Concerns/Apprehensions of Misuse can be Addressed

- a. The Authority has raised a concern that TSPs could in the future come up with differentiated tariff offers wherein they disincentivize access to certain websites by putting higher tariffs for accessing them. We would like to highlight that the discounted data tariff plans are open for all the subscribers without discrimination, further discounted data tariffs are also open to all types of websites/applications without discrimination. However, it is brought out that by resorting to disincentivizing/prohibitive pricing practices, TSPs would risk to preclude a certain set of subscribers from its subscriber base, which no TSP can afford in such a highly competitive market as India. Operators should have flexibility whether to charge or not charge these websites for providing a particular discounted access to customers
- b. TRAI has stated that differential tariffs may result in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). It is brought out that the service offerings of TSPs are based on the preferences of the customers only. We submit that classification of subscribers based on the content is beneficial for the subscribers as in the absence of discounted rates all subscribers pay at standard rate and thus, subscribers who cannot afford to pay the standard rates remain unconnected.
- c. TRAI has pointed that providers may have difficulty in attracting users if substitutes exist for free. This may thus, create entry barriers and non-level playing field for these players stifling innovation. Therefore, the tariff offerings have to be studied from the perspective of whether it promotes or harms competition. As per a Research Paper by Diana Carew, the power of zero-rating to nourish an Internet ecosystem in poor and developing countries comes from its potential to increase connectivity by both people and businesses quickly and at low-cost. First, free access to popular sites encourages more people to sign up for data service plans, and enables greater data freedom to explore local content. Second, the increase in demand for local content spurs local businesses and entrepreneurs to create new online products and services—for example, information on Ebola outbreaks, typhoon warnings, or even wait times at local stores and government offices. Moreover, the higher share of population online justifies efforts of government agencies to go digital, which in turn encourages more business and individuals to join the internet ecosystem. Taken together, zero-rating can effectively jump start a virtuous feedback loop that moves the local economy into a high-connectivity equilibrium. Thus, such discounted plans foster innovation and do not harm the competition. New content providers generally don't have established infrastructure to deal with end users on an individual basis. The marketing, distribution and billing platforms of network operators can be utilised by these providers and the charges for these services built into a composite amount where the content provider pays the network operator and offers content free to the customers. Such arrangements help the smaller content providers to market their content and compete with established providers in the broader internet ecosystem. (**Refer to Annexure - 3**).

d. Concerns that discounted/zero rated plans could serve as a means of foreclosing competition, or limit freedom of expression, appear misplaced and lacking both theoretical and empirical support (**Refer to Annexure – 2**). Further, a Research Paper by Roslyn Layton, Center for Communication Media and Information Technologies concludes that there is no evidence that shows that zero rating creates harm. (**Refer to Annexure – 6**).

6. Existence of Strong Legal Framework

- a. The overwhelming majority of countries do not require specific regimes as the existing legal regimes provide sufficient protection against truly distortive behavior by operators without stifling innovative offers that enable smaller competitors to enter the market. In India also, the existing legal regimes provide sufficient protection against any truly distortive behavior by operators. All Internet transactions are governed by the same laws that govern other commercial transactions. These include:
 - i. Indian Contract Act, 1872
 - ii. Indian Penal Code, 1860
 - iii. Intellectual Property Rights (especially Copyright Act, 1957)
 - iv. Competition Act, 2002
 - v. Information Technology Act, 2000
 - vi. Consumer Protection Act, 1986
- b. In order to deal with various anti-competitive, ambiguous, predatory, monopolistic issues, etc., there are relevant provisions under Competition Act, Copyright (Amendment) Act, 2012, Consumer Protection Act, 1986.
- c. Thus, adequate rules/acts are already in place to take care of any disadvantage resulting from price differentiation in case of data services.
- d. Evaluation of tariff offerings on a case by case basis can be adopted by TRAI to check for consumer harm in consonance with global best-practices including those adopted by the Federal Communications Commission (FCC) in the United States and by the European Union. Further, the issue of content/data differentiation needs to be seen from the point of view of customer classification and not platform-operators classification as content regulation is outside the purview of TRAI Act.

7. Price Differentiation versus price discrimination

- a. We would like to highlight the fact that differentiation is not discrimination. In fact, differentiation can be positively beneficial and enhance consumer welfare, while discrimination is a negative concept and consciously harms certain segments. In tariff plans that are positively differentiating, no segment is disadvantaged through increase in tariffs,

while some segments that are currently unconnected or poorly connected, are facilitated access to at least a part of the internet. There is no element of compulsion in such differential offerings nor is there any blocking or throttling.

8. Examples of price differentiation in other industries and how it helped?

- a. Service Differentiation is a common business practice that is widely practiced across various industries. Examples:
 - i. E-commerce companies have recently signed deals with handset manufacturers to sell their handset exclusively on their website, which otherwise was not available on other platforms. Even the price of same product was different on different e-commerce platforms.
 - ii. Many insurance companies are selling their products on their website at a much lower rate than the usual (off-line) method to save their operational cost. Many tour and travel companies provide additional benefits to their customers if they buy tour packages online. While such discounts for a similar product/service vary from one website/platform to another website/platform; however, they are still not viewed as anti-competitive and discriminatory in any manner.
 - iii. Same room in the same hotel can be booked through different ways at different prices
 - iv. Tatkal rail ticket versus a normal rail ticket for the same journey in the same train.
 - v. Same seat in economy class in airlines sold at different price on different websites
 - vi. Same Mineral water sold at higher price in multiplex versus a retail shop
- b. Price differentiation in these industries has helped them to flourish by reducing the consumer surplus and meeting the customized consumer demand. It has helped both the sides of the market; consumers get a choice in terms of offering while the suppliers/producers get the flexibility of tapping different segments of the market.
- c. Thus, price differentiation is adopted as a legitimate business advocating strategy and similarly, TSPs too should be allowed to define products with differential pricing.

9. Price Differentiation ought to be Principle based

- a. As per the provisions of the TTO, 1999 and its amendments, the tariff for data services (Internet) is under forbearance. However, all TSPs have to comply with regulatory principles of inter-alia, non-discrimination and non-predation. We support a principle based robust approach {{Fair, Reasonable and Non-Discriminatory (FRAND)}}.
- b. In the research paper by Economist Diana Carew, she has advised adoption of robust core principles for regulatory oversight of the system such as Transparency, Non-exclusivity, Local content, regular reporting (**Refer to Annexure -3**). For the growth of data services, price differentiation for data services can be allowed on the basis of following principles:

- i. Focus on the foremost priority – connecting the unconnected.
- ii. Transparency – all zero-rating offerings be equally accessible to all customers of the operator.
- iii. Non-exclusivity – there should be no agreement that prohibits multiple operators from offering the same zero-rated content. This will mitigate fears of anti-competitive behavior.
- iv. No anti-competitive behavior and no discrimination
- v. Non predatory, non-ambiguous and not misleading
- vi. Local content – when possible, mobile operators should also zero-rate some basic local content, such as local government services or local healthcare and weather alerts.
- vii. Regular reporting from operators to facilitate ongoing evaluation and fine-tuning.

10. Conclusion

- a. At our stage of development, our highest need is internet adoption and increased data usage and whatever facilitates that healthily needs to be supported.
- b. Differential pricing plans are important to meet the needs of various segments of consumers. Imposing regulation that thwart such developments threaten to increase costs and discourage investment in ways that ultimately work to the detriment of the consumers that such regulation is ostensibly designed to protect.
- c. Price differentiation should be based on the following principles:
 - i. FRAND
 - ii. Focus on priority of connecting the unconnected
 - iii. Transparency
 - iv. Non-exclusivity
 - v. No anti-competitive behaviour and no discrimination
 - vi. Non predatory, non-ambiguous and not misleading
 - vii. Regular reporting
- d. No ex-ante regulation is required since the market is vibrant enough. On ex-post basis, TRAI can examine tariff plans on a case by case basis after giving a reasonable opportunity to the operators of being heard.

In keeping with the stated aim of enhancing the adoption and usage of content available over the internet and not other services like M2M/VoIP, etc., our detailed response to TRAI's queries are as given in the subsequent paragraphs.

Issue-wise Response:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response

1. As highlighted in the preamble TSP's should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms as long as the Differential Pricing Schemes does not violate Principles of Transparency, Non-exclusivity, Non-Discrimination, Not Anti-competitive, Non-Predatory. We support the principle of FRAND (Fair, Reasonable and Non-Discriminatory). For the growth of data service, price differentiation for data services can be allowed on the basis of following principles:
 - a. FRAND
 - b. Focus on the foremost priority – connecting the unconnected.
 - c. Transparency – all zero-rating offerings be equally accessible to all customers of the operator.
 - d. Non-exclusivity – there should be no agreement that prohibits multiple operators from offering the same zero-rated content. This will mitigate fears of anti-competitive behavior.
 - e. No anti-competitive behavior and no discrimination
 - f. Non predatory, non-ambiguous and not misleading
 - g. Regular reporting from operators to facilitate ongoing evaluation and fine-tuning.
2. We firmly believe that the differential pricing is critical for promoting innovation in the Internet eco-system, bringing more people online and for greater digital equality, digital economy, digital infrastructure (such as high speed mobile broadband, digital identity, financial inclusion), digital empowerment (such as local content, digital literacy, participative governance through mobiles, digital locker) and promoting government & services on-demand. It is also essential for promoting the vision of 'Make in India' where getting small manufacturers on to supply chain of e-commerce players will need significant innovation in pricing and access.
3. TSPs are already offering differential tariffs for various voice and SMS components, such as Local Call, STD Call, ISD Call, Roaming Call, On and Off Net Call, Day and Night Call. Such differential tariffs for voice have only enhanced the affordability of telecom services in India. On the contrary, a uniform tariff for all types of calls would have increased the call rates in India especially the local call and would have adversely affect the interest of low-pricing customers.
4. TSPs should be allowed to offer differential tariff for specific content/website, provided it is non-discriminatory. Currently, Internet-based companies are experimenting with various

marketing innovations and business models to promote their websites/platform/services and differential data service plans including zero rating can facilitate such marketing innovation/business models. Therefore, TSPs should be allowed to offer differential tariff for specific content/website till it is non-discriminatory. Classification based on the Content Providers should be considered. A Content Provider can have a non-exclusive agreement with the TSP so that the zero-rated service could be made available to other TSPs. Furthermore, TSPs' zero/discounted rating platform should be open to all content providers in a non-discriminatory manner and based on FRAND principle.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response

1. As stated in the answer to Question-1 forbearance should apply on Data Tariffs and the Differential Pricing Schemes should be allowed if the same are defended successfully on the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation.
2. The differential data plan being offered by the operators must conform to the set of principles as highlighted above. TRAI may examine a particular data plan of the operator and determine whether the tariff plan conforms to the above highlighted principles.
3. On ex-post basis, TRAI can examine tariff plans on a case by case basis after giving a reasonable opportunity to the operators of being heard.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response

Differentiated pricing for data services is not the only method by which access can be promoted. At the same time, it is important to note that it was indeed TRAI's forbearance policy that resulted in the creation of such diverse offerings which has led to increased internet adoption in India. However, we believe that Direct Benefit Transfer (DBT) is not the right way of differential tariff as the same has the potential to be misused.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response

1. In order to bridge the digital divide and ensure that all Indians have affordable access to the Internet, it is important for all concerned stakeholders come together to work towards universal and affordable access. In this regard, innovation in tariff offerings must be seen in the context of broader policy reforms required to promote this objective.
2. We encourage engagement on related issues including spectrum, networks and infrastructure reforms, adoption-promotion measures and the speedy implementation of BharatNet.
3. **We reiterate that COAI and AUSPI are fully committed towards connecting the 1 Billion Unconnected Citizens of India and fully supports the digital India vision** of the government and suggests adoption of policies and promoting ecosystem which enables fulfilment of this vision. In order to achieve digital literacy, the broadband/internet must be made affordable.
4. **A Progressive Data Tariff Policy is crucial for development of Mobile Broadband and Internet Ecosystem**
 - a. In a price-sensitive market like India, the policy on data tariff will be a key determinant of take-up of data usage. A flexible and progressive data tariff policy will lead to high mobile data services usage, which would translate into greater adoption of mobile internet and broadband services.
 - b. The roll-out of broadband services are at the inflexion of growth and it is universally accepted that India has one of the most competitive telecom markets in the world and therefore any tariff offering or pricing structure that boosts the internet ecosystem needs to be seriously considered and not prejudged and forbidden through a blanket ruling on grounds of inapplicable apprehensions of discrimination. Such a ban would constitute a welfare-reducing measure of high concern by blocking a possible avenue for our less-advantaged citizens to move to increased economic growth and prosperity by harnessing the power of the Internet.
5. **State of Broadband/Internet Penetration in India**
 - a. **Status of Broadband:** India is a market where 80% of the population still does not have the benefit of mobile data services.
 - b. **Importance of Broadband:** Improved access to broadband and internet services would promote economic and social growth.

Economic and Social Impact of Improved Internet Access in the Developing World	
Productivity Gains	+25%
Total GDP Improvement	\$2.2 Trillion
GDP Growth Gain	+72%
New Jobs	140 Million Jobs
Personal Income Gains	\$600 Per Person Each Year
Number Lifted Out of Extreme Poverty	160 Million People
Lives Saved Through Improved Health Care	2.5 Million Lives

Source: Brookings, Deloitte, Value of connectivity: Economic and social benefits of expanding internet access, February, 2014.

- c. **Affordable Broadband Services:** The immediate priority in India is to ensure that the affordable broadband services are adopted and utilized by a vast mass of unconnected and low net usage citizens. This is absolutely critical for the success of Digital India and for speedier and inclusive economic development.
- d. **Investments Required:** The roll-out of Broadband and Internet services requires enormous investments to the tune of INR 500,000 crores over the next 3-5 years. Moreover, as per the Government Commitments, the Digital India Programme itself will require investments to the tune of Rs. 113,000 crores. Additionally, the Planning Commission's 12th Five Year Plan requires an investment of INR 943,899 crores with 93% of the total investment expected to come from the private sector. It was the flexibility of service pricing that was permitted to the TSPs that led to the mass adoption of voice services. A similar approach is warranted for ensuring adoption of data services. However, the entrepreneurs are reluctant to start new Internet based businesses when online customers are limited due to low adoption of data services. On the other hand, in such a price-sensitive market such as India, without local businesses providing relevant information, content and services in the local languages, the potential customers are unwilling to invest in expensive data plans for their smartphones. There is thus a serious danger of getting trapped in a low connectivity syndrome and slipping further behind other nations in the various connectivity indices. One of the ways to break the spiral is to encourage market friendly approach which allows price differentiation.

6. Price Differentiation – How is it beneficial?

- a. As noted by the Authority, the TTO 1999 provides that the TSP shall not discriminate between subscribers of the same class and such classification shall not be arbitrary. Thus, as long as there is a clear differentiation in the classification of subscribers, differential pricing is permitted even under the existing regime.
- b. Both online content providers and mobile broadband services are characterized by dynamic competition – that is, both industries make large, non-recoupable investments in R&D and physical infrastructure which are largely invariant to the number of users. In such industries, the average cost curve is declining over the relevant range of output: Simply put, it always

costs less to produce an incremental unit of output than it costs, on average, to make the previous ones. In such industries, consumer welfare can be increased if firms are able to identify and offer discounts to “marginal” customers, that is, those with lower willingness (or ability) to pay, thus expanding the size of the market and generating the additional revenues that can be used to defray the fixed costs of investment and innovation. It is widely agreed that such differential pricing is not only widespread, but generally improves economic efficiency and increases consumer welfare. Since, connected and poorly connected are two distinct classes, so price differentiation should be allowed.

c. **The benefits of price differentiation are as follows:**

- i. Improves Economic Efficiency
 - ii. Increase in Broadband Penetration
 - iii. Enhance Social Benefits
 - iv. Reduction in Cost Borne by Customers
 - v. Benefits Consumers as well as Increases Competition
 - vi. Essential for Providing a Satisfactory Quality of Service to Consumers
 - vii. Provision of Essential services
- d. Thus, for developing world countries (like India), discounted plans can be an effective tool to bridge the digital divide and get millions on to the internet in a shorter timeframe. It can help deliver governance and services to millions. For a country like India, such innovation can only help replicate the mobile voice revolution in the data services /internet space. In the end, the customer should have the choice and should be free to decide what they want and the way they want. Our commitment should be to offer that content without discrimination. Thus, anything which facilitates the entry of unconnected citizens to the data world should be permitted and encouraged.
- e. Concerns/Apprehensions of TRAI related to price differentiation can be addressed.

7. Existence of Strong Legal Framework

- a. Adequate rules/acts are already in place to take care of any disadvantage resulting from price differentiation in case of data services.
- b. Evaluation of tariff offerings on a case by case basis can be adopted by TRAI to check for consumer harm in consonance with global best-practices including those adopted by the Federal Communications Commission (FCC) in the United States and by the European Union. Further, the issue of content/data differentiation needs to be seen from the point of view of customer classification and not platform-operators classification as content regulation is outside the purview of TRAI Act.

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- a. As per the provisions of the TTO, 1999 and its amendments, the tariff for data (Internet) is under forbearance. However, all TSPs have to comply with regulatory principles of inter-alia, non-discrimination and non-predation. We support a principle based robust approach {{Fair, Reasonable and Non-Discriminatory (FRAND)}}.
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 - vii. Regular reporting from operators to facilitate ongoing evaluation and fine-tuning.

Digital divide: Improving Internet access in the developing world through affordable services and diverse content

By Darrell M. West

EXECUTIVE SUMMARY



Darrell M. West
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Over 3.1 billion people in the world have access to the Internet. This includes around 642 million Chinese, 280 million Americans, 243 million Indians, 109 million Japanese, 108 million Brazilians, and 84 million Russians, among others.¹ These individuals use the Internet for economic development, entrepreneurship, education, and health care.

However, that leaves roughly 4.2 billion people outside the digital revolution. With Internet usage growing only 9 percent a year, around 58 percent of the world lacks Internet access.² Those individuals are unable to enjoy the social, economic, and civic benefits that derive from digital connectivity.

In this paper, I discuss the factors that make it difficult for people in the developing world to obtain Internet access and ways to promote greater connectivity. There are a number of steps that would narrow the current divide between Internet users and non-users, and foster a robust and open Internet. When individuals go online, they need affordable services, diverse content, reasonable costs, reliable infrastructure, uncensored information, and local language translation.

Zero rating programs represent effective ways to bring poor people from the developing world into the digital era and promote innovation and competition in the Internet sector. These programs enable people who lack the financial resources for expensive data plans to use certain applications without having that usage charged towards the individual's data cap. Around 45 percent of mobile operators around the world offer some type of zero rating services.³ If countries can make progress in bringing unconnected people to the Internet, it would encourage greater economic development, improve education and health care, and strengthen civil society around the world.

Reducing taxes on mobile service providers and equipment also would boost Internet usage and thereby improve access to the digital economy. It is estimated that reducing mobile taxes would add up to 600,000 new subscribers in Mexico, 1,050,000 in Brazil, 620,000 in South Africa, 277,000 in Bangladesh, and 530,000 in Malaysia.⁴

Half of the world's unconnected (2.2 of the 4.3 billion) reside in China and India so those countries deserve special attention in terms of the need to improve Internet access and content. Addressing cost barriers, perhaps through zero rating programs, and providing diverse and uncensored content would go a long way toward reducing their digital divide. Those steps would bring their residents more closely to the technology era and provide access to valuable tools for economic development, social engagement, and public expression.

KEY BARRIERS TO INTERNET ACCESS IN THE DEVELOPING WORLD

There are a number of factors that make it difficult for people to obtain access to the Internet. These include things such as poverty; high device, data, and telecommunications charges; infrastructure barriers; digital literacy challenges; and policy and operational barriers. These challenges represent significant barriers for millions of people in the developing world.

Poverty, expensive devices, and high telecommunications fees

Lacking disposable financial resources makes it difficult to purchase devices or gain access to digital services. According to a Deloitte study, "income levels are a key barrier to internet access, and internet penetration is often the lowest in countries with the lowest GDP per capita."⁵ Unless these individuals can utilize free or cheap products, they won't be able to gain the benefits of the technology revolution.

Global income statistics reveal that almost one-quarter of the world lives at a subsistence level on less than \$1.25 per day. The Oxford Poverty & Human Development Initiative estimates that about 1.6 billion people fall below that threshold and live in extreme poverty. Around half of these individuals reside in South Asia and 29 percent live in sub-Saharan Africa.⁶

Even if people have higher incomes, expensive devices and data costs make it impossible to access digital services. Users must cover the device, connection fees, call costs, text messaging expenses, and broadband access. Cellphones and smartphones are expensive, and data plans put Internet access out of the range of many individuals.

In India, for example, smart phones run as much as \$125, which is well above the affordability of many Indians.⁷ According to a Gallup survey, the annual median household income there is \$3,168.⁸ Even though the price in some parts of that country has dropped below that level, that device cost still puts Internet-enabled phones beyond the financial capabilities of millions

In India, for example, smart phones run as much as \$125, which is well above the affordability of many Indians. According to a Gallup survey, the annual median household income there is \$3,168. Even though the price in some parts of that country has dropped below that level, that device cost still puts Internet-enabled phones beyond the financial capabilities of millions of people given their need to cover the costs of food, housing, and transportation.

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Data charges also are very expensive. It is costly for users to access data and the more they use their phone, the more expensive it is going to be. And with video services coming online, data access fees likely will remain high in the near future.¹⁰

One of the reasons why telecommunications costs are high in India is that there are relatively few Internet service providers. The resulting lack of competition leads to large fees. Accessing one megabyte per second costs around \$61, which makes it very expensive for the average person. Indians have broadband access charges that are “more than four times that of China, Brazil and Argentina, and 20 to 30 percent higher than that of Vietnam and Malaysia.”¹¹

In addition, per capita income in Brazil and China is double or triple that of India. Yet the average smartphone cost in those places runs between \$200 to \$300.¹² This again presents insurmountable barriers to digital access in those parts of the world.

In China, users complain about the high costs of 4G service.¹³ They say this service costs five times what the same products run in Hong Kong. Expensive service makes it difficult to gain access to the Internet and give people the products they desire. Part of the problem on the mainland is the lack of telecommunications competition. China Mobile has a near-monopoly there, compared to the multiple providers in Hong Kong, and this keeps costs high.

These barriers are not limited to poorer countries. Even in a developed country such as the United States, there are access issues linked to income levels. There is a well-documented connection between income and smartphone ownership. According to survey data, 81 percent of people having incomes above \$75,000 own smartphones, compared to 47 percent for those earning below \$30,000.¹⁴

Poor infrastructure, digital illiteracy, and lack of digital trust

Weak infrastructure is a major barrier to digital access. This includes things such as fiber optic lines, cell towers, Internet routers, wireless spectrum, reliable electricity, and the like. It is one

of the reasons why Internet penetration is much lower in rural than urban areas. In India, for example, nine percent of rural dwellers have access to the Internet, compared to 64 percent of those living in metropolitan areas. Weak infrastructure is a serious limiting factor in that nation's Internet penetration level.¹⁵

In other countries, there are substantial differences in Internet usage based on age groups. In China, for example, around half of Internet users are under the age of 30 years old. When one looks at the overall usage distribution by age, 25.7 percent of those younger than 19 use the Internet, compared to 30.4 percent among those 20 to 29, 25 percent for those 30 to 39, 12.4 percent for people 40 to 49, and 6.2 percent among those 50 or older.¹⁶

Part of the challenge for older people is a lack of digital literacy. Many of them do not access the Internet because they do not understand its benefits or they fear its risks. In an online survey of India's businesses, numerous respondents "cited the lack of education on using the Internet as among the top three reasons that prevent consumers from using the Internet." Overall, literacy remains low in India secondary school enrollment is limited among impoverished parts of the population. This is especially the case in rural areas.¹⁷

A number of senior citizens in India have disabilities that impede technology usage. Around 40 percent claim they have a "physical or health condition that makes reading difficult or challenging" or a "disability, handicap, or chronic disease that prevents them from fully participating in many common daily activities". People in this category are far less likely (49 percent) to go online compared to seniors with few physical impairments (66 percent).¹⁸

In China, many of the elderly cite a lack of trust in the Internet. For them, technology is new and unknown, and therefore seen as risky or dangerous. They report high levels of stress and anxiety in learning how to use the Internet. Others express worry about computer viruses, hacking, surveillance, or identity theft. They read stories about unwanted intrusions and fear that their identities will be compromised.¹⁹

For the world as a whole, a report from McKinsey estimates that 18 percent of non-Internet users are senior citizens, 28 percent are illiterate, 52 percent are female, and 50 percent have

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incomes below their country's poverty line.²⁰ The variation in kinds of non-users suggests different groups face contrasting barriers to Internet access.

Policy, taxes, and operational barriers

Many countries in the developing world have policy and operational barriers that constrain Internet usage. This includes things such as monopoly telecommunications providers, tech sector taxes, lack of digital content, the absence of local language content, and censorship by civil or governmental authorities.

Monopolies keep telecommunications prices high and make it difficult for impoverished residents to access digital services. Insufficient digital content prevents people from understanding the benefits of the digital world and seeing how they personally could gain from the Internet. In many places, content may be available only in a non-native language and that keeps local speakers from accessing Internet services.

Some places, such as Mexico, South Africa, Bangladesh, Malaysia, and Brazil have taxes on mobile broadband that discourage Internet access. These "connectivity taxes" and fees increase the cost of mobile services and represent a significant barrier, especially for underserved communities where affordability is a major consideration. In those places, it is hard to expand Internet usage when people can't afford mobile devices or services due to high taxation. Similarly, some countries impose per-user fees on mobile operators, discouraging them from investing in services for unconnected communities (because they will generate less revenue, yet comparable tax bills.)

Reducing these taxes is an effective way to expand Internet access. As shown in Table 1, a Telecom Advisory Services study by Raul Katz, Ernesto Flores-Roux, and Judith Mariscal finds that reducing the Mexico mobile tax from 16.1 to 15.1 percent would increase the number of mobile subscribers between 300,000 and 600,000. Brazil has a 43.3 percent tax on mobile services that if reduced by one percentage point, could raise the number of subscribers between 520,000 and 1,050,000. The South Africa tax is 14.9 percent and a cut in it by one point would increase the subscribers between 310,000 and 620,000 people. The Bangladesh tax is at 54.8 percent. Cutting it by one point would raise the subscribers by 137,000 to 277,000 individuals. Malaysia has a 6.1 percent tax and a reduction there would increase subscribers between 260,000 and 530,000 people.²¹

**TABLE 1: IMPACT OF MOBILE TAX REDUCTION
ON NUMBER OF NEW MOBILE SUBSCRIBERS**

Mexico	300,000-600,000 new subscribers
Brazil	520,000-1,050,000
South Africa	310,000-620,000
Bangladesh	137,000-277,000
Malaysia	260,000-530,000

Source: Raul Katz, Ernesto Flores-Roux, and Judith Mariscal, "The Impact of Taxation on the Development of the Mobile Broadband Sector," *Telecom Advisory Services for GSMA*, 2014, pp. 6-7.

A study by Deloitte for GSMA of mobile sector taxes in 19 countries found that mobile operators paid over \$13.5 billion in taxes. It concluded that "taxation on mobile services is more than 30 percent of mobile sector revenues in more than half of the 19 countries studied." In a number of these nations, half of the tax burden explicitly derives from taxes that target mobile operators. If this tax burden was decreased by one percentage point, its researchers estimated that mobile broadband penetration would increase by 1.8 percentage points and economic growth would rise by 0.7 percentage points (see Table 2).²²

**TABLE 2: IMPACT OF MOBILE TAX REDUCTION ON
BROADBAND PENETRATION AND ECONOMIC GROWTH**

Broadband Penetration	+1.8 Percentage Points
Economic Growth	+0.7 Percentage Points

Source: Deloitte for GSMA, "Mobile Taxes and Fees," February, 2014, p. 6.

Other nations have proposed new Internet usage taxes. The government of Hungary, for example, suggested that it would add 150 forints (around 60 cents) to each gigabyte downloaded and uploaded by Internet service providers in that nation. Prime Minister Viktor Orban proposed that this monthly tax be capped at 1,000 forints (around \$4).²³ However, following angry street protests, he shelved the excise tax, but indicated he wanted a broader discussion of ways to regulate and tax the Internet.²⁴

In addition, proposed regulations on Internet applications and services known as over-the-top (OTT) content can stifle innovation, inflate costs, and undermine efforts to expand access. Despite these harms, India is considering regulations on web-based calls and texts through

In some places, policy barriers take the form of censorship from the government or civil society that puts information behind a firewall or makes it difficult to access useful content. This is true in authoritarian societies where there is overt censorship. In China, for example, there are substantial barriers that block Internet content for millions of people. It is estimated that the government employs over 50,000 people whose primary job is censorship enforcement.

platforms such as Skype and WhatsApp.²⁵ In Europe, there have been similar requests to regulate these kinds of mobile services.²⁶

In some places, policy barriers take the form of censorship from the government or civil society that puts information behind a firewall or makes it difficult to access useful content. This is true in authoritarian societies where there is overt censorship. In China, for example, there are substantial barriers that block Internet content for millions of people. It is estimated that the government employs over 50,000 people whose primary job is censorship enforcement.²⁷ In other societies, isolationist values may insulate residents from the global world. Authorities in those nations use cultural rationales to keep digital information and services away from their people.

Addressing major policy and operational barriers is important because even though a rising number of people in the developing world have gained access to the Internet, many remain outside the digital revolution. Tanzania, for example, has seen substantial growth in access between 2010 and 2013, but most still do not use the web (see Table 3). Overall Internet usage has risen from 2.9 percent in 2010 to 4.4 percent in

2013. The number of individuals with fixed broadband subscriptions rose from 3,150 to 51,903 while those with mobile broadband subscriptions have risen from 466,918 to 1,332,519.

TABLE 3: INCREASE IN INTERNET USAGE IN TANZANIA

	2010	2011	2012	2013
Percent Using Internet	2.9	3.5	3.95	4.4
Number with Fixed Broadband Subscriptions	3,150	26,943	39,805	51,903
Number with Mobile Broadband Subscriptions	466,918	569,979	1,093,085	1,332,519

Source: International Telecommunication Union, "World Telecommunication/ICT Indicators Database", June, 2014.

Similar patterns have been seen in other nations. In Zambia, Internet usage has risen from 10 to 15.4 percent of the population (see Table 4). The number with fixed broadband subscriptions has risen from 10,267 to 10,850. Those with mobile broadband subscriptions have increased from 34,436 to 107,952.

TABLE 4: INCREASE IN INTERNET USAGE IN ZAMBIA

	2010	2011	2012	2013
Percent Using Internet	10	11.5	13.5	15.4
Number with Fixed Broadband Subscriptions	10,267	15,902	14,794	10,850
Number with Mobile Broadband Subscriptions	34,436	31,559	91,130	107,952

Source: International Telecommunication Union, "World Telecommunication/ICT Indicators Database", June, 2014.

Rwanda has seen an increase in the percentage of people using the Internet from 8 to 8.7 percent (see Table 5). The number with fixed broadband subscriptions has risen from 2,640 to 2,781 over the past four years. Those with mobile broadband subscriptions have gone from 3,502 to 686,800.

TABLE 5: INCREASE IN INTERNET USAGE IN RWANDA

	2010	2011	2012	2013
Percent Using Internet	8	7	8	8.7
Number with Fixed Broadband Subscriptions	2,640	4,994	2,716	2,781
Number with Mobile Broadband Subscriptions	3,502	116,512	368,477	686,800

Source: *International Telecommunication Union, "World Telecommunication/ICT Indicators Database"*, June, 2014.

The Philippines has seen some of the greatest growth as Internet usage has increased from 25 to 37 percent (see Table 6). Those with fixed broadband has gone from 1,722,400 to 2,572,800, while those with mobile broadband has gone from 2.1 to 26.8 million people.

TABLE 6: INCREASE IN INTERNET USAGE IN THE PHILIPPINES

	2010	2011	2012	2013
Percent Using Internet	25	29	36	37
Number with Fixed Broadband Subscriptions	1,722,400	1,791,000	2,146,600	2,572,800
Number with Mobile Broadband Subscriptions	2,175,300	3,190,000	23,200,000	26,800,000

Source: *International Telecommunication Union, "World Telecommunication/ICT Indicators Database"*, June, 2014.

WAYS TO IMPROVE ACCESS IN THE DEVELOPING WORLD

Given the benefits of digital technology, it is important to expand Internet access and bring digital services to a wider range of people. Key to improving access is reducing telecommunications costs and improving network efficiency, keeping connectivity taxes

But improved access is not just a question of government policy. It is important to implement new data compression and caching techniques that make telecommunications networks operate more efficiently. This can be lines that help electronic signals travel quickly, redesigning file servers, deploying open source hardware, or making more efficient use of spectrum.

reducing entry barriers into the sector. It is doing this by altering the rules on network sharing and allowing new firms to utilize the lines of established operators. The hope is that this new policy will double Mexico's current 26 percent Internet penetration level to something close to the 45 percent rate that exists in places such as Brazil.²⁸

In other countries, governments are eliminating barriers that protect monopoly providers from new companies. This includes opening up markets, encouraging venture capital firms to provide financing of new players, and allowing smaller operators to use existing wireless or fiber-optic networks. In order to provide consumer choices, companies require affordable means of connecting to established networks.²⁹

But improved access is not just a question of government policy. It is important to implement new data compression and caching techniques that make telecommunications networks operate more efficiently. This can be lines that help electronic signals travel quickly, redesigning file servers, deploying open source hardware, or making more efficient use of spectrum.³⁰

Compression techniques can reduce the cost of service delivery and therefore help operators provide better services without depleting their profits. According to Facebook chief executive

and licensing fees affordable, expanding digital infrastructure, strengthening digital literacy, providing diverse content, encouraging multilingualism and free expression, enabling affordable services, and promoting digital competition. As I discuss below, adoption of these ideas would narrow the gap between Internet users and non-users, and bring more people into the digital era.

Reducing Costs and Improving Network Efficiency

Reducing costs is vital to promoting access. There are different challenges in various countries ranging from high access charges and high taxes on service providers to pro-monopoly policies and insufficient networks. Data plans need to become more affordable and consumers must be able to benefit from policies that give them meaningful options.

An example of this is taking place in Mexico where a government agency, the Federal Telecommunications Institute, is seeking to promote consumer choice and thereby bring down telecommunications costs by

officer Mark Zuckerberg, “implementing compression in large scale apps or developing services that you route all your data through and compress everything would yield large data use savings.”³¹ Continuing, he noted that “the technology that some of our partners have developed to amplify data signal from inside buildings is a good example of the type of improvement that will help us achieve an order of magnitude improvement.”³² The company has launched an Open Compute Project designed to develop improved servers and data centers.

Keeping connectivity taxes and licensing fees affordable

High connectivity taxes and fees discourage the growth of online services and the economic benefits they offer. It is harder for firms that provide Internet service to make the necessary investments when their cost structures are too high. That impedes investment and makes it more difficult for the ecosystem to offer the products that consumers and businesses need in order to grow.

With this in mind, governments need connectivity policies that lower the cost of market access and encourage economic, social, and civic development. It is understandable that governments in developing nations adopt revenue-generating actions, but they need to be careful that mobile regulations and policies don’t stymie long-term economic growth. They should follow approaches that draw more people into the Internet and help them take advantage of digital goods and services. If people get higher quality Internet service, it will encourage them to engage in trade and commerce with others.

A similar rationale applies to licensing fees. Governments often use these to finance new projects or fund activities in other areas. Yet as shown in earlier sections, these kinds of fees can act as a disincentive for business investment and consumer access to the Internet. It is for that reason that mobile fees should be kept low in order to foster greater market access.

Expanding digital infrastructure

Other approaches to improving access involve improving digital infrastructure, especially in remote areas. For example, Google’s Project Loon tries to promote access through balloons. In 2013, engineers launched 30 balloons over New Zealand to test connectivity prospects. It gave antennas to people to allow them to access the Internet via the balloons.³³ The company now has expanded its experiments to other nations.

Several companies are testing drones as a vehicle for Internet service delivery. Google has purchased the

Early projects suggest that these kinds of unmanned vehicles can affordably provide service to medium-sized cities or remote rural areas that currently have no service.

drone manufacturer Titan as part of its efforts. Facebook meanwhile is using its Connectivity Lab to determine if drones can be an effective delivery system.³⁴ Early projects suggest that these kinds of unmanned vehicles can affordably provide service to medium-sized cities or remote rural areas that currently have no service.

Still others have suggested that new optical systems or lasers should be part of the digital ecosystem. According to Zuckerberg, “free space optical communication, or FSO, is a way of using light to transmit data through space. These are basically invisible laser beams in the infrared part of the spectrum. FSO is a promising technology that potentially allows us to dramatically boost the speed of internet connections.”³⁵

Earth satellites furthermore should become part of the infrastructure network. This can be done through low-Earth or geosynchronous Earth orbits. Satellites are more expensive than drones or balloons due to high manufacturing and launch costs. But as countries develop economically, satellites are likely to become more affordable and therefore help reduce gaps in digital access.

Improving digital literacy

For certain populations, improving digital access requires education regarding the value of online services. For example, showing people the value of diverse content and having consumers expand their usage of basic services can propel digital activities in a variety of other areas.

In India, for example, instructional classes train adults (especially rural dwellers, senior citizens, and poor people) how to use the Internet. They learn that they do not have to physically go to stores or government offices to access services or complete transactions. Through digital platforms or mobile apps, people can find the latest information on business opportunities and market conditions. This improves their ability to make effective decisions.³⁶ Through initiatives such as the National Knowledge Network, AADHAR (Unique Identification Authority of India), and eSeva, Indians can bring the most up-to-date information to their fingertips.³⁷

That country also has pioneered the National Optical Fibre Network that seeks to bring needed telecommunications service to rural areas and underserved populations. However, there isn't much money to support this network and it has been difficult to bring access to those who are outside the technology revolution.³⁸ Providing needed funding would improve service delivery and narrow the digital divide in Internet access.

The India Ministry of Information Technology has launched an “IT for Masses Program” program with the goal of improving digital literacy by 2020. This effort will train rural women on government services and provide loans and market information to would-be entrepreneurs.

India represents an interesting example of this problem as only around 12 percent of Indians speak English. For the country as a whole, there are 22 official languages, which complicate access to digital information. People are most likely to use the Internet when information is delivered in local languages, through multilingualism, or via image-based graphics. Reaching underserved populations or people who live in rural areas especially benefits from these kinds of presentations. Translations and pictures help people access information and gain the benefits of the digital era.

It has a budget of \$20 million to meet this goal and matches those in need of training with stakeholders who are digitally literate.³⁹

In other nations, officials have developed programs to train people on Internet usage. For example, Sri Lanka's Ministry of Education promotes digital literacy using computer learning centers and training programs.⁴⁰ They use libraries and schools after-hours to teach people how to make use of digital resources. This helps seniors understand the benefits of digital services for their day-to-day lives.

The value of diverse content

Having diverse content represents another way to encourage people to use digital services. For example, in the early days of desktop computing, having programs such as email, word processing, and spreadsheet management encouraged people to use computers. Once they mastered those programs, it was easy for them to find other software that appealed to them and enabled them to become more productive and efficient.

This also has been the case in terms of online services. One illustration is Ghana's CocoaLink project (www.worldcocoafoundtion.org) for the agricultural sector. It helps connect cocoa producers with industry experts in 15 communities. Those who have particular expertise can send text messages to others who need advice and consultation.

According to the World Cocoa Foundation, 3,720 people have registered for this service and around 100,000 SMS messages have been sent through the network. Among the inquiries that have been generated include information on production, distribution, and marketing. The goal is to generate additional revenue for markets and improve their overall livelihood. All it takes is a cell phone, with messages delivered in English or the local language. It is estimated that 65 percent of rural dwellers in western Ghana have cell phones.⁴¹

Similar developments have unfolded in India. Various agencies offer online services such as paying taxes, renewing driver's licenses, or ordering business permits. More than 40 percent of taxes now are paid online. This reduces the time required to visit government offices or provide paper documents for tax officials.⁴² It demonstrates that people are open to digital services when those products are affordable and accessible.

Encouraging multilingualism and free expression

Another way to improve digital access is through multilingualism and the use of local languages. According to British Professor Richard Rose, there are more than 6,900 different languages in the world. About 400 of them have at least one million speakers.⁴³ This "Tower of Babel" creates enormous challenges in terms of information access. Although English is the most common language on the Internet, it is the native language of only seven percent of the global population.⁴⁴ For people who don't speak English or whose language is not available over the Internet, it is hard to make digital information and services useful to them.

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Service providers there are starting to provide information in languages such as Hindi and Tamil in order to reach non-English speakers. Some of this is occurring through local content, while other services are incorporating translation features that allow people to tailor information to their own preferred language or dialect.⁴⁶

Government censorship remains a challenge in many places around the globe. Internet service providers sometimes are asked for confidential information on web viewership or electronic communications. Some social media platforms have been blocked in order to limit grass roots organizing or free expression that is critical of political leaders.⁴⁷ Discouraging these kinds of overt limits is vital in order to encourage more people to go online.

The benefits of zero rating practices

Many firms have launched what they call "zero rating" practices as a way to improve Internet access among the disenfranchised. This policy allows people who lack the financial resources for expensive data plans to use certain applications without having that usage charged towards the individual's data cap. It frees them to use the Internet and access various services without additional fees, and in conjunction with free Wi-Fi networks or library-based devices,

represents a way to bring digital access to those who otherwise could not pay for desired services.

It is estimated that 45 percent of mobile operators around the globe provide some type of zero rating applications.⁴⁸ Zero rating programs for popular services free up data that users can employ to explore other sites, including local ones. In many places, platforms such as Facebook, Google, and Wikipedia are very popular. Even in a diverse digital marketplace such as the United States, surveys show that people spend about 40 minutes each day on Facebook, and they rely upon that site for about 24 percent of the total time they spend on mobile devices.⁴⁹ In the developing world, usage is more concentrated on global Internet sites like Facebook, especially when tight data caps exist.

By exempting high-usage sites from data caps, operators give people the ability to see more of the web without spending additional money. Or to put it differently, zero rating can reduce the cost of Internet access to local sites for poor consumers because their consumption of data on global applications does not take their entire data caps. In the end, poor people get more data for their money.

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In a number of countries, zero rating services have enabled people to get access to the Internet who otherwise had no access. As shown in Table 7, an analysis of the Filipino Network Globe found that “what we’re seeing in Globe users is the number of people who are using the internet—the data—was doubled, and Globe subscribers have grown by 25%.”⁵⁰

In Paraguay, an Internet.org project has generated an increase in “the number of people using the internet by 50% over the course of the partnership and [an] increase [in the] daily data usage by more than 50%.” A partnership between technology companies and the TIGO mobile operator has brought 3 million new people to the Internet who previously lacked service.⁵¹

Meanwhile, several African nations have reported substantial upticks in Internet usage following introduction of Facebook Zero. The number of Facebook users, for example, rose 154 percent in Nigeria, 85 percent in Ghana, and 50 percent in Kenya. For the continent as a whole, there was a reported 114 percent increase in Facebook users after the launch of Zero.⁵²

TABLE 7: THE IMPACT OF ZERO RATING SERVICES ON INTERNET USAGE

Paraguay	+50%
Kenya	+50%
Ghana	+85%
Nigeria	+154%

Source: The Paraguay figure comes from Internet.org, "Connecting the World from the Sky," undated report, and the Nigeria, Ghana, and Kenya numbers come from April Deibert, "Google Free Zone and Facebook Zero: Products Targeting Developing Populations, Innovation Series, February 19, 2013.

At a recent Internet Governance Forum, zero rating programs were cited as a popular way to provide Internet service in developing nations.⁵³ For example, Wikipedia offers a "zero" version of its informational website for mobile platforms to 350 million people in 30 developing nations and it attracts around 65 million page views each month.⁵⁴ Facebook meanwhile offers a "zero" service through 50 operators globally that has enabled Internet usage by low income people.⁵⁵

Internet.org is an organization supported by companies such as Ericsson, Mediatek, Opera Software, Samsung, Facebook, Nokia, and Qualcomm dedicated to connecting the unconnected. Beginning in 2014, Internet.org is partnering with mobile operators to put together a diverse set of applications for people in a number of developing nations to access for free. The content is customized for local interest and language, providing access to basic services such as Accuweather, Facts for Life (how to raise healthy children), Kokoliko (a job board service), the Mobile Alliance for Maternal Action (information for new and expectant mothers), Facebook, Google Search, Wikipedia, and Women's Right Application (information on the rights of women), among many others.

This service has been popular in the countries where it has been launched. In Tanzania, for example, few individuals have Internet access, according to the Tanzania Communications Regulatory Authority. David Zacharia, the head of data and devices for mobile phone operator Tigo, predicted that the partnership would "accelerate internet penetration in the country but will also open new socio-economic opportunities to the users in the fields of education, technology and commerce".⁵⁶

One zero rating service in Tanzania that has proved very popular is text messaging for mothers and pregnant women. The program regularly sends them information designed to reduce infant mortality and improve maternal health. Over a two-year period, 500,000 parents received 40 million text messages about "safe motherhood". This helped reduce infant mortality by 64 percent and maternal mortality by 55 percent. Airtel Tanzania supports

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this service on a zero rating basis in order to improve health care in that nation.⁵⁷

In many parts of the developing world, telecommunications data plans are expensive and it is hard for people to afford plans themselves and the usage fees that accompany them. In these places, zero rating programs help people access valuable services in e-commerce, health care, education, and communications. For example, OLX is an online site for people to buy and sell things, and it attracts 360 million page views each day. Being included in the Internet.org app—which results in being able to access it without incurring data cap charges—is a major benefit for entrepreneurs.⁵⁸ This website dramatically expands access to digital services for natives who do not speak English.⁵⁹

In Zambia, the Women’s Rights Application (WRAPP) compiles information on women’s health and legal rights. Before connecting with Internet.org, only 1,000 women had used its website. But through the broader partnership, 15 percent of the country’s population that had access to the Internet was able to connect to the site.⁶⁰ This increased the reach and impact of the platform. According to Facebook chief operating officer Sheryl Sandberg, WRAPP allows a woman “to say to her husband, ‘I have the right to a vote’ or ‘I have the right to access health care.’ Sometimes women don’t know those things. The goal is that giving out this

information can be transformative and this is a very scalable way to do it.”⁶¹

Having access to applications developed by the Mobile Alliance for Maternal Action has a positive impact on child care. In Bangladesh, for example, 69 percent of mothers who accessed the site received medical care, compared to 32 percent of non-users (see Table 8). On average, site users had at least four clinical appointments where they received medical care for their young child.⁶²

TABLE 8: HOW TECHNOLOGY BOOSTS MEDICAL CARE

Technology Users	69% Get Medical Care
Technology Non-Users	32% Get Medical Care

Source: Caroline Fairchild, "For Facebook, Access to Women's Rights Information Is a Basic one." *Fortune*, August 14, 2014.

Promoting competition

Some critics assert that zero rating programs limit competition and are discriminatory. Their fear is that services that don't count against the data cap disadvantage all the other services which do count. This has led nations such as Chile to ban zero rating programs on grounds that they are anti-competitive and discriminatory.⁶³ In addition, the Norwegian Communications Authority has argued that zero rating practices violate net neutrality by advantaging certain types of services or applications.⁶⁴ The European Union is considering legislation that could limit zero rating practices.

Yet there are several reasons to dispute those criticisms. First, zero rating programs may encourage competition and limit discrimination by increasing access and fueling demand for Internet usage and Internet content. As an example, providing free Wi-Fi or access through public terminals in schools or libraries allows people to access zero rating services as well as those that count against data caps. Those who worry about discrimination assume people who get free services will limit themselves to those offerings and not utilize other services. In reality, people who go online access other products and find ways to limit their data cap charges.

Mobile providers in a number of countries offer their own zero rating programs. They are combining services from other firms with video streaming or popular applications that people like to use. As long as they draw on services from large as well as small companies and feature a diverse range of applications, they do not seriously limit consumer options or harm competition.⁶⁵

In fact, zero rating programs can promote competition, because they lead to more local eyeballs online, increasing demand for local content, and stimulating the local content creation sector. By offering costless access to global content and popular local content, zero rating gives consumers an incentive to get a phone and a data plan, which in turn, creates more of an audience for local content providers. Thus, zero rating can increase demand for local developers and local content, and promote greater competitiveness and diversity in the process. It is also a way for mobile wireless firms to differentiate themselves from competitors by bundling "unique" content with their mobile wireless services, increasing competition among mobile operators and potentially further lowering data costs.

Officials in many places believe that zero rating programs benefit consumers, especially those from disadvantaged backgrounds. Alejandro Pisanty, director general for academic computing services at the National University of Mexico, says that “users of zero rated programs combine them with wifi network access to access the rest of the internet.”⁶⁶ This brings the virtues of the Internet to people who otherwise would have no connectivity.

Participants in a recent Internet Governance Forum rejected the anti-competition argument on grounds that “the programs are offered on a non-discriminatory basis, so other services can also be a part of the package.”⁶⁷ Helani Galpaya, the chief executive officer of LIRNEasia, claims that a way to promote competition is to combine partnerships with locally-developed apps and government services. That would guarantee there is diverse content and create a market for local programmers.⁶⁸

A way to stimulate local applications is through prize competitions. In India, for example, an Innovation Challenge project awards \$250,000 to the top app, website, or service that helps women, students, farmers, or migrant workers. There also are Impact Award prizes of \$25,000 in each of these four categories. These kinds of cash prizes encourage developers to make digital services that will improve the daily lives of regular folks.⁶⁹

In short, zero rating services offer the advantage of improving digital access for those who otherwise cannot afford Internet services, as well as increasing the amount of connectivity available to those who currently have minimal internet access. Concerns that these programs could threaten competition are mitigated because such efforts are designed to free up data under caps and allow users to browse content they would not otherwise choose to view. This stimulates demand for local content and innovation, and helps government and business pursue initiatives that provide inexpensive internet access through Wi-Fi or publicly-available terminals. Overall, zero rating programs build tremendous public value in developing markets by creating demand for local content and significantly expanding Internet access, including to sites that are not zero-rated. The benefits of free services encourage people to seek products that bring them into the electronic world.

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THE BENEFITS OF IMPROVED INTERNET ACCESS IN THE DEVELOPING WORLD

If countries in the developing world can make progress on Internet access, it would stimulate consumer demand, move millions out of poverty, and create enormous opportunities for economic development and social inclusion on many different fronts. Having a robust, diverse, and open Internet ecosystem would be beneficial to many different people.

Economic growth

Improved Internet access would promote economic growth and move large numbers of people out of poverty. According to a Deloitte study, “extending internet access to levels seen in developed countries today means that long run productivity could be enhanced by as much as 25% in developing countries. Deloitte estimates that the resulting economic activity could generate \$2.2 trillion in additional GDP, a 72% increase in the GDP growth rate, and more than 140 million new jobs” (see Table 9).⁷⁰

**TABLE 9: ECONOMIC AND SOCIAL IMPACT OF
IMPROVED INTERNET ACCESS IN THE DEVELOPING WORLD**

Productivity Gains	+25%
Total GDP Improvement	\$2.2 Trillion
GDP Growth Gain	+72%
New Jobs	140 Million Jobs
Personal Income Gains	\$600 Per Person Each Year
Number Lifted Out of Extreme Poverty	160 Million People
Lives Saved Through Improved Health Care	2.5 Million Lives

Source: Deloitte, *Value of connectivity: Economic and social benefits of expanding internet access*, February, 2014.

This would have a dramatic impact on poverty alleviation and strengthening the middle class. The research found that “extending internet access in developing economies to the level seen in developed countries can raise living standards and incomes by up to \$600 per person a year, thus lifting 160 million people out of extreme poverty in the regions covered by this study.”⁷¹

The value of the Internet is that it leads to increased investment and creates jobs for high-skilled workers in the developing world. This has been the case in Rwanda, which has formed partnerships with leading technology companies. These kinds of collaborations have brought valuable new funding into the country and broadened Internet access across the

country. It has helped advance the knowledge society and provided benefits for millions of people.

Health care and education

Two of the sectors that are likely to grow as a result of improved Internet access are health care and education. In the developing world, both are vital to future economic growth and improved life quality. Both patients and health care providers benefit from timely access to medical information. They can use mobile devices to find out which drugs are most effective for certain illnesses, check for drug interaction effects, and access a database that will tell them whether particular medications are counterfeit.⁷²

Increasingly, health care providers are using remote monitoring devices to check vital signs. Patients who live a great distance from treatment centers can electronically transmit health information to physicians, who can let them know if they have abnormal readings. This helps developing countries deal with health care disparities between rural and urban areas, and brings expert diagnosis even to physically remote locations.

According to a Deloitte study, "evidence on the link between health literacy and mortality rates suggests that access to the internet has the potential to save nearly 2.5 million lives across the regions covered by this study, if they were to achieve the level of internet penetration seen in developed economies."⁷³

Technology also improves education. It connects students and teachers with electronic resources and digital textbooks. It gives them access to new forms of information such as instructional videos and computer games. Students appreciate digital education because it engages them in the learning process and provides instant feedback on their academic performance.⁷⁴

Facebook has implemented an innovative education program with the non-profit edX and Airtel in Rwanda. Called SocialEDU, the project gives students free access to the group's educational software plus a free phone to access the information. Pupils can take online classes and collaborate with fellow students through social media accounts.⁷⁵

Civic education, governance, and social cohesion

Expanded Internet access is helpful for governance and civil society. Having more people online with access to information improves transparency and accountability in the public sector. It helps to distribute information more broadly around the population. If people and reporters have access to budget information or policy decisions, it empowers them and helps them hold officials responsible for their governmental decisions.

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Civil society also benefits through improved connectivity and bringing diverse sets of people together. One of the biggest challenges in a disconnected world is getting people from different cultures and backgrounds to understand one another. It is easy in that situation for mistrust and intolerance to proliferate when people do not understand each other or have opportunities to communicate.

The virtue of the Internet is that it gives people a valuable means for interaction and communication. If people see themselves as part of a global community, it broadens their perspectives and helps them overcome parochial considerations. In that way, it promotes social cohesion and political integration.

CONCLUSION

To summarize, there are a number of ways to improve technology access and bring the benefits of a robust and open Internet to people around the world. This includes steps such as reducing telecommunications access costs, improving network efficiency, expanding

digital infrastructure, strengthening digital literacy, providing diverse content, encouraging multilingualism, promoting free expression, enabling affordable services, and increasing digital competition. Each of these actions helps to reduce the gap between Internet users and non-users, and works to maintain the freedom, openness, and diversity that are the cornerstones of the Internet.

It is especially important to make progress on digital access in the cases of India and China. Those two nations are home to an estimated 2.2 of the 4.3 billion people with no Internet access. Addressing cost problems, providing diverse content, promoting free expression, and enabling affordable services in that part of the world would go a long way toward closing the digital divide. Since more than half of the world's population lacking Internet access reside in those countries, it is crucial to make changes there that will make it easier for the unconnected to use digital services. That would bring them into the technology era and give them access to valuable tools for economic development and social integration.

From this research, it is clear that zero rating programs represent effective ways to expand access by bringing impoverished people into a diverse and competitive digital world and

driving demand for local content and services. These approaches help to address the affordability challenges that exist, especially in many parts of the developing world. Some of the most significant barriers involve poverty, mobile or telecommunications taxes, and the high cost of computer devices and access fees. Zero rating practices improve access by allowing those with limited financial resources inexpensively to access digital services.

Policies that promote telecommunications competition help reduce access charges and thereby enable more people to use Internet services. And if people can access a wide range of digital content through multilingualism or their local languages, it will promote greater literacy and show people the social, economic, and civic benefits of Internet connectivity. With these kinds of changes, it is possible to narrow the digital divide and bring digital benefits to billions of people around the world.

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By **Jeffrey A. Eisenach, Ph.D.**

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The Economics of Zero Rating

By **Jeffrey A. Eisenach, Ph.D.**

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Introduction

Zero Rating plans enable mobile wireless customers to download and upload online content without incurring data usage charges or having their usage counted against data usage limits. Zero Rating has become increasingly popular in both developed and developing countries, but plays a particularly important role in developing countries, where the costs of mobile data services are higher relative to per capita incomes.

The obvious benefits of Zero Rating include lower prices for consumers, especially those who might have difficulty affording mobile data plans, and expanding Internet adoption, which has been demonstrated to generate substantial economic and social benefits. However, some have expressed concerns about whether such plans violate net neutrality principles by discriminating in favor of some content over other content. Critics of Zero Rating worry that it could harm competition in markets related to Internet access and/or online content, or interfere with consumers' unfettered access to online information (i.e., diversity of expression).

In this context, this study presents an assessment of the benefits and costs of Zero Rating. It concludes that Zero Rating programs in general represent an economically efficient mechanism for increasing consumer welfare given the unique characteristics of information technology markets, which make it beneficial to offer lower prices and other incentives to expand the size of the market, especially in developing countries where incomes, and market penetration, are low. Further, the most common types of Zero Rating programs are the ones most likely to benefit consumers, not harm them, and the ones most likely to expand consumer choice, not limit it. With respect to diversity of expression and related concerns, it is difficult to construct a scenario under which increasing access to online information and adoption of digital communications services would be harmful to online speech. While regulatory authorities should remain vigilant in monitoring business practices, broad-based bans or restrictions on Zero Rating plans are far more likely to harm consumer welfare than improve it.

The remainder of this paper is organized as follows. Section II describes the state of play with respect to both the types of Zero Rating plans currently in the marketplace and efforts by regulators in some countries to limit or prohibit their availability. Section III presents a brief explanation of the economic characteristics (i.e., dynamism, modularity and demand-side effects) that distinguish information technology markets from markets for other types of goods, and which affect both market performance and the nature of the competitive process. Based on this framework, it outlines the primary issues involved in assessing the impact of Zero Rating plans on economic efficiency, competition, and overall economic welfare. Section IV presents an assessment of the two primary criticisms of Zero Rating, namely the asserted potential for anticompetitive market foreclosure and concerns about diversity of expression. It explains that the Zero Rating plans currently being offered almost certainly generate benefits well in excess of any costs. Section V provides a brief summary of conclusions.

Zero Rating Plans: The State of Play

All Zero Rating plans share one characteristic: They allow mobile subscribers to access certain online content “for free” – that is, without having the associated data usage counted against their usage allowances under wireless service plans. The plans differ in two main respects: The types of content included, and the underlying business arrangements.

The type of content included in Zero Rating services varies widely, and includes access to online government and community service sites as well as access to popular services like Facebook, Google, Twitter and Wikipedia. In the U.S., T-Mobile offers its data plan subscribers zero-rated access to more than 25 online music services, including iHeartRadio, Pandora and Spotify. In some cases, carriers offer customized content designed specifically to be offered in conjunction with Zero Rating. For example, Facebook Zero and Internet.org provide customized content designed specifically for use on devices with limited capabilities or over networks with limited capacity.

Zero Rating business arrangements vary mainly according to the nature of the relationship between the access provider and the content provider. The most common form of Zero Rating plans are “carrier initiated” – that is, the mobile carrier simply chooses to zero-rate certain content as a means of attracting customers. “Sponsored data” plans represent a different model, under which content providers pay carriers to have their content zero rated. In some cases, carriers may choose to zero-rate their own content or content produced by affiliated companies, as was the case until recently with mobile TV plans offered by Canadian carriers Bell Mobility and Videotron.

Content-oriented applications like Facebook, Twitter and Wikipedia have been especially active in working with mobile operators to develop and promote Zero Rating plans in developing countries. Facebook Zero allows customers of participating mobile carriers to access Facebook’s standard mobile site content, send messages, update their status and engage in other typical activities on a zero-rated basis. (Facebook Zero users can also access additional Facebook content, such as photographs, but when they do so the resulting data usage counts as paid usage.) First launched in 2010, Facebook Zero has been implemented by more than 50 mobile operators in over 40 countries.¹ Facebook Zero is carrier initiated: Facebook does not pay carriers for participating in Facebook Zero.

Internet.org is a global partnership involving Facebook and other technology companies, local governments and NGOs which focuses on decreasing the cost of delivering data and expanding Internet access in underserved communities outside of the U.S. and Europe.² The internet.org app, which is offered in partnership with local mobile carriers, allows subscribers zero-rated access to customized content from multiple providers, including Facebook, Wikipedia and a variety of local content providers. First launched in Zambia in 2014, the internet.org app has expanded to Tanzania, Kenya, Columbia, Ghana and India, as shown in Table 1 below. As with Facebook Zero, internet.org does not pay ISPs to zero-rate its content.

Table 1. **Internet.org Deployments, 2014-2015**

Country	Carrier	Launch Date	Free Services*
Zambia	Airtel	July 31, 2014	16
Tanzania	Tigo	October 29, 2014	19
Kenya	Airtel	November 14, 2014	18
Colombia	Tigo	January 14, 2015	16
Ghana	Airtel	January 22, 2015	17
India	Reliance	February 10, 2015	38

Source: internet.org. *Services listed are as of February 27, 2015

Despite its *prima facie* benefits, regulators in a handful of countries have taken steps to limit or ban Zero Rating programs.³ For example, the government of Chile has found that Zero Rating plans violate the country's net neutrality law;⁴ regulators in the Netherlands have fined mobile carrier Vodafone for zero-rating HBO;⁵ and, regulators in Slovenia have fined the country's two largest mobile operators for zero-rating music and cloud storage services.⁶ Canada's CRTC recently banned offerings by mobile providers Bell Mobility and Videotron which offered differential pricing for the companies' mobile TV services.⁷ Regulators in other countries have either suggested that such programs are likely to violate neutrality rules (e.g., Norway),⁸ or have initiated investigations (e.g., India).⁹ In the U.S., Federal Communications Commission officials have indicated that Zero Rating plans will be evaluated on a case-by-case basis under the Commission's new Open Internet Order.¹⁰

The analysis below explains why broad-based bans or restrictions on Zero Rating plans are likely to be counterproductive and harm consumer welfare.

The Competitive Dynamics of Information Technology Markets

In general, the welfare effects of pricing schemes and other business practices depend on the characteristics of the markets in which they are deployed. Zero Rating programs are deployed in information technology (IT) markets, which are distinguished from more traditional “textbook” markets by three primary characteristics: *dynamism; modularity; and demand-side effects.*¹¹

Dynamism refers to the significance of innovation as a measure of market performance: In dynamic markets, the ability of a firm to offer new and improved products plays at least as significant a role in its success (*i.e.*, its profitability) as the ability to produce and sell existing products at lower prices.¹²

Typically, firms create new products by making significant sunk cost investments (which may take the form of either “R&D” or capital expenditures in non-recoverable facilities). As a result, production benefits from economies of scale – *i.e.*, average total costs that decline at higher levels of production, but always exceed marginal costs. Producers are able to recoup their sunk cost investments because products are differentiated through innovation (Innovation can be thought of as simply product differentiation over time.), meaning that long-term prices in such markets are higher than marginal cost, notwithstanding the existence of robust competition. Under traditional antitrust doctrine, the ability to earn high margins might be mistaken for monopoly power (the ability to earn excess profits), but assuming low entry barriers, they are not only consistent with, but necessary for, robust competition and the maximization of consumer welfare in these types of dynamic markets. In these markets, high accounting margins not only allow firms to recoup sunk cost investments, but also provide the incentive to take the risks inherent in innovation.¹³

A second characteristic that distinguishes IT markets is *modularity*, or what is sometimes referred to as “platform competition.” From an economic perspective, modularity is associated with strong complementarities in production or consumption: Operating systems are strong complements with personal computers; smart phones are strong complements with both communications networks and online content, such as mapping services, restaurant reviews, or social networks. Modularity also creates demand for compatibility or “interconnection.” Firms that produce complementary products (*e.g.*, Microsoft and Nokia, or Facebook and Bharti Airtel) may team up to create platforms (sets of compatible complements); in other cases (*e.g.*, Apple, Blackberry) firms choose to achieve compatibility through vertical integration. Competition in such markets takes place both within platforms (*e.g.*, between HTC and Samsung for share on the Android platform) and among them (*e.g.*, between the Android and iOS operating environments).

Finally – and importantly for assessing Zero Rating – IT markets are also characterized by significant *demand-side effects*, including economies of both scale and scope. Demand-side economies of scale, also known as network effects, imply that a product is more valuable to consumers as the number of users increases. The prototypical, if now somewhat dated, example is the fax machine. Demand-side economies of scope, by contrast, imply that a product’s value increases with the diversity (as opposed to simply the number) of users: The value of a credit card network to both consumers and merchants depends on the presence of the other type of participant. Markets characterized by demand-side economies of scope are referred to as “two-sided” or “multi-sided.”

The relationship between competition and consumer welfare in markets with demand-side effects is more complicated than in more traditional markets in several ways. For example, it is well established that the operator of a two-sided market has strong incentives to set efficient relative prices (*i.e.*, to engage in efficient price discrimination).¹⁴

The Economic Foundations of Zero Rating

The discussion above provides a conceptual framework for assessing the effects of Zero Rating. This section applies this framework to assess the economic implications of Zero Rating for online content and applications, mobile access, and the Internet ecosystem overall. Specifically, it discusses: (a) the role of Zero Rating in capturing network externalities (demand side economies of scale); (b) Zero Rating as a form of efficient differential pricing; (c) Zero Rating as an efficient pricing mechanism in the two-sided market for mobile wireless services; and, (d) Zero Rating as a mechanism for competitive product differentiation on mobile wireless markets. In each of these respects, Zero Rating is a market-driven mechanism for achieving economically efficient (and socially desirable) outcomes.

Zero Rating and Network Effects

Online content providers and mobile networks operate in markets that can have network effects, in that the value of the network to customers grows with the addition of other customers. As described below, the extent and type of network effect can vary significantly in particular cases. In some cases, expansion increases the value for all customers on the network. In others, the effects are limited to additions within smaller groups. And in others, benefits arise when different kinds of participants join a network.¹⁵ Thus, it is often in the interests of current participants in a network to promote its growth in some form, and sometimes in the interests of society generally to promote universal participation. Governments often subsidize participation in industries with network effects through direct or indirect government subsidies (e.g., universal service for telephone and, more recently, broadband adoption).

One obvious and likely significant benefit of Zero Rating is to expand participation in zero-rated online content and applications, while also increasing mobile wireless penetration, especially in developing economies.¹⁶ There is a substantial literature in support of the proposition that expanded Internet access, principally through higher mobile wireless adoption, has a variety of economic and societal benefits.¹⁷

It is also important to understand that the power of network effects is greatest within “communities of use.” That is, the value of adding an additional member is greater for members who are more closely connected with (*i.e.*, who value interactions with) existing members than those who are (in the same sense) further away. In this context, Zero Rating is appropriately understood as a mechanism for achieving increased participation within relatively small communities, including within lower-income populations in developing economies.¹⁸

By promoting the positive network effects of increased adoption, Zero Rating thus generates positive social as well as economic externalities.

Zero Rating and Differential Pricing

Both online content providers and mobile broadband services are characterized by dynamic competition – that is, both industries make large, non-recoupable investments in R&D and physical infrastructure which are largely invariant to the number of users. As discussed above, in such industries, the average cost curve is declining over the relevant range of output: Simply put, it always costs less to produce an incremental unit of output than it costs, on average, to make the previous ones.

In such industries, consumer welfare can be increased if firms are able to identify and offer discounts to “marginal” customers, that is, those with lower willingness (or ability) to pay, thus expanding the size of the market and generating the additional revenues that can be used to defray the fixed costs of investment and innovation. It is widely agreed that such differential pricing – referred to by economists as – “competitive price discrimination” – is not only widespread, but generally improves economic efficiency and increases consumer welfare.¹⁹

In this context, zero rating of offerings like Wikipedia Zero, Facebook Zero and the internet.org app can be understood economically as a mechanism by which mobile carriers engage in efficient price discrimination through the bundling of two goods (mobile wireless service and content), thereby creating the ability for marginal consumers to pay a reduced price by choosing a differentiated product in the form of a “basic” form of online access.²⁰ In so doing, Zero Rating improves economic efficiency by supporting continuing investment and innovation in both networks and content while expanding Internet access to consumers who would otherwise be unserved.

Zero Rating and Two-Sided Markets

The central economic challenge for an operator of a multi-sided platform is to set prices and other product characteristics in such a way as to attract the optimal mix of customers and thus maximize the value of the platform. Newspapers, for example, must run enough advertisements to defray costs, but not so many as to drive away customers.

The economics of multi-sided markets help to explain Zero Rating programs in at least two respects. First, thinking of mobile operators as the platform provider, Zero Rating is a means by which carriers create opportunities for distribution by content providers (by increasing the number of subscribers), while enhancing the value of the platform for subscribers (by increasing the amount of available content). To the extent content providers contribute financially to Zero Rating through sponsored data programs, they do so in reflection of the increased value (at least over the long run) of enhanced distribution. But carriers may (and do) choose to offer Zero Rating even without a financial payment from content providers simply because it increases the value of their platforms.

A second aspect of multi-sidedness relevant to Zero Rating relates to the dual nature of consumers in relation to platforms like Facebook, Twitter and Wikipedia, in which “consumers” are also content creators. Thus, by attracting additional participants onto the platforms of such services, Zero Rating increases *both* the number of content consumers and the amount of content available. This “double whammy” effect helps to explain why firms like Facebook are taking the lead in encouraging Zero Rating programs.²¹

Zero Rating and Competition in Mobile Wireless Markets

Lastly, firms in dynamic industries are better able to defray their fixed costs to the extent they can differentiate their products and attract more consumers. Zero Rating programs are an instrument by which mobile wireless firms can differentiate themselves from competitors by offering access to customized content with their mobile wireless services. Product differentiation also can serve to intensify competition in such markets. In this context, it is notable that the most prominent examples of Zero Rating in the U.S. have involved MetroPCS, Sprint and T-Mobile, all of which have used zero-rate offerings in order to differentiate their products from larger competitors. Similarly, Zero Rating plays a significant role in product differentiation for Globe (Philippines), which has offered zero-rated access to Facebook and other applications as part of its marketing campaigns.²² Thus, Zero Rating (like other types of innovative pricing plans) generally contributes to the competitiveness of mobile wireless markets.

Addressing Concerns about Zero Rating

As noted above, some net neutrality advocates have challenged Zero Rating by asserting that it violates the principle of non-discrimination and hence (a) risks anticompetitive effects and (b) limits freedom of expression.²³ For the reasons explained immediately below, however, Zero Rating programs typically do not raise serious concerns with respect to anticompetitive effects. Further, as explained in the second subsection below, concerns about diversity of expression appear to be based more on speculation than empirical evidence, and to ignore the positive effects of Zero Rating in increasing access to online communications and information.

Zero Rating and Competition

The types of Zero Rating programs currently observed in the marketplace do not appear to raise significant competition concerns.

First, as noted above, most Zero Rating programs are carrier initiated and do not involve payments to carriers by the providers of the zero-rated content. Particularly in the absence of payments, Zero Rating cannot plausibly be characterized as anticompetitive foreclosure by content providers. Rather, to the extent that carriers elect to include certain content providers in a Zero Rating plan, the decision reflects the carrier's unilateral determination that doing so improves the value of its platform.

Second, even in sponsored data programs where content providers are providing payments to carriers, there appears to be no evidence that such arrangements involve exclusivity: Rather, it appears that opportunities to participate are being held out to content providers of all kinds.²⁴ Without exclusivity – the inclusion of some participants and the exclusion of others – there is no foreclosure, and hence no anticompetitive concern.²⁵

Third, there is no *prima facie* basis for concluding that Zero Rating programs involving exclusivity would be anti-competitive. Exclusivity arrangements are commonplace, and typically are justified by efficiency motivations, such as the desire to avoid "free riding" on brand-specific investments. Exclusivity raises competition concerns, on the other hand, only under limited conditions, including that the exclusive arrangement must be sufficiently widespread so as to foreclose entry (and expansion) by an otherwise equally efficient competitor (*i.e.*, by preventing such a competitor from achieving minimum efficient scale). The characteristics of the mobile wireless and online content markets suggest that exclusivity in Zero Rating programs, to the extent it occurs, is of the efficiency-enhancing variety.²⁶

The case advanced by critics of Zero Rating amounts to a claim that any form of differentiated carriage necessarily advantages some firms over others, and thus has potential competitive effects, and that the “victims” of such discrimination are likely to be small, innovative firms that lack the financial wherewithal to engage in Zero Rating programs of their own.²⁷ There are powerful arguments against this view, including: (a) mobile broadband providers have incentives to maintain a diversity of actual and potential complementors (e.g., content providers) and thus are not likely to willingly participate in activities that might foreclose competition; (b) the most common Zero Rating programs are carrier initiated and do not require financial contributions from the content provider; (c) many small content providers engage in Zero Rating (e.g., Aquto, hipcricket, Syntonic)²⁸ and (as discussed above) Zero Rating is easily explained on efficiency grounds; and, (d) Zero Rating critics have not demonstrated any harm to competition or consumers from Zero Rating, or even shown that any individual competitors have been disadvantaged.²⁹

Zero Rating and Freedom of Expression

While freedom of expression concerns arguably invoke values that go beyond economic efficiency *per se*, economic analysis can nevertheless inform the debate around the key issues. First, as noted above, Zero Rating programs do not generally involve exclusivity. Thus, no one’s views are being foreclosed, or muzzled. Second, the firms engaging in Zero Rating are to a significant extent (e.g., Facebook, Twitter, Wikipedia) vehicles for the open expression of views by all participants, subject only to *de minimis* limitations. Increasing the number of Facebook (or Twitter or Wikipedia) users thus arguably enhances freedom of expression and the diversity of opinion in the public square – especially in developing countries, where such outlets have demonstrably enhanced freedom of political expression. Third, as an empirical matter, the diversity of content suppliers is growing rapidly; concerns about “a few media outlets controlling the news” seem increasingly anachronistic. Fourth, and finally, in order to argue that Zero Rating programs deprive subscribers of access to information (“the full and open Internet”), one needs to argue that nothing is better than something – that those who gain access to online content as a result of Zero Rating would be better off with no access than some access, an argument which seems difficult to sustain.

Conclusions

Concerns about Zero Rating are misplaced. The Zero Rating programs that are observed in the marketplace are readily explained as market-driven mechanisms for capturing economic efficiencies associated with the characteristics of information technology markets. By expanding the reach of online content and distribution services, they generate economic social benefits. Concerns that Zero Rating could serve as a means of foreclosing competition, or limit freedom of expression, appear misplaced and lacking both theoretical and empirical support.

Notes

- ¹ See Matt Hicks, "Fast and Free Facebook Mobile Access with 0.facebook.com," May 18, 2010 (available at <https://www.facebook.com/notes/facebook/fast-and-free-facebook-mobile-access-with-0facebookcom/391295167130>).
- ² See internet.org/about.
- ³ For an interesting discussion of issues associated with Zero Rating programs, see "Net Neutrality, Zero Rating, and Development: What's the Data?" *Internet Governance Forum* (September 3, 2014) (available at <http://www.intgovforum.org/cms/174-igf-2014/transcripts/1969-2014-09-03-ws208-net-neutrality-zero-rating-and-development-room-5>) (hereafter *IGF Transcript*).
- ⁴ See e.g., David Meyer, "In Chile, Mobile Carriers Can No Longer Offer free Twitter, Facebook or WhatsApp," GigaOm (May 28, 2014) (available at <https://gigaom.com/2014/05/28/in-chile-mobile-carriers-can-no-longer-offer-free-twitter-facebook-and-whatsapp/>) (hereafter, Meyer, Chile).
- ⁵ Authority for Consumers & Markets, "Fines Imposed on Dutch Telecom Companies KPN and Vodafone for Violation of Net Neutrality Regulations," (January 27, 2015) (available at <https://www.acm.nl/en/publications/publication/13765/fines-imposed-on-dutch-telecom-companies-kpn-and-vodafone-for-violation-of-net-neutrality-regulations/>)
- ⁶ See "Mobile operators in Slovenia Fall Foul of Net Neutrality Rules," MobileWorldLive.com (January 26, 2015) (available at <http://www.mobileworldlive.com/mobile-operators-slovenia-fall-foul-net-neutrality-rules>).
- ⁷ See Canadian Radio-television and Telecommunications Commission, CRTC, Broadcasting and Telecom Decision 2015-26 (January 29, 2015) (available at <http://www.crtc.gc.ca/eng/archive/2015/2015-26.htm>).
- ⁸ See e.g., David Meyer, "Pro-Net Neutrality Norway Advises Carriers to Avoid Zero-Rating," GigaOm (November 18, 2014) (available at <https://gigaom.com/2014/11/18/pro-net-neutrality-norway-advises-carriers-to-avoid-zero-rating/>).
- ⁹ See e.g., "Net Neutrality Also an Issue in Emerging Markets Like India," *Business Monitor* (February 3, 2015) (available at <http://www.businessmonitor.com/news-and-views/net-neutrality-also-an-issue-in-emerging-markets-like-india>); see also Anandita Singh Mankotia, "Trai examining Bharti Airtel's special deals on Facebook and WhatsApp," *The Economic Times*, November 25, 2014 (available at http://articles.economictimes.indiatimes.com/2014-11-25/news/56455517_1_net-neutrality-mobile-data-services-uninor).
- ¹⁰ The FCC voted to approve a new Open Internet Order on February 26, 2015. See Federal Communications Commission, "FCC Adopts Strong, Sustainable Rules to Protect the Open Internet" (February 26, 2015). The text of the Order has not yet been released, but FCC officials have indicated they will evaluate Zero Rating plans on a case-by-case basis. See Lauren Walker, "Why the Net Neutrality Fight Isn't Over," *Newsweek* (February 6, 2015) (available at <http://www.newsweek.com/why-net-neutrality-fight-isnt-over-305060>).
- ¹¹ This section relies in part on Jeffrey A. Eisenach and Ilene Knable Gotts, "In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector," in Fabrizio Cugia di Sant'Orsola, Rehman Noormohamed, and Denis Alves Guimarães, eds., *Communications and Competition Law: Key Issues in the Telecoms, Media and Technology Sectors* (Wolters Kluwer Law and Business, 2014) 69-90. For a more extensive discussion of these phenomena and their implications for competition analysis, see Jeffrey A. Eisenach, *Broadband Competition in the Internet Ecosystem* (American Enterprise Institute, 2012); see also Oz Shy, *The Economics of Network Industries* (Cambridge University Press, 2001).
- ¹² See William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton University Press, 2002), at 4 ("Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals."); see also Joseph Schumpeter, *Capitalism, Socialism and Democracy* (1942).
- ¹³ Especially in dynamic markets with high rates of innovation, high margins as measured by accounting data do not necessarily equate to high profits from the perspective of economics or competition analysis. The seminal reference is Franklin M. Fisher and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," *American Economic Review* 73;1 (March 1983) 82-97
- ¹⁴ See, e.g., Julian Wright, "One-Sided Logic in Two-Sided Markets," *Review of Network Economics* 3(1) at 44 (2004).
- ¹⁵ The impact of network effects can depend on a variety of factors. For example, some of the network effects of increasing wireless penetration are shared among carriers thanks to the fact that carriers interconnect with one another (so subscribers to each network can call subscribers on other networks). Carriers may seek to capture some of these effects through programs ("friends and family" plans) that encourage in-network calling.

- ¹⁶ The empirical evidence on the impact of Zero Rating on wireless penetration and mobile content usage, though limited, suggests the effects may be substantial. For example, a 2010 program by Turk Cell involving Twitter resulted in a 340 percent increase in Twitter traffic. See *IGF Transcript*.
- ¹⁷ See e.g., *Value of Connectivity: Economic and Social Benefits of Expanding Internet Access* (Deloitte 2014) (available at https://fbcdn-dragon-a.akamaihd.net/hphotos-ak-ash3/t39.2365/851546_1398036020459876_1878998841_n.pdf); see also Digital Entrepreneurship in Kenya 2014 (GSMA, 2014) (available at http://www.gsmaentrepreneurshipkenya.com/GSMA_KENYA-AR2014-060214-WEB-SINGLE-PGS.pdf).
- ¹⁸ Social networks like Facebook and Twitter have been shown to play a significant role in driving Internet adoption in developing countries, where the proportion of Internet users who use such applications is higher than in the U.S. See e.g., Lee Rainie and Jacob Poushter, "Emerging Nations Catching Up to U.S. on Technology Adoption, Especially Mobile and Social Media Use," Pew Research Center (February 13, 2014) (available at <http://www.pewresearch.org/fact-tank/2014/02/13/emerging-nations-catching-up-to-u-s-on-technology-adoption-especially-mobile-and-social-media-use/>)
- ¹⁹ See e.g., William J. Baumol and Daniel G. Swanson, "The New Economy and Ubiquitous Competitive Price Discrimination: Identifying Defensible Criteria of Market Power," *Antitrust Law Journal* 70 (2003) 661-685 at 665; see also See, e.g., Hal R. Varian, "Differential Pricing and Efficiency," *First Monday* 1;2 (August 1996) at 2 ("[M]any important industries involve technologies that exhibit increasing returns to scale, large fixed and sunk costs, and significant economies of scope. Two important examples of such industries are telecommunications services and information services. In each of these cases the relevant technologies involve high fixed costs, significant joint costs and low, or even zero, marginal costs. Setting prices equal to marginal cost will generally not recoup sufficient revenue to cover the fixed costs and the standard economic recommendation of 'price at marginal cost' is not economically viable. Some other mechanism for achieving efficient allocation of resources must be found.").
- ²⁰ Facebook and its partners in Internet.org have made extensive investments to understand the realities of Internet access in the developing world and to use this knowledge to develop ways to expand Internet access in such countries.
- ²¹ Relatedly, to the extent Zero Rating ultimately increases the audience for mobile content services, it also implicates yet another "side" of the multi-sided mobile wireless ecosystem – advertisers. I understand that Facebook Zero does not depend on advertising, but the same is not true for other firms participating in Zero Rating programs, such as Google and Pandora.
- ²² See "Globe Telecom Expands Mobile Data Business with Free Facebook, Free Viber Offer," *Adobo Magazine* (January 8, 2015) (available at <http://www.adobomagazine.com/philippine-news/globe-telecom-expands-mobile-data-business-free-facebook-free-viber-offer>).
- ²³ See e.g., Susan Crawford, "Zero for Conduct," *Medium.com* (January 7, 2015) (available at <https://medium.com/backchannel/less-than-zero-199bcb05a868>, viewed February 6, 2015).
- ²⁴ See, "AT&T Introduces Sponsored Data for Mobile Data Subscribers and Businesses," (January 6, 2014) (available at <http://www.att.com/gen/press-room?pid=25183&cdv=n=news&newsarticleid=37366&mapcode=consumer/mobile-devices>).
- ²⁵ The fact that some content providers choose not to participate in zero rating does not mean they are "foreclosed" in any sense of the word, since they had the opportunity to do so.
- ²⁶ For example, it is worth recalling that each mobile network is not a distinct market, but rather that all mobile networks in a given geographic area compete in the same relevant product market. Hence, an exclusive arrangement with a single carrier does not foreclose competition in the entire market.
- ²⁷ See e.g., Crawford (2015).
- ²⁸ See AT&T, "Our Sponsored Data Providers" (available at <http://www.att.com/att/sponsoreddata/en/index.html#fbid=PYLlaU9knHP>, viewed February 8, 2015).
- ²⁹ The antitrust laws properly focus on protecting competition, not individual competitors. It is also noteworthy that the firms identified by Zero Rating's critics as potential "victims" tend to be established firms like Netflix and Skype (Microsoft), not startups and new entrants. See e.g., New America Foundation, Center for Media Justice, Media Access Project, *Notice of Ex Parte Presentation: GN Docket No. 09-191 (Preserving the Open Internet); WC Docket No. 07-52 (Broadband Industry Practices)* (January 10, 2011) (available at http://newamerica.net/publications/resources/2011/notice_of_ex_parte_presentation_gn_docket_no_09_191_preserving_the_open_).

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Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries

BY DIANA CAREW

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The power of the Internet has redefined the global economy for the 21st Century. As of 2014, over three billion people around the world were connected. The corresponding boom in Internet-based retailers, news and information providers, and online entertainment and video companies has been just as impressive.¹ Businesses go where the customers are, and increasingly the customers are online or mobile.

Unfortunately, the online revolution is lagging in many of the least developed parts of the world. Consider that as of 2014, fewer than 30 percent of Africa's 1.1 billion population used the Internet.² At the same time, relatively few African businesses have participated in the Internet business boom. Less than one percent of all existing domain name registrations in 2013 originated from Africa, meaning African-based businesses have very little local or global presence on the internet.³

The problems are multiple. Building a broadband infrastructure to all homes, especially in rural areas, is too costly for many low-income countries. And mobile broadband service, while more broadly available, is also relatively expensive to provide and high-priced compared to incomes. As a result, broadband markets are limited in many poor and developing areas. In 2013, for example, there were 20 mobile broadband subscriptions per 100 people in the Philippines, and just three for every 100 people in Kenya.⁴

At the same time, a low level of connectedness keeps the local Internet ecosystems stunted. Entrepreneurs are unwilling to start new Internet-based businesses because there aren't enough customers online. Conversely, without local Internet-based businesses providing relevant information, content, and services, potential customers have less incentive to invest in expensive data plans for their smart phones.

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Consider the obstacles facing a potential local business that would collect agricultural prices across a poor country, and post them online. Such Internet businesses have increasing returns to scale—expensive to collect the information in the first place, but relatively cheap to provide it to more and more customers. That means such a business—which would be very beneficial to farmers—is far easier to start and far more profitable if the pool of potential customers is large. But if the pool of potential customers is small, the business may never get started, and there will be even less reason for poor mobile phone users to buy a data plan.

The online revolution is lagging in many of the least developed parts of the world.

In other words, developing countries can get stuck in a low-connectivity equilibrium, where there are relatively few broadband customers and few local Internet-based businesses to serve them. How, then, can we jumpstart the local internet ecosystem in developing countries to move from a low-connectivity equilibrium to a high connectivity equilibrium where the number of users with data plans is higher and the country has viable local Internet-based businesses that both generate jobs and provide relevant content and services to mobile users? As more people connect to the Internet, local content and service providers will create and expand existing content to meet demand. This will boost growth in the local economy, which in turn will generate greater demand for local content and enable more people to connect to the Internet. This is a transition that many developed countries made in the late 1990s and early 2000s. How can we accelerate it in poor and developing countries?

This paper explores one approach for jump-starting local Internet ecosystems where connectedness is low—a practice known as “zero-rating.” Under this program, mobile operators

provide its customers with access to certain online content, or package of websites, for “free,” in that such content does not count against monthly data caps. There are several variations of zero-rating programs, many of which do not involve any exchange of funds among firms. One type of zero-rating outside the scope of this analysis is where content providers directly reimburse operators for foregone data costs is called ‘sponsored data.’ This paper contemplates programs more like Internet.org or Wikipedia Zero where content providers do not directly compensate operators for lost data revenue.

It’s important to note here that this paper focuses mainly on the use of zero rating in poor and developing countries, and the arguments are laid out with those situations in mind. In future work, we will explore the ways that zero-rating is useful in developed countries, and especially among less-connected populations.

The power of zero-rating to nourish an Internet ecosystem in poor and developing countries comes from its potential to increase connectivity by both people and businesses quickly and at low-cost. First, free access to popular sites like Google, Twitter, Wikipedia, and Facebook encourages more people to sign up for data plans, and enables greater data freedom to explore local content. Second, the increase in demand for local content spurs local businesses and entrepreneurs to create new online products and services—for example, information on Ebola outbreaks, typhoon warnings, or even wait times at local stores and government offices. Moreover, the higher share of population online justifies efforts of government agencies to go digital, which in turn encourages more business and individuals to join the internet ecosystem. Taken together, zero-rating can effectively jump start a virtuous feedback loop that moves the local economy into a high-connectivity equilibrium.

Zero-rating has already been adopted by mobile operators in poor and developing countries, including the Philippines, Turkey, India, and across Sub-Saharan Africa. And although these programs are relatively new, early indications show

more people are connecting to the Internet in these countries.

However, zero-rating has some detractors. Some argue for banning the practice, claiming that it violates net neutrality principles by prioritizing select content. Others argue that free access to select content is too limited to provide the digital literacy skills needed to fully participate in the data-driven economy.

Still, this paper argues that given the promise of early indications, it seems bad policy to squash the potential of zero-rating, especially in countries trapped in a low-connectivity equilibrium. Instead, this paper proposes several ways to enhance the potential effectiveness of zero-rating as a tool for growth for poor and developing communities. That includes being non-exclusive across mobile operators and transparent. We also suggest regular evaluation and reporting of zero-rating programs, to better inform mobile operators and relevant policymakers of the actual risks and rewards.

By banning zero-rating, poor and developing countries would deprive themselves of a possible avenue for economic growth and prosperity. They are closing a pathway for their citizens and businesses to harness the power of the Internet, moving them to a high-connectivity equilibrium. In the language of economics, that would mean forgoing one of the greatest positive externalities of having a vibrant Internet ecosystem: economic and social mobility.

LOW CONNECTIVITY EQUILIBRIUM

In a low-connectivity equilibrium, people and businesses have little motivation to connect to the Internet. A lack of access to Internet-based consumers keeps businesses away from online expansion and sidelines aspiring tech entrepreneurs. On both the consumer and business side of the market, being connected comes at a high cost and low marginal return.

A low-connectivity equilibrium is prevalent in many poor and developing countries. People have little incentive to spend precious income on data plans, given the lack of valuable content. It's no

accident that, of the estimated 4.5 billion people worldwide still unconnected to the Internet, 90 percent—over 4 billion—are in the developing world.⁵

With low-connectedness, businesses are limited to their existing consumer base, and have little incentive to invest in creating online platforms for their products. Internet entrepreneurs have no motivation to transform their ideas into new startups, lacking the promise of growing profits or the ability to get seed money. The dearth of business formation and growth traps the local economy in an unconnected low-growth state, without access to global online markets.

Advanced countries have about 84 active mobile subscriptions per 100 people, compared to about 21 per 100 people in developing countries.

Similarly, government agencies have little incentive to go digital if there are too few citizens with the capability to connect online. Why should they spend precious resources setting up webpages and digital access to services if only a small portion of the population have access?

It is easy to see why some countries get stuck in low-connectivity equilibrium, even as the benefits of being connected are great. A major reason for this is cost. Even in areas where fixed or mobile broadband is accessible, the price for a mobile broadband subscription is simply too expensive for many. According to one recent estimate, people in developing countries with mobile phones pay between 8-12 percent of their average monthly income on mobile connectivity, and that is often just for voice and text.⁶

Consider that a mobile data plan in the Philippines costs on average the equivalent of \$17 a month,

which does not seem like much. Yet this constitutes almost 10 percent of the per capita monthly average national income, according to International Telecommunications Union. That ranks the country as 87th out of 110 countries on affordability for mobile broadband.⁷ It is not obvious to the millions who remain unconnected that it is worth spending a large share of their income on something that may not be essential. And without the online customer base, it is not obvious to businesses that they need to spend the time and money to develop an Internet presence. Thus we have a negative reinforcing cycle.

HIGH-CONNECTIVITY EQUILIBRIUM

Conversely, other countries in the global data ecosystem are highly connected. In a high-connectivity equilibrium, people and businesses are integrated online, constantly feeding off each other to create new content and services that enhance consumer well-being. The result is a strong foundation for economic growth and shared prosperity.

Many advanced countries are in a high-connectivity equilibrium. These countries have enjoyed rapid growth in the number of online businesses, mobile subscriptions, and tech-related job creation. According to a 2014 report, developed countries account for over 80 percent of domain name registrations, which all websites must have.⁸ They have about 84 active mobile subscriptions per 100 people, compared to about 21 per 100 people in developing countries.⁹ High-growth tech clusters are sprouting up across the United States, and in leading global cities like London and Sydney, creating millions of high-wage jobs.¹⁰

That's because in a high-connectivity equilibrium, businesses and entrepreneurs thrive in a vibrant digital marketplace. They are able to meet strong consumer demand for online content and services through an ever rising number of apps, online retailers, social media forums, and new products unique to the Internet.

Some of today's largest companies around the world would never have been as successful had it

not been for a highly connected population. Some companies, like Apple and Samsung, produce sophisticated smartphones and other Internet-able devices. Others, like Amazon, provide consumers with a one-stop retail experience. Search and software giants like Google and Microsoft empower consumers and businesses with essential tools and services. All of these companies feed off each other's growth in a high-connectivity equilibrium.

Indeed, the power of online commerce has translated into an enormous rise in data-related consumption and trade. PPI has previously written on both these topics, showing just how important the Internet has become to driving productivity and national incomes.¹¹ In fact, the profound pace of data-driven innovation has been so rapid, researchers are still developing ways to accurately measure the Internet's impact on government economic statistics.

Another important part of high-connectivity equilibrium is having strong investment in the build-out of high-speed broadband networks. Such robust investment is evident in many developed countries, including the United States, whose private telecommunications and cable sector invests billions annually in fiber installation and high-speed 4G/LTE mobile networks. Overall, annual capital expenditures of mobile operators in developed countries well outpaces the developing world.¹²

SHIFTING FROM A LOW TO HIGH-CONNECTIVITY EQUILIBRIUM

It is possible to move from a low- to high-connectivity equilibrium. After all, developed countries were able to make this transition in the late 1990s and early 2000s. These countries also continue to enjoy a sustained momentum in the large share of the population purchasing a monthly mobile data plan, as the bevy of available online content and functionality grows and becomes more relevant in everyday life. In the United States, for example, there are more wireless connections than people, with many connecting to the Internet through multiple devices.¹³

The shift from a low-connectivity to high-connectivity equilibrium in developed countries occurred more organically than in developing countries. That's because a relatively large share of the population in developed countries had enough income that they could afford to sign-up for the Internet. It took a lower initial benefit from going online—less available online content—to convince many citizens in the developed world to spend their income on a fixed broadband connection. This led to an easy transition to mobile broadband plans once they became available.

In high-connectivity Internet ecosystems, consumers and businesses feed off each other to create new content, generating income, jobs, and more demand.

Some researchers also credit the rise in Internet demand in developed countries to a few initial “killer apps.” These offerings were widely believed to have helped influence on early Internet adoption. For example, the proliferation of social media is credited with encouraging people to spend on an Internet connection. Starting with online chat rooms and Compuserve, and continuing on through America Online, MySpace, Facebook, Twitter, Reddit, and LinkedIn, social media has transformed how people communicate, get the news, and create their own content to share.¹⁴ It has connected traditionally harder to reach segments of the population, like those in rural areas and the elderly, who want a low-cost way to stay in contact with family and friends.

In these high-connectivity Internet ecosystems, consumers and businesses feed off each other to create new content, generating income, jobs, and more demand. Since the introduction of the iPhone, the number of available iOS apps increased from 800 in July 2008 to a staggering 1.3 million in September 2014.¹⁵ The number of



Android apps in the Google Play store is just as high, if not higher. The rising demand for online video has resulted in companies designing an interactive watching experience across devices, with consumers able to watch movies, listen to music, and even catch their favorite shows on their tablet, phone, or TV.

GETTING FROM LOW TO HIGH-CONNECTIVITY

How can developing countries shift to a high-connectivity equilibrium? There are several forms of intervention that can encourage the transition. Each approach has its advantages and disadvantages, but the effectiveness will ultimately depend on how well it is able to jumpstart the Internet ecosystem. That is, how successful it is at getting more people and businesses connected to the Internet, by lowering the cost of access while encouraging more local content.

One approach is for governments to intervene directly, by providing subsidies to either people or businesses. Both have extensive histories of being employed in developing countries, with mixed success.

In developing countries, government subsidies are often used to get people to act in certain ways.

A well-regarded example is the Bolsa Familia program in Brazil, which gives poor families money if they vaccinate their children and send them to school.¹⁶

Some governments in developing countries have provided free broadband access to encourage greater adoption and improve the local business climate for content creation. In Macedonia, for example, the “Rural Broadband in 680 Locations” project has provided free WiFi access in 680 rural locations across the country since 2009. A World Bank evaluation considered the program to be successful at enabling greater access to agricultural and education information, and public online services.¹⁷

Governments can also provide subsidies to businesses, often in the form of what are generically known as ‘universal service funds.’ These government-controlled funds provide money to the private sector to build out broadband networks in poor or remote areas where there is no compelling business case. However, while popular, this approach has had limited success. According to a 2013 survey of 69 such funds, half reported little to no activity. The funds were collected but have yet to be utilized.¹⁸

Although it's still too soon to assess the impact of many zero-rating programs, early results are promising.

Another approach to shifting to a high-connectivity equilibrium is more indirect. It involves the government allowing the private sector to offer Internet content people value at low-cost. Here, the private sector is providing the subsidy to consumers to increase the number of people purchasing a data plan, which will increase the amount of online content being created.

One such indirect approach is known as a practice called “zero-rating.” Zero-rating is where mobile operators offer select online content for free, in

that accessing it will not count against any monthly data caps (hence, it is “zero-rated”). In some cases, the mobile operator may offer zero-rated content to people even without data plans.

The idea behind zero-rating is simple: to get more people connected by providing access to popular websites, and to provide greater freedom to use data for local content, increasing demand. That is, when certain content is zero-rated, particularly high-demand services like Google and Facebook, people are free to use a higher percentage of their existing data cap on other content. This will jumpstart the local Internet ecosystem. And since the success of zero-rating is sparked by low-cost access to popular online content, it follows that the main sites being offered to date include social media giants Facebook and Twitter, along with Google and Wikipedia.

Zero-rating is widely offered across many developing countries. In fact, a recent study found that 45 percent of global mobile operators offer some form of zero rating. This includes offerings in many of the countries with the lowest incomes and broadband adoption rates, stuck in a low-connectivity equilibrium, like Tanzania, Cameroon, Ivory Coast, India, Moldova, Uzbekistan, and Pakistan.¹⁹

Zero-rating can take several forms, depending on the mobile operator. It can be offered on a temporary basis, over a few months, or it can be permanent. The content being zero-rated is also at the discretion of the mobile operator, which ranges from one high-demand website to several sites that may include local content.²⁰ Zero-rating is generally not monetized, so that there is typically no payment between the mobile operator and content provider. But there is usually a legal agreement between content provider and operator, that delineates terms of use and could include provision of technical assistance for implementation.²¹

ADVANTAGES OF ZERO-RATING

In shifting to a high-connectivity equilibrium, a zero-rating approach has several advantages over direct government subsidies. For developing countries that may have scarce resources, these

advantages are important in considering ways to effectively jump-start local Internet ecosystems.

First, zero-rating can jumpstart an Internet ecosystem at a faster and significantly lower cost. Direct government subsidy programs can be very costly, and spread out over many years. They may also be harder to contain, especially programs that fund public broadband networks or subsidize Internet-capable devices. That's because mobile broadband technology is constantly evolving, as are the devices that run on the networks. It is very expensive to successfully build, operate, and maintain government-owned broadband networks, especially when increased public-take up of broadband is not guaranteed. Even in developed countries, government-owned broadband networks have a very mixed record of success.

Zero-rating is cheaper because mobile operators subsidize the costs to provide zero-rated data. They internalize the costs through their billing processing operations. Moreover, even if these operators are government-owned, there are typically no direct payments to the zero-rated content creator.

Second, with zero-rating, an Internet ecosystem can flourish relatively quickly, because such offerings can be more easily implemented and maintained, or adjusted according to public response. It is much easier, and cheaper, for example, to extend the zero-rated offering beyond a trial period than it is to increase the amount of a monthly public subsidy.

Third, zero-rating comes with significantly less government control. That not only reduces the burden on governments with limited resources, but it also limits the possibility of mismanagement. Without a large cash transfer program, there is much less room for misallocation or waste of funds, or worse, corruption.

For example, a 2013 opinion survey covering seven African countries found a dramatic impact from the availability of more information on the Internet. When asking people what had changed in communications over the last five years, it

found that the Internet and greater access to information online "are interconnected as wider media generally drives a wider set of viewpoints and information[,] with the Internet acting as a backstop where people can get information not provided by traditional media or actually restricted by Government."²²

The rise in Internet users in Kenya is also helping drive the creation of more local online content.

Finally, although it's still too soon to assess the impact of many zero-rating programs, early results are promising. In several developing countries where mobile operators have already offered zero-rated content, Internet ecosystems are taking off. Mobile operators are reporting an impressive rise in mobile data plan subscriptions and mobile data consumption.

The Philippines, for example, a country whose mobile operators actively engage in zero-rating, has recently begun to enjoy a prosperous Internet start-up culture. A basic search online shows a large and wide variety of Filipino Internet companies, offering services like digital queuing,²³ selling products like folding bicycles, and helping citizens monitor their electricity use in real time. Tech incubators are springing up, and injecting Internet businesses with capital.²⁴

Further, the Philippines has seen rapid growth in the population connecting to the Internet, including a double-digit rise in the last year.²⁵ So successful was a temporary offering of zero-rated Facebook content (known as Facebook Zero) by one of its main mobile operators, that it was later reinstated. According to reports, the original three-month program offered by Globe Telecom, a major carrier, led to a doubling of the company's mobile data user base.²⁶ The Globe's latest annual report also shows the number of mobile subscribers increased by 16 percent year over year, 74 percent stronger growth than in the preceding year.²⁷

Of course, the tremendous growth in Internet startups and Internet users cannot be directly attributed to the country's various zero-rating programs, but they certainly contributed. The Globe's annual report, for example, touts the program as a core component of its services offering.

Perhaps some of the most promising examples of early zero-rating success in jumpstarting Internet ecosystems are in Africa. Many African countries have mobile operators that offered some form of zero-rating, starting as early as 2010.

Without any exposure to the Internet, there is no chance of moving from a low-connectivity to a high-connectivity equilibrium.

Within the first year offering zero-rated content, the evidence of increased Internet adoption across Africa—using new subscriptions to Facebook as a proxy—was remarkable. According to oArfrica, a data service that tracks Internet progress in Africa, the number of Facebook users across the entire African continent increased by an average 114 percent.²⁸ This includes a 4,000 percent increase in Central African Republic and a 2,000 percent increase in Chad and Somalia.

Certainly an increase of Facebook subscriptions does not mean more Africans are purchasing mobile broadband plans, or that more people creating Facebook accounts are initiating local Internet ecosystems. But it appears to be serving as an important catalyst on both fronts. According to one take on a 2009 Inveneo conference:

The consensus of group, marketing and technical experts at African ICT companies, was that Facebook was creating demand for their services. Current clients wanted faster Internet connectivity to download all the images and video sent their way via Facebook, and more technology (cameras, video &

image editing software) to create content for their Facebook pages. All the chatter about Facebook accounts was also driving new customers to buy computers and invest in Internet connectivity. "I need to get Facebook," is becoming a common refrain at retail computer stores.²⁹

Egypt, in particular, has seen an impressive rise in their Internet economy over the last few years. While there may or may not be a connection, Egypt's participation in zero-rating programs began several years ago, and its main mobile operator Orange began offering Facebook Zero in 2012. Preliminary reporting showed a massive rise in customers connecting to the Internet, with 350,000 new subscriptions in the first month.³⁰

Concurrently, Egypt's businesses have made a dramatic shift to go online. According to data compiled by the United Nations Conference on Trade and Development, over 2008-2012 the share of urban businesses using the Internet increased from 29 to 56 percent, while the share of rural businesses online increased from 9 percent to 38 percent.³¹ The rise in rurally-located businesses on the Internet, serving the more vulnerable populations in terms of Internet connectedness, is especially promising.

Undoubtedly, the rapid adoption of Internet-based business models by businesses in urban and rural parts of the country was influenced by the rising number of people connecting to the Internet. Over the last year alone, the number of Internet users in Egypt rose 10 percent.³² Taken together, this suggests the beginnings of a flourishing Internet ecosystem that could shift the country into a high-connectivity equilibrium.

Progress in Africa on creating Internet ecosystems in countries that have employed zero-rating is not limited to the northern part of the continent. In Kenya, for example, another country whose mobile operators offered Facebook Zero, the number of Internet users is steadily rising. In 2014, the number of Kenyans connecting to the Internet increased by a whopping 16 percent.³³

The rise in Internet users in Kenya is also helping drive the creation of more local online content. According to an excerpt from the 2014 Ericsson Mobility Report:

New business opportunities that have been created by the Internet have been boosted by consumers' increased access via mobile phones. This has led to the development of new business models. In Kenya, Mozambique, and Nigeria, TV and media services are increasingly being accessed using smartphones...influencing the development of local and regional content. Innovations such as this give rise to further market trends such as multiscreen consumer behavior. The rise in sophistication of social networking platforms has played a role in the growth of mobile traffic.”³⁴

These early indications of successful development of Internet ecosystems in countries with a low-connectivity equilibrium point to a promising role for zero-rating programs. As more data continues to be collected and reported, it is possible we will see further success on the development of these and other Internet ecosystems in countries where zero-rating is available.

CRITICISMS OF ZERO-RATING

There are critics who oppose using zero-rating as an approach to shifting to a high-connectivity equilibrium. These critics argue it will do little to benefit the local population or economy, and that it could even harm competition in local markets.

First, critics of zero-rating see it as a form of content prioritization.³⁵ Some opponents, such as Susan Crawford, claim it discriminates against the creation of local would-be content providers of similar services.³⁶ In this scenario the Internet ecosystem is not stimulated, because businesses are unable to compete with the few sites that receive preferential treatment. This view posits a zero-rating spiral, where any business that wishes to succeed will have to negotiate their own zero-rated deals with operators. This would keep local content developers out of the market, or at the very least discourage creation of non-zero-rated content.

Fear of discriminatory practices is why countries like Chile have already banned zero-rating.³⁷ Other developing countries that are considering similar measures are doing so on the grounds that any prioritization is a violation of net neutrality.

Core principles encourage public and government trust in mobile operators' intentions when pursuing zero-rating programs.

Second, opponents of zero-rating argue that the shift to a high-connectivity equilibrium may not happen if consumers are unable or unwilling to go beyond the free content. Here, zero-rating forms a “walled garden” around the Internet, also referred to as a separate “Internet for poor people.”³⁸

The underlying presumption is that if people can't afford a data plan regardless of zero-rated content, even if they see the relevancy of having Internet access, then zero-rating is irrelevant. The ecosystem will never get off the ground, leaving people with a fragmented slice of the Internet. In this scenario, instead of bridging the digital divide, zero-rating will widen it, ultimately doing more harm than good.

These zero-rating opponents also point to evidence in some developing countries that people already believe sites like Facebook constitute “The Internet.” According to one Quartz article, “Facebook is literally becoming the Internet.” It cites the overwhelming share of Filipino citizens on Facebook as a share of those using the Internet, and details how a leading handset manufacturer even includes Facebook’s logo in its advertising.³⁹

Interestingly, however, the same article also explains why these claims of “Facebook being the Internet” are exaggerated. Facebook has penetrated just 6.5 percent of the population in Asia, and less

than 5 percent in Africa.⁴⁰ Moreover, it is not clear why increased use of social media—and any other zero-rated content—is negative. That could actually be a sign of the zero-rating’s success in these countries at getting more people and businesses online.

Ultimately, exposure to ‘some Internet’ is far more likely to be a gateway to increased data consumption than to block Internet usage or reduce it. Without any exposure to the Internet, there is no chance of moving from a low-connectivity to a high-connectivity equilibrium. That makes it all but assured people will not be able to learn the digital skills they need to participate in the digital revolution.

Zero-rating also cannot work without basic broadband infrastructure in place, particularly for mobile broadband.

Moreover, people and businesses in poor and developing countries stand to gain the most from becoming connected. They are in some ways even more reliant on being connected than people in developed nations, and stand to lose out on more social and economic opportunities without it.

The popularity of social media sites like Facebook and Twitter is not the problem with zero-rating—it is an opportunity. According to a recent Pew survey, “Once people have access to the internet, they tend to engage in social networking.”⁴¹

Not counting popular social media content against data caps will give people the freedom and incentive to explore local content and services. And instead of competing with the social media giants for customers, local enterprises can work with them as part of the larger Internet ecosystem. They can take advantage of the ability for people to use any zero-rated social media platforms, as an opportunity to reach potential customers. They can create their own social media pages for customers to follow, and

even advertise their latest goods and services, at a relatively low-cost.

ENHANCING ZERO-RATING THROUGH POLICY

Rather than ban zero-rating, countries should follow certain core principles that will enhance its ability to successfully ignite a local Internet economy. That is, a set of characteristics for zero-rating programs to incorporate, as highlighted by the successes demonstrated in the preliminary evidence.

These principles will still enable the many shapes and sizes of zero-rating programs currently in practice. A one-size-fits-all approach to zero-rating simply does not make sense given the large variance in underlying social and economic demographics of the target low-connected populations.⁴²

Rather, these principles should incorporate lessons from current practice, to establish a base set of features that should be common to all zero-rating programs. We believe this will give future programs the best chance of becoming a successful ecosystem jumpstart, while addressing some of qualms voiced by zero-rating critics. Such principles encourage public and government trust in mobile operators’ intentions when pursuing zero-rating programs.

For example, we propose the following core principles for zero-rating programs:

1. Transparency—all zero-rating offerings should ban secret agreements between content provider and mobile operator.
2. Non-exclusivity—there should be no agreement that prohibits multiple operators from offering the same zero-rated content. This will mitigate fears of anti-competitive behavior.
3. Local content—when possible, mobile operators should also zero-rate some basic local content, such as local government services or local healthcare and weather alerts.
4. Evaluation—regular data collection and reporting from the mobile operators will help governments understand the effectiveness of zero-rating.

These principles will help foster a positive feedback loop for local economic development. For example, offering some zero-rated local content will entice content creators to go online faster, and it will show low-connectivity consumers the relevance of local content.

Regular reporting and evaluation of the outcomes of zero-rating programs will not only provide a better foundation for technology policy in developing countries, but will also enable mobile operators to adjust their zero-rating offerings as experience suggests. It will also boost transparency, which addresses many of the criticisms raised by zero-rating opponents.

With these principles, governments in developing countries should continue to allow zero-rated offerings, as a complement to other subsidy programs to encourage broadband adoption already in place. That means policies such as net neutrality—a strict approach to regulating a free and open Internet—should not be constructed in low-connectivity countries in a way that prohibits future zero-rating programs.

Of course, zero-rating is only one part of how developing countries can shift from a low to high-connectivity equilibrium. Zero-rating should be used in conjunction with other policies and programs aimed at cultivating thriving local Internet ecosystems.

Such policies include strong protections for data privacy and security. This is a hot topic in developed and developing countries alike. Striking the right balance between consumer protection and enabling data-driven innovation, through a combination of legislation and industry standards, is essential to maintaining public trust and safety. People are more likely to remain unconnected if they feel it is too risky to share personal information on the Internet.

At the same time, governments should also acknowledge the importance of Internet freedom. If online content is artificially censored, or if governments enforce strict content rules, there will be less consumer demand to access the Internet.

Zero-rating also cannot work without basic broadband infrastructure in place, particularly for mobile broadband.⁴³ Developing governments in



low-connectivity countries must support the build-out of broadband networks by creating national broadband plans and following through on them, and when applicable, making spectrum available for high-speed mobile broadband networks and Wi-Fi.

Governments in low-connectivity countries should also prioritize policies that encourage private investment in broadband networks. It is very expensive for the government to own, manage, and maintain broadband networks. Evidence from the experience of developed countries suggests robust private investment in high-speed broadband networks has enabled much of the tremendous growth in apps, videos, and other high-bandwidth mobile data traffic.

Moreover, governments should refrain from imposing Internet access taxes, or “connectivity taxes.” This includes import taxes on mobile phones, and Internet connection and usage taxes. Increasing the cost of going online will discourage people from purchasing data plans, which could undermine the effectiveness of zero-rating.

Finally, governments in developing countries must also continue and build on efforts to ensure adequate digital literacy skills across their population.⁴⁴ Such training must start early, in schools and at home. This includes efforts to better prepare teachers, and it includes making sure schools have access to the Internet.

A FUTURE OF HIGH-CONNECTIVITY

A country trapped in a low-connectivity equilibrium faces serious challenges in terms of future growth and prosperity. As the data-driven economy continues to govern global growth and high-wage job creation, these countries risk being completely left out of the Internet's tremendous social and economic opportunities.

Fortunately, it is possible for countries trapped in a low-connectivity equilibrium to make the transition to high-connectivity. However, some approaches

may work better than others, and one in particular may come with a cheaper price tag and more public trust: zero-rating.

In particular, this paper explains why zero-rating may be the most viable and low-cost approach in moving to a high-connectivity equilibrium. It has the power to boost local content and local demand for online goods and services, and early indications of its effectiveness are promising.

That's why, at the stage, it would be a mistake for developing countries to dismiss the potential of zero-rating. Instead, there are ways governments debating the merits of zero-rating could think about core principles to make the practice more effective. Until these countries in low-connectivity equilibriums successfully make the transition to high-connectivity, it would be wise to keep all economy-boosting options on the table.

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Granting network providers pricing flexibility should reduce the costs borne by consumers.

Network Neutrality or Internet Innovation?

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Network neutrality has received sustained attention from both policymakers and academic commentators for the past several years, and it shows no signs of retreating from the forefront of the policy debate. President Obama effectively ensured that network neutrality will remain at the top of the policy agenda by including provisions in the 2009 stimulus package that require the Federal Communications Commission to formulate a national broadband plan. The stimulus package also requires that grants made by the National Telecommunications and Information Administration comply with four network neutrality principles first articulated by the FCC in 2005. On October 22, 2009, the FCC initiated proceedings to codify and expand the 2005 principles. President Obama reaffirmed his support for network neutrality in a YouTube interview conducted shortly after his 2010 State of the Union address.

Pinning down a precise definition of network neutrality is difficult. Roughly speaking, it requires network providers to route traffic without regard to the source or content of the packets of data that move across the Internet, the application with which those packets are associated, or the sender's willingness to pay. In the words of leading network neutrality proponent Lawrence Lessig, "Net neutrality means simply that all like Internet content must be treated alike and move at the same speed over the network."

It would be surprising if any two similar packets would be treated exactly alike when traveling through a network con-

sisting of more than 30,000 autonomous systems that determine their terms of interconnection through arms-length negotiations. Indeed, many commentators have noted that such equal treatment did not occur over much of the Internet's past, when it was far less complex. Now, systematic changes in the architecture of the Internet make identical treatment even less likely, yet the changes are largely the result of network providers' attempts to reduce cost, manage congestion, and maintain quality of service. These changes may not represent network providers' efforts to promote their self interests at the expense of the public, as some network neutrality proponents have suggested, but instead they have the potential to yield substantial benefits both to individual consumers and to society as a whole.

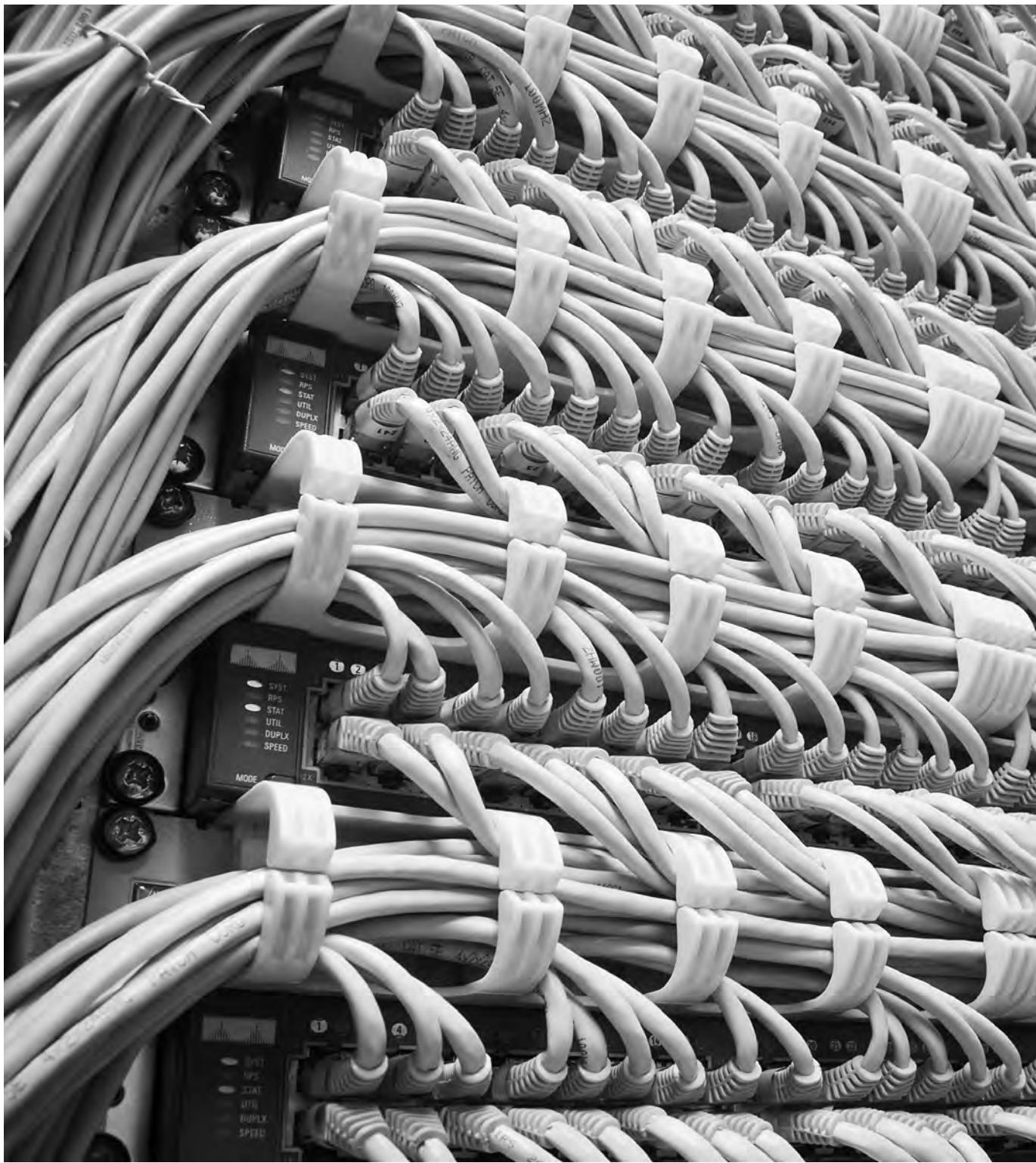
THE EARLY INTERNET

When the Internet first emerged, its topology and the business relationships comprising it were relatively simple. The Internet evolved out of the National Science Foundation's NSFNET backbone, which was created in 1986 (and decommissioned in 1997) to provide universities all over the country with access to federally funded supercomputing centers located at five major universities. The primary architects of NSFNET decided to give it a tripartite structure. At the top was the NSFNET backbone, which at its peak connected 16 research facilities across the country. At the bottom were the campus networks run by individual universities. In the middle were regional networks (typically operated by university consortia or state-university partnerships) that linked the campus networks to the major computing centers.

Every data packet had to travel through a parallel path traversing each level of the hierarchy. For example, traffic originating on one campus network would have to connect to the regional network with which it was associated, which hand-

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ed off the traffic to the NSFNET backbone, which in turn handed it off to the regional network that served the destination campus network. The result was to create a series of parallel hierarchies through which all traffic had to traverse.

The network retained this same basic architecture when it was privatized during the mid-1990s. The NSFNET backbone at the top of the hierarchy was replaced by a series of private backbone providers that interconnected with one another at four public network access points established by the National Science Foundation. The campus networks at the bottom of

the hierarchy were replaced by last-mile providers that transported traffic from local distribution facilities located in individual cities (which in the case of digital subscriber lines are usually called “central offices” and in the case of cable modem systems are usually called “headend”) to end users’ residences and places of business. The regional networks evolved into regional Internet service providers (ISPs) that transported traffic between the four network access points served by backbone providers and the central offices and headends maintained by last-mile providers.

The privatization of the Internet did not change the hierarchical nature of the basic architecture. Each regional ISP still connected to a single backbone provider, and each last-mile provider still connected to a single regional ISP. Indeed, the early versions of the routing protocol employed by the backbones (known as “border gateway protocol”) would not support more complex topologies.

This architecture conferred a number of advantages. It constituted a “spanning tree” that connected all of the nodes with the minimum number of links. Furthermore, the fact that the path between any two nodes was unique greatly simplified determining the path along which traffic should be routed. That said, tree architectures are also subject to a number of drawbacks. The uniqueness of the path connecting any two nodes means that the failure of any link or node in the network will inevitably disconnect part of the network. Even when all network elements are operating properly, if the rate at which traffic arrives exceeds any particular element’s capacity to route the traffic, that network element will become congested and the quality of service provided will deteriorate. In addition, the hierarchical structure made each network participant completely dependent on the players operating at the level above them, which in turn provided backbones with a potential source of market power.

Peering and Transit The early Internet was also characterized by relatively simple business relationships. End users typically purchased Internet access through some form of “all-you-can-eat” pricing, which allowed them to consume as much bandwidth as they would like for a single flat rate. Relationships between network providers typically fell into two categories. Tier-1 ISPs entered into “peering” relationships with one another, in which they exchanged traffic on a settlement-free basis and no money changed hands. The primary justification for foregoing payment is transaction costs. Although the backbones could meter and bill each other for the traffic they exchanged, they could avoid the cost of doing so without suffering any economic harm so long as the traffic they exchanged was roughly symmetrical; such arrangements would not be economical if the traffic being exchanged were severely imbalanced. Thus tier-1 ISPs will not peer with other networks that are unable to maintain a minimum level of traffic volume. In addition, peering partners typically require that inbound and outbound traffic not exceed a certain ratio. Networks that cannot meet these requirements must enter into “transit” arrangements in which they pay the backbone to provide connectivity to the rest of the Internet.

Most early analyses of these arrangements focused on their financial terms. What is often overlooked is that interconnection agreements covered two distinct functions: the sending and receiving of traffic, and the announcing to the rest of the Internet where IP addresses served by various providers are located. To understand this latter function, consider the perspective of a small network, A, that serves a small number of its own customers and purchases access to the rest of the Internet through another ISP. The transit agreement between A and the ISP would not only require the

ISP to receive traffic sent by A and to deliver traffic bound to A, but also require the ISP to announce to the rest of the Internet how to reach the IP prefixes associated with A’s customers. In addition, A can maintain a very simple routing table – it need only keep track of the prefixes of the customers that it serves; for all IP addresses outside of A, it can enter a “default route” into its routing table that directs all other traffic to the other ISP.

The existence of default routes creates a potential problem. If none of the routing tables involved in a particular routing session contained the location of the destination, by default the networks would simply hand the packets back and forth continuously and the packets would never reach their final destination. The only way to avoid this problem is for one or more network providers to maintain routing tables that map the entire Internet without employing any default routes. Thus, tier-1 ISPs are defined not only by their engaging in settlement-free peering with one another, but also by their maintaining routing tables that contain no defaults. Peering contracts also include a number of other requirements to guard against free riding and to ensure the proper functioning of the network.

THE INTERNET’S EVOLUTION

Over the past decade, ISPs have begun to enter into more complex interconnection arrangements that deviate from the strict tripartite hierarchy that characterized the early Internet. In addition, content providers have begun to experiment with a variety of ways to locate their content closer to end users. Both types of changes have significant implications that have largely been overlooked in the policy debate.

Private Peering, Multihoming, and Secondary Peering One of the first problems to emerge in the early Internet was congestion at the four network access points, which often caused throughput times and network reliability to degrade. Some estimate that this congestion caused packet loss at rates as high as 40 percent. As the network access points became increasingly congested, backbones began to find it advantageous to exchange traffic at private interconnection points, a practice known as “private peering.”

In addition, regional ISPs have begun to connect to more than one backbone, a practice known as “multihoming,” in part to protect against service outages and to limit their vulnerability to any exertion of market power by a backbone. Regional ISPs that did not have sufficient volume to peer with the tier-1 backbones also began to find that they did have sufficient volume to peer with other regional ISPs, a practice known as “secondary peering.” Enabling regional ISPs to exchange traffic on a settlement-free basis reduced the costs borne by end users. In addition, secondary peering would often shorten the number of hops needed for particular packets to reach their final destination and make them subject to bilateral (as opposed to multiparty) negotiations, both of which should increase networks’ control over quality of service. Secondary peering and multihoming also made the network more robust by creating multiple paths through

which network nodes could interconnect. In fact, as much as 70 percent of the nodes in the Internet can now communicate with one another without passing through the public backbone. This had the additional benefit of weakening the market position of the top-tier backbones, since any breakdown in the business relationship would not necessarily disconnect the ISP from the network and the ability to route along different paths places a natural limit on the backbones' ability to engage in supracompetitive pricing.

The emergence of interconnection relationships that deviate from the strict hierarchy that characterized the early Internet represents a substantial divergence from network neutrality. For example, assume that an end user is downloading content from both CNN.com and MSNBC.com. Assume further that the end user's regional ISP has a secondary peering relationship with the regional ISP serving CNN.com, but does not have a secondary peering relationship with the regional ISP serving MSNBC.com. The absence of a secondary peering relationship means that traffic from MSNBC.com will

ing tables. For similar reasons, a network may intentionally route traffic over a more costly path if doing so will help it maintain its traffic within the ratios mandated by its peering contract. Again, the effect is to introduce significant variance in the speed with which similarly situated packets will arrive at their destination and the cost that similarly situated packets will have to bear. This variance results not from anticompetitive motives, but rather from networks' attempts to minimize costs and ensure quality of service in the face of a network topology that is increasingly heterogeneous.

Server Farms and CDNs Large content providers have begun to employ other means to reduce cost and manage latency. One solution is to forgo maintaining a single large server and instead to deploy multiple points of presence in "carrier hotels" across the country. Doing so allows these content providers to avoid paying transit charges to reach the public backbone and instead transmit their traffic through secondary peering arrangements with tier-2 ISPs. Greater

Secondary peering and multihoming have the benefit of weakening the market position of the top-tier backbones.

have to pay transit charges, while traffic from CNN.com will not. The result is that traffic that is functionally identical will end up paying different amounts. The differences in topology may also allow the traffic from CNN.com to maintain greater control over the quality of service.

The presence of multiple routes between these two points also complicates routing decisions. The presence of multiple paths connecting two points naturally means that someone must decide along which path to route the traffic. Although most networks choose routes that minimize the number of hops, networks may sometimes find it beneficial to route traffic in order to satisfy other requirements of their interconnection relationships. For example, a network may seek to enhance efficiency by balancing the loads between the two links. Multihomed entities can also monitor the quality of service provided by each connection and route the most delay-sensitive traffic along the link with the lowest latency.

In addition, transit contracts call for customers to pay a flat fee up to a predetermined peak volume (known as the committed rate) and pay additional charges for any volume that exceeds that level. For the same reason that consumers with two mobile telephones have the incentive to use up all of the pre-paid minutes on both lines before incurring any additional per-minute charges, multihomed entities have the incentive to utilize all of their committed rate before paying additional fees. This lowers overall transit cost, but requires diverting some traffic along a path that is longer than the one stored in the rout-

ing tables. For similar reasons, a network may intentionally route traffic over a more costly path if doing so will help it maintain its traffic within the ratios mandated by its peering contract. Again, the effect is to introduce significant variance in the speed with which similarly situated packets will arrive at their destination and the cost that similarly situated packets will have to bear. This variance results not from anticompetitive motives, but rather from networks' attempts to minimize costs and ensure quality of service in the face of a network topology that is increasingly heterogeneous.

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reliance on private networks also gives the content providers greater control over network security and performance. A recent study indicates that Google, Yahoo!, and Microsoft have been able to use server farms to bypass the backbone altogether for roughly a third of their traffic, and to keep their number of hops for traffic that had to pass through the backbone to no more than one or two.

On other occasions, content providers are distributing their data through "content delivery networks" (CDNs) such as Akamai and Limelight. CDNs in effect substitute storage for long-distance networking capacity by maintaining a network of local caches across the Internet. When an end user sends a request for a webpage hosted by a CDN, that query is redirected to the cache. CDNs are thus able to use storage to serve multiple queries for the same content without using significant network resources. The geographic dispersion of the caches usually dictates that the file will be served by a location closer than would be possible if all of the content were stored in a central server, which minimizes cost and latency. The distributed nature of the caches also provides protection against denial-of-service attacks and allows the CDN to redirect queries to other caches when particular caches are overly congested.

CDNs represent an innovative way to deal with the increasing complexity of the Internet. The problem is that they are nonneutral. CDNs work best for static content; they are less well suited to interactive content that changes dynamically. More to the point, CDNs are commercial services; thus greater

reliability and quality of service are available only to those who are willing to pay for them.

To the extent that CDNs use the public backbone to deliver the content to their caches, they are best regarded as an overlay to the existing network. Increasingly, however, CDNs and server farms are bypassing the public backbone altogether and connecting to their caches through private networks, in the process transforming CDNs into a fundamentally different architecture.

All of these developments represent innovative adjustments to the realities of the Internet. The differences in topology mean that traffic that is otherwise similar may travel through the network at different speeds, with different costs, and with different levels of quality of service.

THE EVOLUTION OF BUSINESS RELATIONSHIPS

The evolution of the Internet has not been restricted to topology. Network participants have also been experimenting with an increasingly broad range of business arrangements. Some

Because this relationship is regarded as less hierarchical than client-server relationships, the computers in this architecture are known as peers and communications between them are known as peer-to-peer. Peer-to-peer is thus not synonymous with file sharing or user-generated content, as is often mistakenly assumed. On the contrary, many peer-to-peer applications (such as Vuze) support commercial broadcast services, and many platforms for user-generated content (such as YouTube) employ centralized servers. The real significance of the term “peer-to-peer” lies in the nature of the network architecture.

It is not yet clear what proportion of network traffic will follow each architecture. For example, peer-to-peer traffic had consistently outstripped client-server traffic for several years leading up to 2007. In 2007, however, client-server traffic staged a comeback, thanks primarily to the expansion of streaming video services like YouTube, and exceeded peer-to-peer traffic 45 percent to 37 percent. Many industry observers now predict that although peer-to-peer will remain important,

The differences in topology mean that traffic that is otherwise similar may travel through the network at different speeds, with different costs.

of these innovations have been driven by the increasing significance of peer-to-peer technologies. Other important developments are partial transit and paid peering.

Peer-To-Peer One of the primary forces causing business relationships to change is the growing importance of applications using peer-to-peer technologies. The traditional Internet employed what is known as a client-server architecture, in which files are stored in large computers at centralized locations (servers) and end users (clients) request files from those computers. The relationship is generally regarded as hierarchical, and the amount of data uploaded by clients is very small relative to the amount of data downloaded by servers. In the classic example of the World Wide Web, client traffic consists solely of uniform resource locators (URLs), the short bits of code identifying a particular website address. Server traffic, which consists of the data comprising the requested website, is much larger. For this reason, the technologies that took the early lead in broadband deployment (cable modem service and DSL) adapted an asymmetric architecture, allocating a larger proportion of the available bandwidth to downloading than to uploading. Newer technologies, such as fiber and wireless broadband, follow the same pattern.

Peer-to-peer technologies follow a very different approach. Edge computers in a peer-to-peer architecture are not divided into those that host files and those that request files. Instead, computers simultaneously perform both functions.

it will decline as a percentage of total Internet traffic over the next several years. Even so, it is clear that peer-to-peer traffic is likely to remain a more important component of network traffic than during the Internet’s early years.

The growing importance of peer-to-peer technologies is causing significant congestion in certain areas of the network and is putting pressure on the traditional approach to pricing network services. The emergence of end users as important sources of data is putting severe pressure on the limited bandwidth allocated to upload traffic. In addition, unlike in a client-server architecture where end users usually only generate traffic when a person is seated at the keyboard, edge computers in a peer-to-peer architecture can generate traffic for as long as the computer is left running. The result is that the lion’s share of upload traffic is generated by a small number of superheavy peer-to-peer users. As few as 5 percent of end users may be responsible for generating more than 50 percent of all Internet traffic.

The most recent generation of peer-to-peer technologies can exacerbate congestion still further. In the first generation of peer-to-peer technologies, each end user stored the entirety of the files that the user hosted. As a result, anyone requesting those files was limited by the total bandwidth and the level of congestion associated with the network connection attached to that end user’s computer. Technologies such as BitTorrent follow a different approach. Instead of storing entire files in one location, BitTorrent divides each file into

pieces and distributes them at multiple locations around the Internet. When a BitTorrent user requests a file, the software then retrieves the various pieces from multiple computers at the same time, which reduces the amount of bandwidth required from any one peer and improves download performance. BitTorrent also dynamically reallocates requests for pieces away from the slowest connections and toward the fastest connections, thereby placing the heaviest burden on those peers with the fast connections.

The congestion caused by peer-to-peer technologies weighs heaviest on last-mile technologies that share bandwidth locally, such as cable modem and wireless broadband systems. For example, cable modem technology requires that subscribers share bandwidth with the other households operating through the same neighborhood node. As a result, cable modem customers are significantly more vulnerable to the downloading habits of their immediate neighbors than are telephone-based broadband systems, which offer dedicated local connections. Service can slow to a crawl if as few as 15 of the 500 or so users sharing the same node are using peer-to-peer applications to download files.

The classic economic solution to congestion is to set the price of incremental network usage equal to the congestion costs imposed on the network by that usage. However, determining the congestion cost imposed by any particular user at any particular time can be quite complex. Subscribers that use large amounts of bandwidth can contribute very little to network congestion if they confine their usage to hours when network usage is low. Conversely, subscribers that use only small amounts of bandwidth may nonetheless impose significant congestion costs on the network if they generate traffic at peak times. The contribution of any particular usage cannot be determined simply by counting the number of bits being transmitted. The overall impact of any particular increase in network usage can only be determined in light of other subscribers' Internet usage. Thus it may make sense to charge different amounts to users who are using the Internet to access the same content or application if a sufficient number of other users sharing the same bandwidth are using the network at the same time.

The growth of peer-to-peer technologies has also heightened the pressure on the models that network providers have used to price their services. As noted earlier, the traditional approach charges content and application providers prices that increase with the peak bandwidth consumed, while end users are charged on an unmetered basis. The fact that every download had to pass through one link that charged on a volume-sensitive basis allowed this pricing approach to serve as a reasonable approximation of efficient congestion pricing. For example, 100 downloads of a 700 megabyte movie would generate 70 gigabytes of traffic from the server, which in turn would be reflected in the price paid by the content provider to its ISP.

The situation is quite different under peer-to-peer architecture. In that case, the movie could be downloaded once from the server, and the remaining 99 downloads could be served by other end users running the same peer-to-peer

software. Because end users are provided with service on an all-you-can-eat basis, the additional 99 downloads served by the peer-to-peer network do not generate any additional revenue. The only revenue received by the network is for the initial 700 megabyte download. Thus, in a peer-to-peer architecture, the amounts that content providers pay under the traditional pricing regime no longer serve as a workable approximation of the total traffic they impose on the network. Moreover, the failure to charge network participants prices that reflect their incremental contribution to congestion causes excessive consumption of network resources that ultimately harms consumers.

It thus comes as no surprise that the network providers that are most subject to local congestion are experimenting with other means for managing the congestion caused by peer-to-peer applications. For example, Time Warner has recently experimented with bandwidth caps and other forms of metered pricing. Although many network neutrality proponents have no objection to metered pricing, recent attempts to impose metered pricing and bandwidth caps have met such a hostile reaction from the network neutrality community that the network providers had to back down. That said, metered pricing is far from a panacea. As I have discussed in greater detail elsewhere, true congestion-based pricing would vary from moment to moment based on the volume of traffic introduced into the network by other users. Such a pricing regime would challenge consumers' ability to process the relevant information, and the distributed nature of the Internet means that no one entity has the information needed to formulate such policies. As a result, other network providers have turned to proxies that are strongly associated with high-volume activity, which most importantly includes a ban on operating a server as required by peer-to-peer technologies. Although this would constitute a violation of network neutrality by discriminating against a particular type of application, even network neutrality proponents acknowledge that such a restriction represents a good proxy for bandwidth-intensive activity.

Partial Transit and Paid Peering Network providers have also begun to enter into business relationships that go beyond peering and transit relationships that dominated the early Internet. Some are driven by the emergence of secondary peering relationships discussed above. Before such relationships existed, a tier-2 or tier-3 ISP would have to buy transit from a tier-1 ISP that had obtained access to all of the IP addresses that it did not serve. In other words, a tier-2 or tier-3 ISP's transit relationships would cover the entire Internet (except for its own customers).

The advent of secondary peering reduces the scope of transit services that the ISP needs to purchase. The ISP no longer needs to buy transit to the entire Internet; the secondary peering relationships already provide the ISP with the ability to reach those customers served by its secondary peering partners. As a result, these ISPs have begun to purchase partial transit that covers only those portions of the Internet not already covered by their secondary peering relationships.

In addition, an ISP with inbound traffic that far exceeds its outbound traffic may run the risk of having traffic ratios that put it in violation of its peering contract. Under these circumstances, it may attempt to cover its deficit in outbound traffic by selling a partial transit contract that covers only outbound traffic, but not inbound traffic. Alternatively, it may reduce its inbound traffic by buying partial transit for inbound traffic.

Another interesting development is the emergence of paid peering, which involves all of the same aspects as conventional peering relationships. Peers announce to the rest of the Internet the addresses that their peering partners control, maintain a sufficient number of interconnection points across the country, and maintain the requisite total volume and traffic ratios. The key difference is that one peering partner pays the other partner for its services.

Paid peering is driven by both supply-side and demand-side considerations. Starting first with the supply side, settlement-free peering arrangements between tier-1 ISPs with

The benefits created by the network economic effect for telephone networks arise with respect to a single class of customers. When a market is two-sided, instead of bringing together a single class of similarly situated users, networks bring together two completely different classes of users. In those cases, the value is determined not by the number of users of the same class, but rather by the number of users of the other class. A classic example is broadcast television, which brings together two groups: viewers and advertisers. Advertisers gain no benefit (and if anything suffer a detriment) from belonging to a network with a large number of other advertisers. The value of the network for advertisers is instead determined solely by the number of viewers, i.e., the size of the other class of users.

The literature suggests that social welfare would be maximized if the network provider were permitted to price discriminate on both sides of the two-sided market. It also suggests that the prices paid on each side of the market can differ widely, and that in many cases it is economically ben-

Social welfare would be maximized if the network provider could price discriminate on both sides of the two-sided market.

similar traffic volumes make sense only if both networks have similar costs. Over time, backbones have begun to serve two different types of last-mile networks: those such as Cogent and Abovenet that primarily serve content and application providers (which are sometimes called “content networks”), and those such as Comcast and Verizon that serve end users (which are sometimes called “eyeball networks”). The costs of the first type of network are quite low, typically only requiring a single high-speed line to a small number of business locations. The costs of the second type of network are considerably higher, requiring the wiring and upgrading of equipment in entire neighborhoods. The presence of such asymmetric costs provides a substantial impetus for cash to flow from networks serving content and application providers to networks providing connections to end users.

These supply-side considerations are reinforced by demand-side considerations associated with the economics of two-sided markets, which illustrates the potential benefits of allowing network providers to charge differential prices to both end users and content and application providers. Conventional economics has long recognized the existence of “network economic effects,” which cause a network to increase in value as the number of users connected to it increases. To use a classic example, the value of a telephone network to a particular consumer depends in part on the number of other subscribers connected to the network; the more people you can reach through the network, the more valuable it becomes.

eficial for one side to subsidize the other side. The fact that the Internet has become increasingly dominated by advertising revenue paid to content and application providers suggests that it may be socially beneficial for content and application providers to subsidize the prices paid by end users. An advertiser’s willingness to pay for an ad on a particular website depends on the number of end users viewing that website. Under these circumstances, the optimal solution may be for the website owner to subsidize the total number of end users by making payments to the network provider to help defray their costs of connection. The costs of subsidizing more users would be more than offset by the additional revenue generated by the fact that advertisers can now reach more potential customers. In the case of broadband, this would be both economically efficient and would be a boon to consumers both in terms of providing service in more geographic areas and in reducing the prices that consumers pay.

These dynamics are again well illustrated by broadcast television. In many ways, broadcast television and the Internet are analogous. The studios that create television programs play a similar role to content and application providers. Television networks aggregate programs and deliver them nationally in much the same manner as content networks and backbone providers. Local broadcast stations provide last-mile connectivity that is quite similar to the role played by eyeball networks. In addition, the revenue structure is quite comparable, in that television networks receive advertising revenue

in much the same manner as content and application providers. Furthermore, the cost structure is somewhat similar in that connecting individual homes is much more costly than distributing programming nationally.

For decades, the standard business arrangement has been for television networks to subsidize the operations of local broadcast stations by paying them to be members of their television networks. The industry's revenue and cost structure make such arrangements quite logical. The cost of paying these broadcast stations to affiliate with a network is more than offset by the increase in advertising revenue made possible by the fact that the network is now able to reach a larger audience. Broadcast television thus represents a prime example of when firms operating on one side of the market find it economically beneficial to subsidize end users on the other side of the market.

Furthermore, the magnitude of the affiliation fees that the networks pay to broadcast stations is anything but uniform. The precise amount varies with the relative strength of the network and the relative strength of the broadcast station. Stronger broadcast stations receive more, while weaker ones receive less. Equally interesting is the fact that in recent years, the cash flow has begun to vary in its direction as well as magnitude, with weaker stations having to pay rather than being paid to be part of the television network. The dynamic nature of this pricing regime benefits consumers by providing incentives for networks to invest in better quality programming and by providing an incentive for stations to provide better carriage.

The two-sided market analysis reveals the potential drawbacks of preventing network providers from charging differential prices. As a general matter, pricing flexibility makes it easier for network providers to recover the costs of building additional bandwidth. Granting network providers pricing flexibility with respect to content and application providers should reduce the percentage of the network costs borne by consumers. Conversely, preventing network providers from exercising pricing flexibility with respect to content and application providers would simply increase the proportion of the network costs that providers must recover directly from end users. This simultaneously raises the prices paid by consumers and decreases the likelihood that the capital

improvements will ever be built. Charging content and application providers differential prices thus has the potential to increase social welfare and can reduce, not increase, the burden borne by consumers.

CONCLUSION

It is all too easy to forget that the Internet is not a monolith with a brooding omnipresence overseeing the entire system. Instead, it is a collection of autonomous systems that determine the terms of interconnection between them through a series of arms-length negotiations. Given the Internet's essence as a network of networks, it should come as no surprise that no two packets will pay the same amount for the same service.

The developments that I have outlined in this article have made such differences even more likely. The network no longer adheres to the rigid and uniform hierarchy that characterized the early Internet and its predecessor, NSFNET. Data packets can now travel along radically different paths based on the topology of the portion of the network through which they travel. This is the inevitable result of reducing costs and experimenting with new structures. At the same time that network providers are experimenting with new topologies, they are also experimenting with new business relationships. Gone are the days when networks interconnected through peering and transit and imposed all-you-can-eat pricing on all end users. That fairly simple and uniform set of contractual arrangements has been replaced by a much more complex set of business relationships that reflect creative solutions to an increasingly complex set of economic problems. Again, these differences mean that the service that any particular packet receives and the amount that it pays will vary with the business relationships between the networks through which it travels. Although many observers reflexively view such deviations from the status quo with suspicion, in many (if not most) cases, they represent nothing more than the natural evolution of a network trying to respond to an ever-growing diversity of customer demands. Imposing regulation that would thwart such developments threatens to increase costs and discourage investment in ways that ultimately work to the detriment of the consumers that such regulation is ostensibly designed to protect.

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September 4, 2014

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Protecting and Promoting the Open Internet, GN Docket No. 14-28; Framework for Broadband Internet Service, GN Docket No. 10-127*

Dear Ms. Dortch:

The Commission's tentative conclusion to extend a mobile-specific Open Internet framework is grounded in three aspects of the mobile marketplace: mobile broadband faces unique operational constraints; mobile broadband technologies are rapidly evolving; and the "generally greater amount of consumer choice" for mobile broadband services than for fixed.¹ CTIA—The Wireless Association® submits the attached technical paper to help detail the operational constraints in these ever-evolving mobile networks, the complexity of mobile network management, why flexibility is needed, and how prescriptive regulation would undermine mobile broadband operators' ability to provide consumers with the level of service they have come to expect.

The paper, *Net Neutrality and Technical Challenges of Mobile Broadband Networks*, is co-authored by Dr. Jeffrey H. Reed, Willis G. Worcester Professor of Electrical and Computer Engineering at Virginia Tech University and Director of Wireless@Virginia Tech, and Dr. Nishith Tripathi, senior consultant who writes and lectures on mobile technologies. Wireless@Virginia Tech is one of the largest and most comprehensive university wireless research groups in the U.S.

In their paper, Drs. Reed and Tripathi explain in great detail the primary technical factors affecting mobile network management; how mobile broadband providers apply differential treatment to different traffic streams on a real-time, dynamic basis; the stark technological differences between wireless and wireline networks and network management; and the problems that would arise from imposing prescriptive Open Internet regulation on mobile providers. The technical factors they highlight include the following:

- **Scarcity of radio resources.** With the explosion in the amount of mobile data traffic, spectrum resources have not kept pace. Mobile broadband operators

¹ Protecting and Promoting the Open Internet, *Notice of Proposed Rulemaking*, GN Docket No. 14-28, FCC 14-61, ¶ 91 (rel. May, 15, 2014); *see also id.* ¶ 62.



are thus constrained, necessitating aggressive and efficient management of limited radio resources.

- **Radio resource sharing.** As the number of users being served by the same base station fluctuates, the challenge of providing high-quality service to each of them also grows, requiring providers to make choices regarding how to manage network resources.
- **Dynamic channel conditions.** The allocation of radio resources constantly changes due to changing channel conditions and the interference environment, as often as every millisecond.
- **Varying resource consumption.** For a given channel condition, different services consume different amounts of resources. Thus, resource allocations change as users shift among different uses – often many times during a given session.
- **Integration of devices and the network.** Even when two devices experience identical channel conditions and allocation of radio resources, their design characteristics may dictate widely different throughput, further complicating network management.
- **Ever-evolving network.** Mobile broadband providers constantly manage user mobility across various technology generations and revisions across the network, offering differing levels of achievable network performance.
- **Challenges of network capacity additions.** The intricacies of capacity growth (adding spectrum and wireless infrastructure deployment), along with ever-rising user traffic, make efficient utilization of the existing radio resources extremely critical to the user experience and network efficiency.

Drs. Reed and Tripathi also explain that mobile and fixed networks face vastly different technical challenges. Fixed networks have significantly higher capacity and predictability of resource requirements, whereas mobile networks are far more capacity constrained, with constantly changing user requirements and operating environments. Fixed networks involve channels that are relatively clean with signal regeneration, while mobile channels are impaired with interference, multipath and blockage, varying by location and from one millisecond to the next. As they observe, “The wireline network engineer knows precisely how much bandwidth is available in a single fiber optic strand and (other than losses over distance) will have a near-constant understanding of the performance of the transport layer. In contrast, wireless networks are faced with ever-changing radio environments.”

Mobile broadband providers need more flexibility to manage their networks and to ensure that their customers have the service they have come to expect. As the paper explains, that flexibility must include the ability to manage applications to avoid harm to the network and to maintain reliable and efficient service for the aggregate user experience. Similarly, mobile operators should be free from any anti-discrimination or commercial reasonableness requirement that would restrict their ability to innovate, optimize, and differentiate service to deliver a high quality product. In addition, expanded transparency requirements are infeasible in the context of dynamic, ever-changing mobile network operations. As Drs. Reed and Tripathi conclude, more prescriptive mobile rules “would stifle innovation and competition, negatively impact the user-experience and system capacity, and severely limit the ability of mobile wireless networks to meet the unique challenges faced by modern wireless networks.”

The paper paints a detailed picture of the difficulties that would be created by the application of an overly broad or overly prescriptive set of rules on mobile broadband. As Reed and Tripathi explain, “subjecting this type of network and network management to broad prophylactic rules with a vague ‘exception’ standard would provide no clarity to carriers, edge providers, or consumers as to how these networks will be managed. The exception would either simply subsume any rules (e.g., blocking or non-discrimination) or providers would be stripped of their ability to evolve and manage networks for the betterment of the entire subscriber base.”

The paper also explains that mobile broadband inextricably intertwines transmission and processing capabilities, and thus remains an “integrated information service.” Mobile broadband service involves extensive and complex processing throughout the network to ensure that customers can seamlessly navigate among multiple applications and services, and different network nodes must constantly engage in service-specific processing to support the user’s activities. As Drs. Reed and Tripathi show, this tight integration between transmission and processing is essential whether the user is browsing a website, engaged in mobile video conferencing, or undertaking any of the myriad other activities made possible by mobile broadband. This factual finding further confirms the FCC’s prior determinations in 2007 and 2010 that mobile broadband Internet access is an integrated information service that must remain subject to a Title I framework. Moreover, the engineering and operational complexities outlined in this report make a Title II common carrier regulatory approach even more problematic.

We look forward to exploring these principles further as the Commission considers how best to promote mobile broadband and the interests of the American consumer.

Sincerely,

/s/ *Scott Bergmann*

Scott Bergmann
Vice President – Regulatory Affairs
CTIA – The Wireless Association®

**Net Neutrality and Technical Challenges of
Mobile Broadband Networks**

Dr. Jeffrey H. Reed and Dr. Nishith D. Tripathi

September 4, 2014

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Abstract

As this paper describes in detail, the management of mobile broadband networks is a constantly evolving task. From millisecond to millisecond, handsets with differing capabilities, consumers with different usage patterns, applications that utilize different aspects and capabilities of both the handset and the network, and content consumption, including video, must be integrated with the network and managed adroitly to deliver a world-class broadband experience for the customer. Now imagine that millisecond to millisecond process happening while the consumer is in motion, while the handsets vary in capability (think flip-phone to smartphone), while the available network changes from 3G to 4G and from one available spectrum band to another, while traffic moves into and out of a cell sector, and while spectrum capacity is limited. **This entire process – the integration of all of these different variables – is unique to mobile broadband.** This paper is designed to illustrate and explain this extremely complex, very dynamic process in the context of the FCC's 2014 Notice of Proposed Rulemaking ("NPRM") on net neutrality.

The NPRM seeks comment on several proposed rules and associated mechanisms. In particular, the NPRM seeks comment on three rules that impact the management of mobile broadband networks. First the "transparency rule" requires mobile broadband providers to publically disclose accurate information regarding network management practices, performance, and commercial terms of their broadband Internet access service. Second, the "no-blocking rule," which was vacated by the D.C. Circuit, prohibited mobile broadband providers from blocking consumers from accessing lawful websites, as well as prohibited blocking applications that compete with the provider's voice or video telephony services, subject to "reasonable network management." The Commission is now exploring modifications to these rules. And third, though it tentatively concludes that such a rule should not be imposed on mobile broadband providers, noting its previous findings distinguishing mobile broadband in the context of net neutrality regulation, the Commission also seeks comment on whether it should apply to mobile broadband networks an "anti-discrimination/commercial reasonableness" rule, that would enforce a "commercially reasonable" standard of conduct for broadband provider practices.

This paper demonstrates that any extensions of, or additions to, the FCC's 2010 rules would be unwieldy and over-inclusive when applied to the complex and constantly-evolving management of mobile broadband networks. In fact, with the introduction of LTE, networks are managed and operated in a far more complicated and complex manner than the networks in place in 2010 when the Open Internet Order was adopted. As more of the LTE standard's advanced functionalities are incorporated into wireless networks, the complexity and prioritization in the networks will only grow, as will the benefits to consumers.

This paper addresses, based on the complexity and constantly-evolving management of mobile networks, why several of the proposals could be disruptive to a robust consumer broadband experience, and why some of the Commission's tentative conclusions should be maintained. For example, requiring mobile broadband providers to develop and/or report metrics regarding network management would be extremely difficult from a technical perspective and is unlikely to be useful due to the millisecond-to-millisecond adjustments that are inherent to a mobile broadband network. As described throughout, ever-increasing usage and scarcity of spectrum resources requires active management of the network to address capacity issues in a rapid fashion at the cell (or sector) level based on the demands placed on

the network. Similarly, while the competitive pressures on wireless carriers make imposition of a no-blocking rule unnecessary, broad application of a rule could have a significant negative technical impact on wireless broadband networks.

This paper explains how wireless applications can consume very large quantities of bandwidth, potentially causing problems for the end user or for others nearby. Third-party mobile apps and services can also interfere with and undermine network performance, and wireless network operators must be permitted the flexibility to manage their networks to prevent these negative effects. The NPRM also seeks comment on the feasibility of defining a minimum level of service that broadband networks must provide, proposing several possible standards that could be used. As discussed, such standards cannot be readily quantified for mobile wireless networks given the millisecond-to-millisecond adjustments in the network and would prevent wireless network operators from using techniques critical to ensuring a robust user experience. Also, as handset technology, base station technology, network technology and application technology rapidly change, it is unclear what metrics and standards would apply universally over time to fairly judge capabilities or performance.

The paper also demonstrates that the NPRM's tentative conclusion that an "anti-discrimination/commercial reasonableness" rule need not apply to wireless is the correct one. Differentiation among users and user services is required to provide a satisfactory quality of service to consumers. This is due to the dynamic nature of the radio environment and the need to operate good scheduling algorithm designs in a wireless network that maximize network performance while providing a good user-perceived experience. It is also due to product differentiation within a competitive marketplace in terms of what devices, features, and services might be offered as part of a carrier's service plan.

Finally, the paper explains that without today's real-time sophisticated scheduling algorithms that support network management that enables the service operator to cost-effectively provide services to many users simultaneously, overall user experience and network throughput will suffer. Treating all users alike at all times will degrade network performance by driving delivery to the lowest common denominator, and make the network less efficient. Adapting delivery to the predicted data delivery performance based on dynamic radio channel assessments promotes more efficient performance overall, across all users, even though at any single moment a network's site will distinguish between users based on channel quality.

The paper concludes that if adopted or expanded, several of the rules proposed in the NPRM would place constraints on mobile wireless networks that would stifle innovation and competition, negatively impact the user-experience and system capacity, and severely limit the ability of mobile wireless networks to meet the unique challenges faced by modern wireless networks. The result, in turn, would be harm to wireless users – the very outcome the Commission seeks to prevent.

From an engineering perspective, the concept that a network management exception to Open Internet rules is sufficient to allow wireless networks to evolve and operate is nonsensical. A modern wireless network must be managed aggressively. It is not an exception, it is a daily reality. Subjecting this type of network and network management to broad prophylactic rules with a vague "exception" standard would provide no clarity to carriers, edge providers, or consumers as to how these networks will be managed. The exception would either simply subsume any rules (e.g., blocking or non-discrimination) or

providers would be stripped of their ability to evolve and manage networks for the betterment of the entire subscriber base.

This paper demonstrates the following:

- *Minimal regulatory constraints for mobile broadband networks would facilitate achieving higher spectral efficiency and improved user experience.*
- *Network Management is practiced extensively in mobile broadband networks and is critical for wireless operations.*
- *Preserving the ability for wireless carriers to block websites or applications as necessary for reasonable network management is important to avoid harm to the network or degradation and is critical to maintaining reliable and efficient service.*
- *Application of an anti-discrimination/commercial reasonableness rule to mobile broadband providers would hamper their ability to innovate, optimize, differentiate, and deliver high quality products and services.*
- *Expanding the transparency rule would increase costs and negatively impact network management option, but will not provide any meaningful benefit to consumers.*
- *Mobile broadband Internet Access service is an integrated information service due to the tight coupling between the device and the many network elements, needed for customized processing of different types of information, and the distributed nature of the complex wireless network.*

1. Overview

This technical paper demonstrates the unique technical aspects of wireless broadband networks that make the imposition of prescriptive net neutrality regulations highly problematic. Mobile broadband networks are highly dynamic, with constant changes in network standards, technology, and capacity needs. Mobile broadband operators are also managing their networks with limited spectrum resources, which must be managed actively and quickly to provide a high quality of service to consumers. As a result, wireless network management practices are necessarily complex. Further, congestion-related metrics are highly variable both temporally and spatially, and also change by the millisecond, making meaningful reporting impractical.

The 2014 Net Neutrality NPRM. With respect to mobile broadband service, the NPRM discusses the transparency rule, the no-blocking rule, and a revised anti-discrimination/commercial reasonableness rule. The existing transparency rule requires the service provider to disclose items such as network management practices and performance, though the FCC now seeks comment on whether and how to expand the transparency requirements for mobile wireless providers. The proposed no-blocking rule would prohibit mobile broadband service providers from blocking consumer's access to lawful websites and from blocking consumer's voice or video telephony applications that compete with mobile broadband service provider's services, though the NPRM seeks comment on whether to apply this rule more broadly to mobile wireless services. The NPRM proposes an anti-discrimination/commercial reasonableness rule that prohibits commercially unreasonable practices based on the totality of circumstances. The NPRM tentatively concludes that this rule should not be applied to mobile broadband service, but it seeks comment on whether to reverse that finding. Comments filed in response to the NPRM affirm the technical findings explained in this paper.

Mobile Wireless Networks Undergo Constant Technical Evolutions. Mobile wireless networks have evolved from first-generation analog systems to fourth-generation high-performance digital systems with multiple revisions within a given generation. These generations and revisions have widely different capabilities for both the networks and the mobile devices. Commercial mobile providers typically have multiple generations and revisions of generations simultaneously operating to serve legacy and new devices. Each time a new revision is introduced network management practices must change. The mobile broadband network and the mobile device perform numerous operations and interact with each other so that the end users have anytime and anywhere seamless communications experience. And the wireless industry has not reached the end of the road on innovation – the industry is already turning to the development of 5G technologies, injecting further complexity in the design and management of mobile wireless networks.

Mobile Wireless Networks Have Unique Technical Characteristics. The difficulty of quantifying guaranteed network performance and user experience is increased further due to the unique characteristics of mobile wireless networks. Examples of such characteristics include:

- scarcity of spectrum,
- dynamic radio channel conditions,
- the need to share radio resources among numerous users and user services with different Quality of Service (QoS) requirements,
- mobility,
- vast variability in loading due to both variations in user density per area and variations in usage and data rates,
- inherently complex process of network capacity growth, and
- integration of devices and network technologies with widely different data use and application capabilities.

These characteristics pose significant challenges to mobile wireless networks and make the imposition of the prescriptive net neutrality rules infeasible. In particular, determination of any reliable universal thresholds or metrics to quantify user experience or network performance is infeasible. Further, imposing such specific metrics would then distort optimization and would impose conditions that would degrade consumers' mobile experiences. Furthermore, mobile broadband providers need a high degree of flexibility to efficiently and effectively manage precious radio resources to ensure the best possible aggregate service experience for all subscribers.

QoS and the ability to treat different types of traffic differently based on their service needs are essential in a mobile network. In a mobile network, where the connectivity performance is not as stable as with a wired network, some services will simply not work well if they are not subjected to differentiated treatment. VoLTE is one example – it is meant to replace the traditional, circuit-switched phone service available on cellphones. Without prioritization of this traffic, the quality and reliability of the phone service would be severely impacted. Other future services such as LTE multicast have similar requirements. As new services are layered onto the networks, and historical separation of data and voice services vanishes the need to address QoS issues will only increase.

Wireless Operators Engage in Numerous Network Management Techniques. The network management practices in mobile wireless networks are extremely complex and consist of numerous

mechanisms that are distributed among various components (or nodes) throughout the wireless and core network. Examples of network management mechanisms include the scheduling algorithm for downlink and uplink resource allocation, the handover algorithm, the load balancing algorithm, handling of the connected mode-idle mode transitions, adaptation to the changing channel conditions, power control, and interference coordination. These network management mechanisms are proprietary and are key competitive differentiators. Providers continually refine their network management practices to dynamically reflect changes in network equipment, application demands, and consumer usage patterns. Indeed, the rapid evaluation of these practices may well mean that by the time a given practice is challenged and adjudicated the practice may no longer be in use. Hence, a mandate to fully disclose these mechanisms, or to impose sweeping no-blocking or anti-discrimination rules, would discourage innovations, violate intellectual property rights, and harm consumers.

Wireless Network Operators Make the Most of Scarce Spectrum Resources. Wireless providers need maximum flexibility in the management of their networks to make the best use of the *scarce radio spectrum* in the presence of exponentially rising data traffic. Due to the scarcity of spectrum, innovative, high-performance, and ever-evolving network management mechanisms are absolutely essential to the overall network performance and user experience. For example, wireless providers must take steps to contain data-intensive applications from flooding the network with excessive amounts of traffic that would degrade service for many users. Wireless network operators require the flexibility to fairly balance network performance and user performance among users, devices, user services, and overall services on the network.

Net Neutrality Regulation Imposes Numerous Unique Challenges on Wireless Networks. As this paper demonstrates, application of the 2014 NPRM's proposed enhanced transparency rule to mobile wireless networks is nearly impossible, as network management practices are highly complex and are constantly changing. Furthermore, flexibility with respect to network management is essential to enable continued innovation in this area and these characteristics counsel strongly against far-reaching no blocking or anti-discrimination rules. Indeed, application of the no-blocking rule, meanwhile, is infeasible as the Commission has defined a "minimum level of service" that is not possible to guarantee for mobile wireless networks. The revised anti-discrimination rule is not intended to be applicable to mobile broadband service, and the findings of this technical paper strongly support this FCC conclusion. The FCC should continue to distinguish between mobile and fixed broadband with respect to the "no discrimination rule" and "anti-discrimination/commercial reasonableness rule." The dynamic and resource constrained (and at times, congested) nature of mobile wireless networks requires differentiation among users and user services to ensure a high quality of network performance and a satisfactory user experience.

Mobile Broadband Internet Access is an Integrated Information Service. Mobile broadband service is a highly integrated service that enables a subscriber to access a variety of services at once. The Commission itself observed that wireless broadband Internet access service offers a single, integrated service to end users that inextricably combines the transmission of data with computer processing, information provision, and computer interactivity. This level of integration requires cross-layer optimization in the network to ensure optimal network performance. Without the flexibility to actively manage their networks, mobile broadband providers will not be able to deliver integrated services at the level of quality that consumers have come to expect.

Recommendations. Due to the challenges faced by mobile network operators, which are outlined below, this paper recommends that the Commission:

- recognize that mobile wireless networks must be treated differently from other communications networks,
- strive for minimal regulation of mobile wireless networks to promote continued innovation, and refrain from applying far-reaching no blocking rules or an anti-discrimination/commercially reasonable rule,
- grant to network providers maximum flexibility regarding the design, management, and optimization of networks to serve consumers,
- refrain from establishing minimum performance standards (or metrics) for wireless networks, as these are impractical to define or enforce in the face of spectrum scarcity and variability, and
- ensure that proprietary and competitive network optimization and management processes are respected, which will ensure continued innovation and differentiation.

Flexibility in tuning and adapting the network management mechanisms to the fast-paced technology evolution, implementation of new features and uncertainty regarding the requirements of emerging applications or services urge that the network management mechanisms in mobile wireless networks should not be subject to broad disclosure, sweeping no-blocking, or anti-discrimination requirements. In other words, these network management mechanisms are intended, by their very nature, to optimize the aggregate performance for the benefit of all users. A focus on specific metrics may work to the detriment of the aggregate network performance and user experience. Conversely, reporting aggregate metrics will not reveal meaningful insights into specific instances.

2. Mobile Wireless Networks: Evolution, Network Architecture, and Operations

In order to fully appreciate the complexities associated with managing a wireless network and the difficulty of imposing an inflexible net neutrality framework, it is helpful to have an understanding of the rapid evolution of wireless networks and technology as well as the underlying architecture. In the more than 30 years that the wireless service has been provided to consumers, there has been a near-constant evolution of the underlying network. Section 2.1 summarizes this evolution of commercial mobile wireless networks. Section 2.2 illustrates the network architecture for the most popular 4G standard – Long Term Evolution (LTE). The wireless network and the mobile station (referred to as the user equipment or UE, mobile device, or handset device) perform numerous operations and interact with each other so that end users have anytime and anywhere seamless communications experience, processes which are quite different from wireline systems. Section 2.3 provides a glimpse of such operations and interactions.

2.1 Evolution of Mobile Wireless Networks

Mobile wireless networks have evolved from the first generation (1G) to the fourth-generation (4G) in just about three decades. Numerous 1G systems were used throughout the globe. Advanced Mobile Phone System (AMPS) is an example of the 1G system in the U.S. First generation systems were analog (radio air interface) in nature and offered primarily voice services. First generation systems evolved to second-generation (2G) digital systems. The 2G systems provided better voice quality and higher capacity compared to the 1G systems. Global System for Mobile communications (GSM), Interim

Standard-54 (TDMA), and later Interim Standard- 95 (IS-95 or CDMAOne) are examples of 2G digital systems engineered primarily for voice services used in the U.S. These digital systems evolved to ‘2.5 G’ systems to better support low data rate uses, including GPRS for GSM, IS-136/EDGE for TDMA, and CDMA 2000 1X for CDMA. Due to expanding needs for wireless data at higher rates, third generation standards for mobile wireless networks focused on supporting data services more efficiently separated from voice channels. The 3G systems include a packet-switched core network to facilitate Internet access. Universal Mobile Telecommunication System (UMTS), High Speed Packet Access (HSPA), and 1xEvolution-Data Optimized (1xEV-DO as a CDMA derivative) are examples of true 3G cellular systems. The 3G systems support peak user data rates on the order of few megabits per second (Mbps). Finally, fourth generation systems such as Long Term Evolution (LTE) were developed to provide higher data rates (e.g., many megabits per seconds) and higher spectral efficiency. In addition, LTE would allow both data and voice to be provided in an integrated fashion using Internet Protocol (IP) for transport, also known as VoIP (Voice over IP). LTE is currently being deployed in the U.S. and around the globe and is expected to be the most dominant wireless standard for the near term. Mobile wireless networks will continue to evolve—indeed providers are already working on 5G—with future generations of technologies bringing new capabilities and challenges. It is key that this evolution and innovation be able to progress unfettered by restrictive regulation. Figure 1 depicts the evolution of mobile wireless networks.

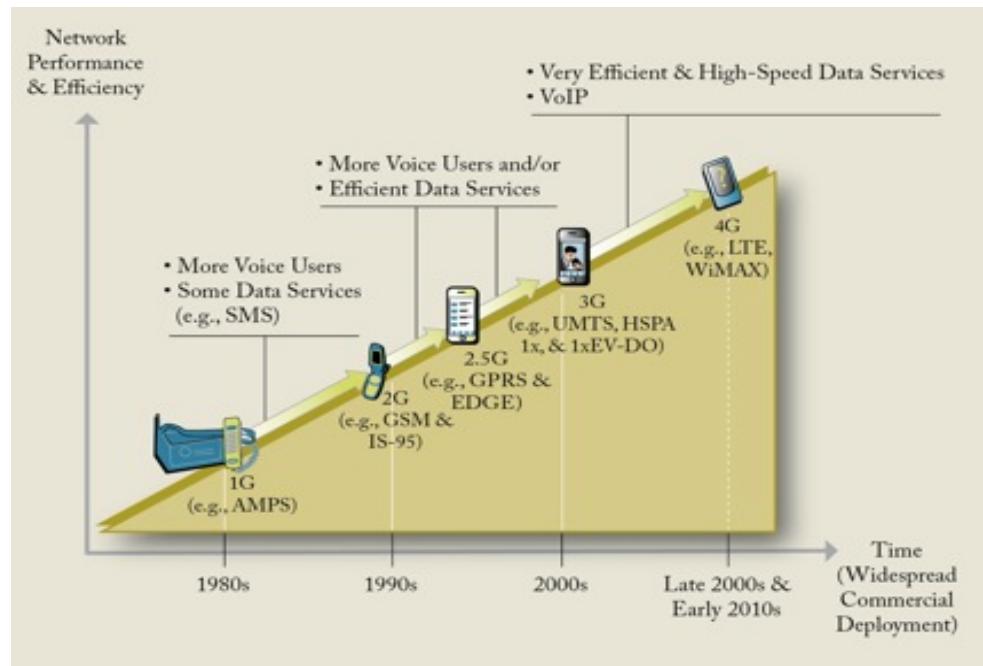


Figure 1. Ever-Changing Mobile Wireless Networks

Even for a given generation of wireless standards, multiple in-generation revisions that offer different features and capabilities exist. For example, 3G UMTS Release 99 supports a peak data rate of 2 Mbps in the downlink, while the 3G UMTS Release 5 feature called High-Speed Downlink Packet Access (HSDPA) supports a peak data rate of 14 Mbps in the downlink. The UMTS Release 7 feature called HSPA+ supports 21 or 42 Mbps in the downlink.

A mobile broadband provider typically has multiple revisions of multiple generations of technologies simultaneously operating. For example, in a given wireless service provider's network, some mobile devices may support GSM, some may support revisions up to HSDPA, some may support revisions up to HSPA+, and some may support revisions up to LTE. As the user switches from one generation of technology to another or from one revision to another, the performance can vary quite significantly. User mobility across different technologies needs to be properly managed by the mobile service provider. This involves complex network management.

The mobile service provider's network is never static. The network needs to be upgraded from one revision to another revision of a given generation technology and from one generation to another generation. Furthermore, once the network is upgraded with new features and capabilities, troubleshooting and then on-going optimization are carried out. The achievable peak performance keeps changing as the network undergoes never-ending upgrades. Even though LTE provides superior performance compared to prior generations of mobile wireless networks, LTE networks are currently undergoing upgrades with new features such as carrier aggregation and Voice over LTE (VoLTE), with each upgrade requiring changes to network management.

2.2 Network Architecture

The network architecture is different for 2G, 3G, and 4G (e.g., LTE) systems. This paper focuses on the network architecture for LTE due to its current dominance; however we will briefly describe simplified 3G and 4G network architectures below. In this section, we will describe the complex and decentralized nature of the wireless network and why application of net neutrality principles in this environment is so difficult. Moreover, with the move to an all IP-based infrastructure, the core wireless infrastructure is more intrinsically integrated into the radio network which in turn requires the wireless provider to calibrate and manage the radio resources and the core resources more carefully to ensure that subscribers are receiving an appropriate level of service.

LTE is defined by an organization or a standards body called the Third Generation Partnership Project (3GPP). 3GPP has defined a radio network called the Evolved-Universal Terrestrial Radio Access Network (E-UTRAN) and a core network called the Evolved Packet Core (EPC). The combination of the E-UTRAN and the EPC is termed Evolved Packet System (EPS) that can be viewed as the end-to-end LTE network. The LTE EPS uses the help of auxiliary networks such as IP Multimedia Subsystem (IMS) and the Policy and Charging Control (PCC) to provide a variety of services to end users. We will look at the main functions of the E-UTRAN, EPC, IMS, and PCC after a brief discussion of the simplified network architectures of 3G (e.g., UMTS) and 4G (e.g., LTE) network architectures illustrated in Figure 2.

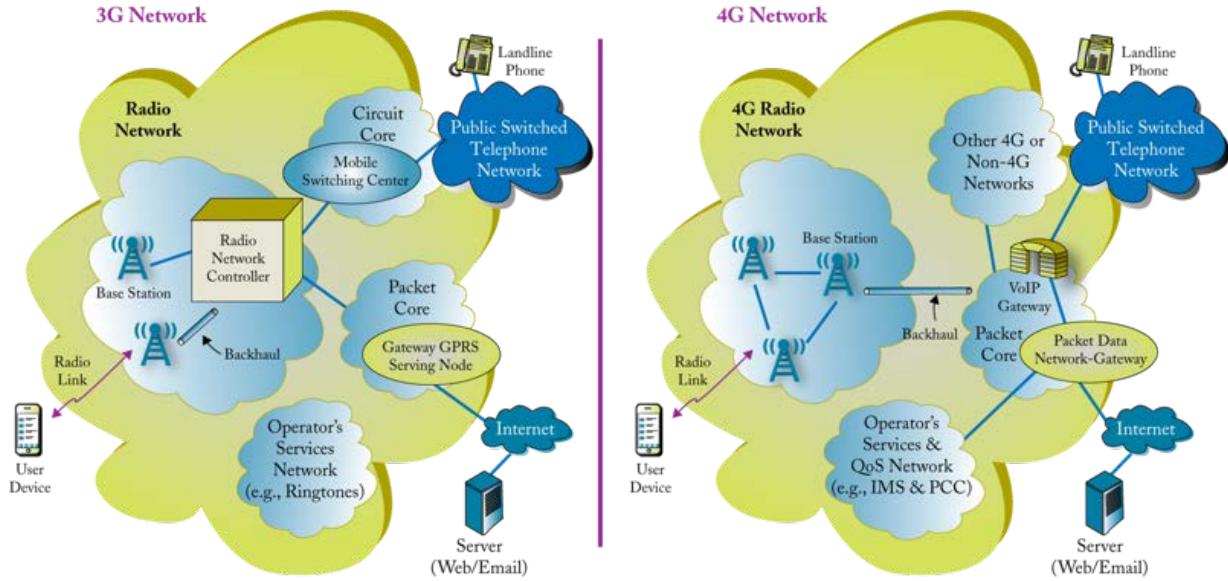


Figure 2. Simplified 3G and 4G Network Architectures

A 3G network consists of a radio network, a circuit-switched core network, a packet switched core network, and a services network. The radio network includes multiple Radio Network Controllers with each Radio Network Controller controlling hundreds of Base Stations. The Base Station communicates with the mobile device (referred to as the user device) via the air interface. The circuit-switched core network interfaces with the Public Switched Telephone Network so that the mobile device can communicate with a landline phone. The packet-switched core network enables the mobile device to access web and email servers via the Internet. The Mobile Switching Center is one of the nodes residing in the circuit-switched core network and controls the voice calls. The Gateway GPRS (General Packet Radio Service) Serving Node is an example of the packet-switched core network node and is in charge of assigning an IP address to the mobile device.

A generic 4G network consists of a radio network, a packet-switched core network, and a services and Quality of Service (QoS) network. The radio network includes the base stations. The packet switched network interfaces with the Internet using the help of a node such as the Packet Data Network Gateway. The packet-switched core network also interfaces with other 4G or non-4G networks. Since there is no circuit-switched core network in a typical 4G network, special nodes such as a VoIP gateway are needed to support calls between the 4G mobile device and the Public Switched Telephone Network. Auxiliary networks such as IP Multimedia Subsystem (IMS) and Policy and Charging Control (PCC) can be viewed as part of the operator's services and QoS network; these networks enable the service provider to offer to its subscribers a variety of IP-based services that have different QoS requirements. *We take a closer look at the LTE-specific 4G network architecture next.*

Wireless Radio Networks are Complex and Decentralized. The E-UTRAN has a decentralized and flat architecture. The E-UTRAN consists of the Evolved Node B (eNodeB or base station). The eNodeB communicates with mobiles over the wireless interface. The eNodeB makes the network management decisions related to the radio resource utilization. For example, the eNodeB evaluates the availability of the radio resources to determine if the subscriber can be offered services or not. The eNodeB implements a scheduling algorithm that allocates radio resources (radio bands and within one band,

Resource Blocks (RBs)) to the active users based on numerous factors including the target quality of service (QoS) of the applications of users, the amount of data, the number of users and the types of the user applications vying for resources, the radio channel conditions of users, the capabilities of the eNodeB and the mobiles, and the available spectrum. The eNodeB executes the scheduling algorithm as often as every 1 millisecond (ms). The eNodeB also determines the type of multiple antenna technique and the combination of the modulation and coding scheme for a given mobile device to reflect the prevailing radio channel conditions for the mobile. The eNodeB also carries out load balancing and interference coordination with the neighboring eNodeBs. The eNodeB implements a handover algorithm that utilizes the measurement reports of the radio environment received from the user equipments (UEs) and makes a handover decision if appropriate.

The Core Network is Tightly Integrated with the Radio Network. The Evolved Packet Core includes several entities such as the Mobility Management Entity (MME), Serving Gateway (S-GW), Packet Data Network Gateway (P-GW), and Home Subscriber Server (HSS) with specific responsibilities assigned to these entities. The Mobile Management Entity authenticates the LTE subscriber by working with the Home Subscriber Server. The Home Subscriber Server stores the subscriber database including the authentication related information. The Mobile Management Entity keeps track of the mobile device location when the mobile is in the idle mode so that a page can be sent to the mobile device to bring it out of the idle mode. The Mobile Management Entity coordinates the setup of Evolved Packet System bearers¹ for a mobile device; the Evolved Packet System bearers help carry the user traffic between the mobile and the Packet Data Network Gateway. The Packet Data Network Gateway allocates one or more IP addresses to the mobile device. The Packet Data Network Gateway is a mobile's gateway to the outside world such as the Internet. The Serving Gateway helps move the traffic between the eNodeB and the Packet Data Network Gateway. When the mobile goes from one eNodeB area to another eNodeB area, the Serving Gateway learns about such user mobility from the Mobile Management Entity and is able to forward the traffic between the Packet Data Network Gateway and the correct eNodeB. When the user is receiving information from a web server, the IP packets from the web server pass through the routers in the Internet and arrive at the Packet Data Network Gateway. The Packet Data Network Gateway forwards the user traffic to the correct Serving Gateway. The Serving Gateway forwards the IP traffic to the eNodeB that is currently serving the UE. The eNodeB allocates suitable radio resources to the mobile device and sends the IP packets to the mobile over the air interface.

The End-to-End LTE Network is Carefully Calibrated to Provide Quality of Service to Consumers. The Evolved Packet System works with the IP Multimedia Subsystem (IMS) and the Policy and Charging Control so that subscribers can be offered a variety of IP Multimedia Subsystem-based services with suitable QoS. The QoS benchmarks are derived from the standards work in 3GPP and are not set by the individual wireless provider. Examples of IMS-based services include Voice over IP (VoIP), Short Message Service (SMS), and Instant Messaging (IM). The wireless service provider is aware of the IMS-based services of the subscriber and the signaling associated with the IMS-based services passes through the Evolved Packet System and the IMS network. The IMS network performs its own service authentication for the cellular subscribers to allow the subscribed IMS services. The IMS network processes the signaling messages and extracts QoS for a given IMS service. The IMS network specifies

¹ A bearer in this context refers to a “pipeline” connecting two or more points in the communication system in which data traffic flows. An “EPS Bearer” would be the pipeline through which data traffic flows within the Evolved Packet System.

such QoS to the Policy and Charging Control network, which compares the service-requested QoS with the subscribed QoS and determines the QoS and charging rules based on operator policies and user subscriptions. The Policy and Charging Control network uses the help of the Packet Data Network Gateway to initiate the setup of an Evolved Packet System bearer² to meet the QoS requirements of the subscribed IMS service. Non-IMS services such as regular email and web browsing use the best-effort Evolved Packet System bearer toward the Internet, and signaling and traffic for such non-IMS services do not pass through the IMS network. Once a suitable Evolved Packet System bearer is in place, the Policy and Charging Control and the Packet Data Network Gateway implement the negotiated service-specific QoS. Although the resource bottleneck is usually radio resources at the eNodeB, the QoS control is needed on the link between the eNodeB and the Serving Gateway and the link between the Serving Gateway and the Packet Data Network Gateway.

2.3 Typical Wireless Network Operations

The 3G and 4G mobile wireless networks are quite complex, with various mobile device and network operations combining to support high data speeds and ever-improving quality of service. Figure 3 provides examples of such operations of mobile devices and the network for LTE.

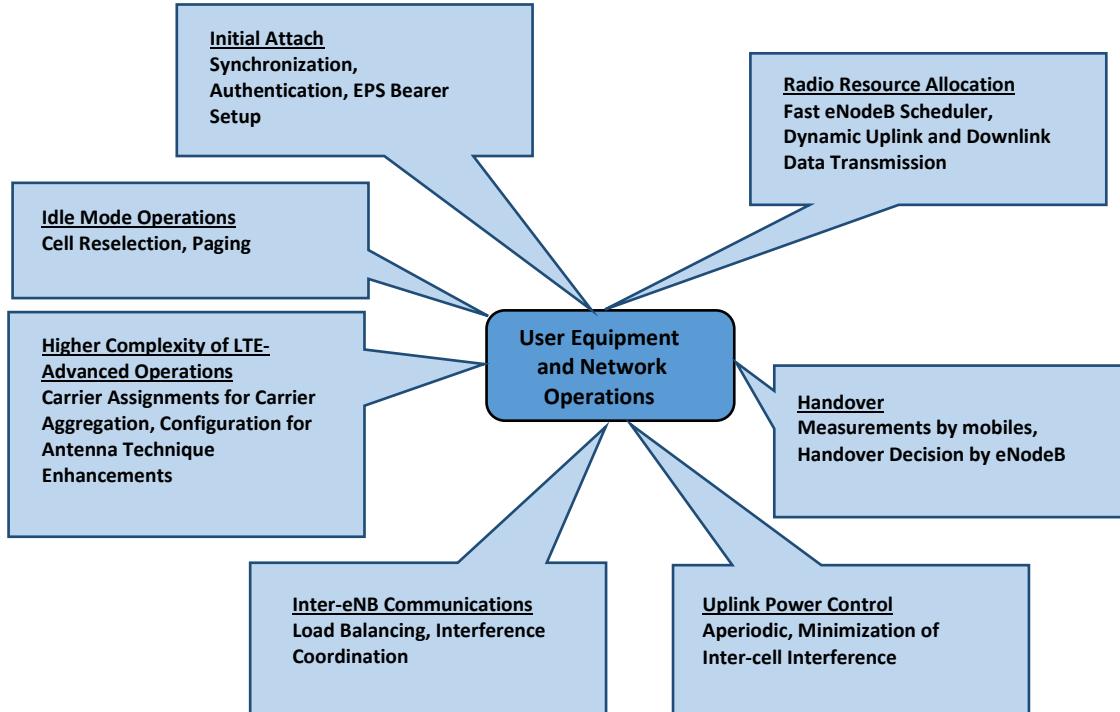


Figure 3. Operations of the Wireless Mobile Device and the Network

The mobile device carries out an initial attach procedure after power-up. During the attach procedure, the mobile achieves downlink and uplink synchronization with the eNodeB. The mobile and the network authenticate each other, and security is established. A default Evolved Packet System bearer with best-effort service is established toward a default packet data network to carry information without any

² End-to-end QoS is controlled at the EPS bearer level in LTE. Hence, if two applications need two different levels of QoS, two different EPS bearers with distinct QoS characteristics are needed. Furthermore, two applications with same QoS needs can be placed onto the same EPS bearer.

guaranteed data rate but with the target delay of 300 ms between the mobile and the Packet Data Network Gateway. The mobile is typically allocated an IP address during the default Evolved Packet System bearer setup.

Active mobiles have one or more Evolved Packet System bearers, and, the eNodeB scheduler dynamically allocates radio resources to the mobile for the downlink data transmission and the uplink data transmission. The eNodeB scheduler executes as fast as every millisecond to adapt to the radio channel conditions and to modify the allocated downlink and uplink resources.

The serving eNodeB configures the active mobile with measurements of neighboring cells that can be on the same carrier frequency as the serving cell or a different carrier frequency, or a different radio access technology (e.g., UMTS). The mobile device provides measurement reports when configured measurement events occur. The serving eNodeB makes a handover decision (if appropriate) and works with the target eNodeB to obtain resources for the mobile. Handover may occur without the movement of a user if the handover would balance traffic between eNodeBs.

In addition to allocating spectrum resources to the mobile, the eNodeB also controls the transmit power of the mobile by sending power control commands. Power control in LTE may be implemented as aperiodic and multiple power step-up and step-down sizes can be used. Power control helps minimize inter-cell interference in the uplink.

The eNodeB may communicate with the neighboring eNodeBs to carry out load balancing and to coordinate interference. Minimizing interference improves the achievable user throughput and cell throughput. Scheduling provides a compromise between fairness in serving all users and throughput for the overall network.

Complexity of the LTE network increases further with LTE-Advanced. The eNodeB scheduler needs to decide when to use multiple carrier frequencies simultaneously for a given mobile to improve throughput as part of the carrier aggregation feature of LTE-Advanced. More antenna technique enhancements are available in LTE-Advanced compared to LTE, and, the eNodeB dynamically needs to determine the type and configuration of the multiple antenna technique.

In the absence of data activity for a configurable time period, the eNodeB asks the mobile to enter the idle mode. The network needs to keep track of mobiles in the idle mode so that the network can page the mobile in the correct geographic region for incoming voice or data traffic. Even though the mobile in the idle mode does not consume any radio resources, it performs cell reselection to observe the strongest cell so that it is in the best possible cell when it needs to exit the idle mode to do some activity such as signaling exchange or data transfer.

3. Characteristics of Mobile Wireless Networks and Differences Between Wireless Networks and Wireline Networks

In Section 3.1, the characteristics of mobile wireless networks are discussed in detail. These characteristics dictate the complexity of network management and the need for flexibility for wireless providers to respond to changing circumstances within the network. Section 3.2 describes the significant differences between wireless and wireline network architectures that warrant differences in how mobile wireless networks are managed.

3.1 Characteristics of Mobile Wireless Networks and Resulting Implications

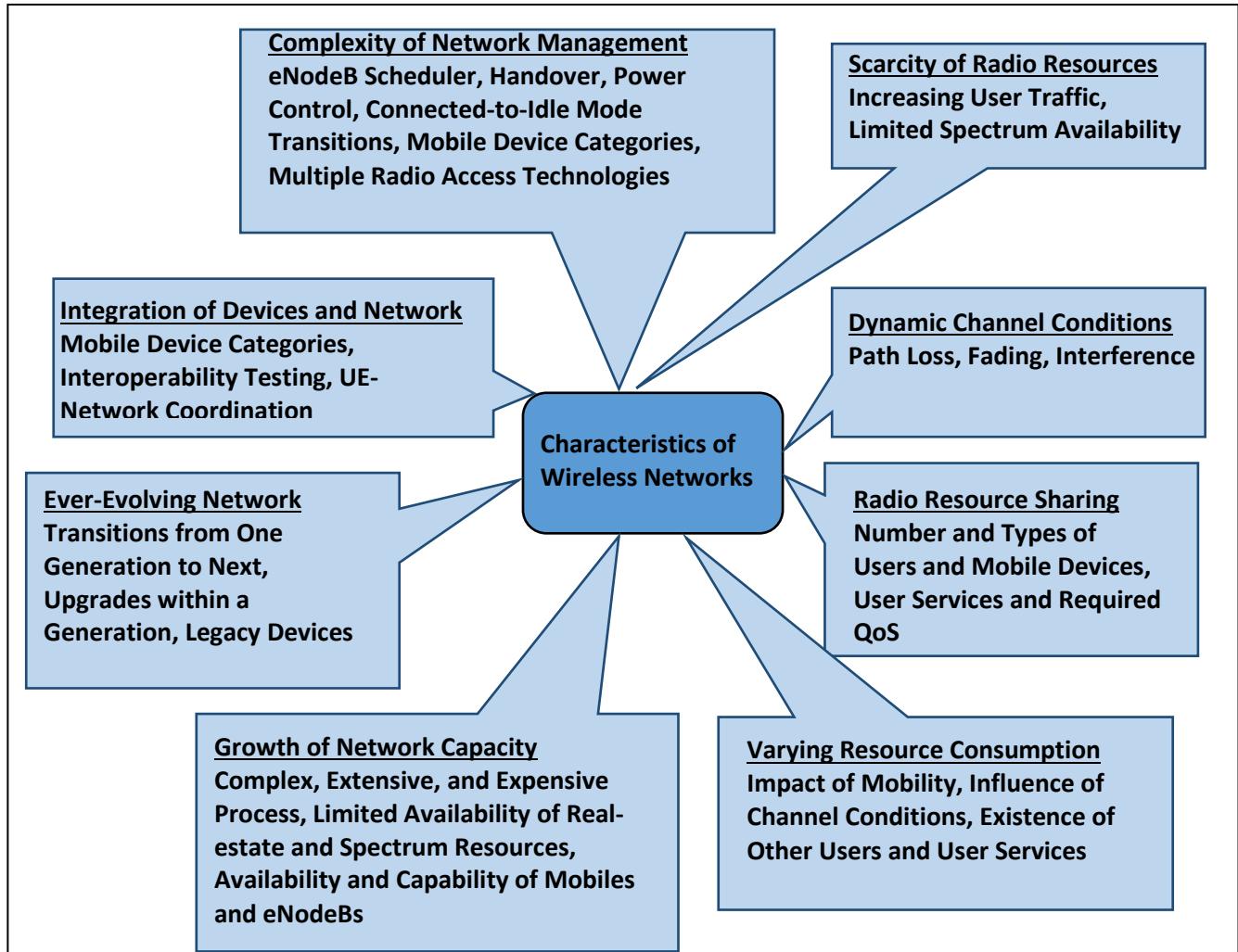


Figure 4. Characteristics of Mobile Wireless Networks

Figure 4 summarizes the characteristics of mobile wireless networks. These characteristics as a whole pose significant challenges to mobile wireless networks and make the application of prescriptive net neutrality principles to mobile wireless networks practically infeasible. In particular, determination of any reliable thresholds to quantify user or network performance is impossible. Furthermore, service providers need a high degree of flexibility to efficiently and effectively manage precious radio resources to ensure the best possible service experience for all subscribers.

Scarcity of Radio Resources. The popularity of the Internet and IP-based services such as video streaming have contributed to the explosion in the amount of data traffic traveling through the mobile broadband network. 4G services such as LTE bring with them higher data speed and greater video quality. The result has been more intensive use of 4G devices for bandwidth-heavy services, such as streaming video. Globally, in 2013 a 4G connection generated 14.5 times more traffic on average than a

non-4G connection.³ Although 4G connections represent only 2.9 percent of worldwide mobile connections today, they already account for 30 percent of mobile data traffic worldwide.⁴ In the United States, the average 4G smartphone generated 1,739 MB of traffic per month in 2013, compared to 906 MB for non-4G smartphones.⁵ Cisco estimates that “In the United States, mobile data traffic by 2018 will be equivalent to 383xthe volume of U.S. mobile traffic ten years earlier (in 2008).”⁶ However, spectrum does not become available with the same growth rate as data traffic. Mobile broadband operators are constrained by the amount of spectrum available and the growth rate of new spectrum availability will not keep up with constant increases in user demand. This is exacerbated by the rapid rate of data intensive applications, now enabled by mass adoption of screen based smartphones and tablets that encourage use of pictures, graphics and video, and hence drive data demand as well as driving requirements for lower latency (real time response). Scarcity of radio resources, such as spectrum, necessitates efficient management of aggregate radio resources that needs to strike a balance among numerous competing factors such as the number of active users, target QoS of user services, and prevailing radio channel conditions.

Radio Resource Sharing. Limited radio resources must be shared among the active users in a given geographic area. Basically all of the channel capacity is divided among the various users and the speed for every user will go down as more users are added. A small number of very heavy data users using apps that are extremely data intensive can have a disproportionate impact on a large number of users. The eNodeB scheduler, as often as every millisecond, needs to consider a number of factors such as the number of active user devices, capabilities of these devices, capabilities of the eNodeB, prevailing channel conditions of different devices on the network, and target QoS of different services to determine the amount of radio resources for individual users. Even if best-effort service were the goal for all users, these users would typically experience different data rates as the eNodeB scheduler would try to improve overall network throughput and overall user throughput.

Dynamic Channel Conditions. For a given level of service quality, the required amount of radio resources is a function of the channel conditions, and the channel conditions not only vary over time, but also as a function of distance from the serving cell. The signal-to-interference plus noise ratio (SINR) directly influences the required radio resources. SINR is influenced by a variety of factors such as the propagation-based signal attenuation, the severity of fading (e.g., shadow fading and Rayleigh fading), and the amount of interference. Furthermore, the channel conditions hardly remain static. The channel conditions change due to factors such as user mobility. Network operators need maximum flexibility to manage radio resources to quickly adapt to changing channel conditions. Even to preserve a given data rate, the user may need 36 times more radio resources when the channel conditions degrade.⁷ For

³ Cisco, Cisco Visual Networking Index, Global Mobile Data Traffic Forecast Update, 2013-2018 at 2 (Feb. 5, 2014) (“Cisco Feb. 2014 VNI Report”), available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.pdf.

⁴ *Id.*

⁵ Cisco, VNI Mobile Forecast Highlights, 2013-2018 at “United States – Accelerating Network Speeds” (“Cisco VNI Highlights”), at http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country (last visited June 10, 2014).

⁶ See Cisco VNI Highlights at “United States – 2018 Forecast Highlights.”

⁷ To quantify downlink channel conditions, the LTE standard has defined Channel Quality Indicator (CQI) that is a measure of achievable spectrum efficiency. CQI=1 corresponds to poor channel conditions, while CQI=15 corresponds to excellent channel conditions. The efficiency of transmission decreases from 5.5547 bits to 0.1523

example, a far-away user may require more coding (effectively more redundancy, meaning a higher real radio data rate to support the same effective data rate) and more retries (faulty packets with too high an error rate to be properly decoded are resent). Thus not all users are the same, even though their perceived data rates (the data rate the end user observes) appear the same. There are no definable metrics that could ‘fairly’ assess the achieved data rate. It takes the network effectively more network air interface resources (radio capacity) to serve such far-away (poor radio channel) customers. There is no such analogous situation for wired or fiber optic networks, because the channel quality conditions do not vary by such a large ratio, nor are the channel conditions so variable over time or space.

Varying Resource Consumption. Users in different channel conditions and using different services consume different amounts of resources. Even for the fixed throughput, different users would consume different amounts of radio resources depending upon the device-specific channel conditions. For a given channel condition, different services such as email and a VoIP call would consume different amounts of resources. It is nearly impossible to determine the exact amount of radio resources for a given user due to the highly dynamic nature of mobile wireless networks.

Challenges of Network Capacity Additions. Mobile broadband providers invest heavily to increase network capacity and keep up with rising user traffic and user expectations. Capacity can be increased by adding more spectrum (more different bands or more channels within the existing band(s)), deploying capacity-enhancing features such as advanced antenna techniques, and adding more cells (either by deploying ‘split’ macro cells or small cells) via cell-splitting techniques to gain more capacity via more ‘frequency reuse.’ In general, many of these techniques are quite expensive and take a long time from the concept to full commercial realization. Also, many of these radio capacity enhancing techniques have practical limitations. Deploying multiple bands requires replacing the users’ handsets, and the costs rise as the devices are more complex to serve multiple bands. Base station cell splitting techniques cannot be implemented indefinitely because co-channel interference levels rise as the cells get smaller. Advanced antenna techniques require larger antenna arrays.

Thus, as noted above, mobile wireless broadband providers cannot simply build their way out of capacity constraints but instead are dependent on government allocation of spectrum resources and must purchase rights to use these resources at auction. Purchasing spectrum resources and implementing other capacity-increasing techniques can be quite expensive. Adding macro cells poses an additional challenge of finding real estate. To exploit the full potential of the standard, the user equipment and the eNodeB need to have compatible capabilities. It may take years before the commercial incarnations of user equipment and the eNodeB are coordinated and can deliver the target theoretical peak performance aimed by the standard. The intricacies of capacity growth along with ever-rising user traffic imply that efficient utilization of the existing radio resources is absolutely critical to the user experience and the network efficiency.

Ever-Evolving Network. As mentioned in Section 2, the mobile broadband service provider’s network keeps changing to adapt to the newer generations of cellular standards and multiple revisions within a given generation of the cellular standard. The network has to manage the user equipment (UE) across various generations and revisions. As the newer standard emerges, the older standard does not

bits for a given modulation symbol, leading to $5.5547/0.1523=36.4$ more resources under the poor channel conditions to preserve a given data rate in poor and excellent channel conditions.

disappear immediately. Even the first-generation analog standard in the U.S., AMPS, survived for more than two decades! There are wide variations in achievable network performance and user-experienced QoS change among generations and even revisions within a generation. For example, a user may experience data rates of tens of Mbps (megabits per second) in an LTE network, but this speed could go down to hundreds of kbps (kilobits per second) when the user enters a UMTS network. Such wide disparity of the achievable performance makes it difficult to quantify even the minimum level of QoS or any metric (used for assessing performance and network neutrality) that relies on the apparent user experience.

Integration of Devices and Network. The user equipment and the network need to be tightly integrated to ensure satisfactory user experience. The standards typically define multiple categories of user equipment with different capabilities. Common ground needs to be found between a given category of user equipment and the eNodeB. In LTE, the network learns about the capabilities of the user equipment during the initial attach procedure and properly configures the equipment to ensure seamless communications between the device and the network. The network often works with user equipment of differing capabilities. Hence, even when two devices have identical channel conditions and identical allocation of radio resources, they could experience widely different throughput depending upon their capabilities as well as the proprietary aspects of the devices, such as antenna design. Extensive integration testing is carried out to ensure proper operations of user equipment and the eNodeB and error-free interactions between the device and the network. Tight integration between the user equipment and the network (e.g., eNodeB, Evolved Packet Core, and IMS) plays an important role in ensuring good user experience. Again, no ‘fair’ metrics could be defined to account for such differences in performance.

Complexity of Network Management. The network management in modern mobile wireless networks is extremely complex. Numerous interactions among the user equipment, the eNodeB, the Mobile Management Entity, the Serving Gateway, the Packet Data Network Gateway, the IMS network, and the Policy and Charging Control network occur to provide seamless communications experience and end-to-end QoS to the user. As mentioned in Section 2, the eNodeB scheduler allocates radio resources for the downlink and the uplink data transfer to achieve target QoS levels for the established Evolved Packet System bearers. The eNodeB executes a handover algorithm to choose the best possible serving cell for a user. The eNodeB also manages uplink power control commands to the mobiles to minimize inter-cell interference. The user equipment would be allowed to transmit more power if its uplink channel conditions are poor and/or its uplink throughput requirements are high. The eNodeB and the Mobile Management Entity manage connected-to-idle transitions for the user equipment. The network management must consider different capabilities of different mobile device categories to optimize the experience for the user. Ensuring seamless mobility across different radio access technologies is a non-trivial task. The network needs to configure the user equipment with suitable measurements and needs to connect radio networks supporting different radio access technologies. Integration testing within the network is also required to verify error-free coordination across radio access technologies. Nevertheless, this cross-layer optimization of the overall network is important for overall system performance and continues to be a promising area for further improving overall network performance.

3.2 Differences Between Wireline Networks and Mobile Wireless Networks

Any proposals to extend network neutrality principles conceived in a wireline context to mobile operations must contend with the vastly different technical challenges of these two types of communication networks. This section provides an overview of the differences in technical challenges between wireline and wireless systems as they relate to network neutrality regulation.

Wireless channels are quite different from wireline channels. First, the bandwidth for a wireless service provider might be on the order of 10s of MHz ($\sim 10^7$ Hz) (5-30 MHz), but a fiber optic system could be 10s of GHz ($\sim 10^{10}$ Hz). The difference represents at least a one thousand-fold difference and in many cases is much greater in total bandwidth. The number of users or data rates that can be accommodated is directly proportional to the total bandwidth (and, in wireless systems, is also affected by the relative dispersion of the users within particular cells). Although 3G and 4G technologies can enable multi-megabit per second wireless transfer rates (assuming adequate spectrum resources), wireless systems will never have the bandwidth of wireline systems. A wireline network can exploit advances in optical fiber technologies to achieve extremely high bandwidth exceeding thousands of Gbps (gigabits per second). In contrast, the limited amount of radio spectrum in mobile wireless networks puts a severe constraint on the achievable data rates on a wireless link. Additionally, the wireline network is very consistent with respect to capacity capabilities of the channel over time (no fading) and space (low loss per distance of fiber). The wireline network engineer knows precisely how much bandwidth is available in a single fiber optic strand and (other than losses over distance) will have a near-constant understanding of the performance of the transport layer. In contrast, wireless networks are faced with ever-changing radio environments. Temporal issues such as multipath, clutter, blockage, channel fading, and extraneous interference will result in changes in the performance of the network and the quality of service experienced by subscribers. Also, the quality of the radio channel necessarily degrades rapidly as a function of distance from the serving cell. Without extensive management (and the inherent compensation mechanisms used within the radio air interface: variable rate coding, variable modulation, retry, etc.) of the wireless network to account for these transport layer issues, customers would not receive the types of services and data rates that they expect.

Moreover, a “build more infrastructure” approach is much less of a solution to capacity issues in wireless systems than in wireline systems for a number of reasons. First, spectrum constraints place outside limits that simply do not exist in wireline. Overall aggregate wireline bandwidth can be expanded infinitely by adding more cables or fibers, or by technology upgrades. Wireless bandwidth is ultimately constrained by fundamental performance limits, available spectrum and interference. Second, mobility and propagation issues combine to create much greater variability in the channel as compared to wireline channels. Third, mobility and propagation issues combine to create much greater variability in wireless traffic—the spread between peak and average traffic levels is typically much wider for wireless than wireline—which makes it infeasible to design networks to meet anything approaching peak demands. Fourth, issues unique to wireless networks are associated with deploying more capacity. Wireless carriers continue to spend billions of dollars annually on infrastructure upgrades, but they will continue to face severe capacity constraints, particularly with demand growing far faster than anticipated and faster than new bands can be added.

In wireline systems, in contrast, capacity improvements without the large expense of laying new fiber have been made possible through better technology at the fiber ends. Such technology options simply

are unavailable for wireless systems, and dynamic prioritization and other management techniques are and will remain essential. While wireless network providers have taken efforts to use their spectrum resources more efficiently, such as by using small cell technology, as explained above wireless operators simply cannot “build out” of capacity constraints to the same extent as their wireline counterparts. In the 30 year history of commercial mobile networks, wireless providers have moved from analog (1G) to digital (2G) to 3G and now 4G services. However, each radio interface change requires substantial time and investment to bring about the gains in efficiencies expected from the more robust standards. Each base station must be updated via software and/or hardware to accommodate the changes in the air interface. All of the existing mobile devices in the network must be replaced to provide the full benefits to spectrum efficiency that the new radio standards allow. In contrast, wireline networks are able to upgrade solely at the edge of their networks to help gain efficiencies and do not require the extensive costs associated with wireless network technology migration to provide capacity gains. Fiber also presents extensive capacity availability throughout the network that has not yet been tapped for use, but is readily available for carrying traffic with updates to the technology at the fiber ends. Not only is the bandwidth of the wireless channel severely constrained compared to wireline channels, the reliability of the wireless channel is well below that of a wireline channel. The reliability issue is due to a number of factors, such as blockage of the radio signal (called shadowing), echoes or multipath of the signal, thermal noise, and, more importantly, interference. These impairments to the channel create substantial additional complexity and variability. Planning and operating a wireless deployment to ensure Quality of Service (QoS) and coverage is extraordinarily difficult because these impairments are random and unpredictable.

Interference is often the most important of these impairments, and, by its very nature, is constantly changing between and within cells. Interference occurs when multiple signals share the same spectrum. These signals are typically associated with the same service provider but are sometimes due to another service provider using the same or adjacent spectrum bands. Interference limits capacity in a wireless system on a dynamic basis, varying by location and from one millisecond to the next, and this problem has no counterpart in wireline systems.

Deployment and maintenance of wireline systems is less dynamic than wireless systems. Although wireline electronics and services continue to evolve, the advent of fiber has brought relative stability and efficiency to the wireline network architecture. In contrast, only change is constant in wireless standards and networks. As a result, network management practices must constantly evolve to address new architectures, new technologies, new standards, and new wireless applications with new performance needs.

These various features of mobile wireless networks make them much different than wireline networks. Table 1, below, summarizes the differences between wireless and wireline networks.

Table 1. Summary of Differences Between Wireless and Wireline Networks

Characteristic	Wireline	Wireless
Communications Channel	Relatively clean with signal Regeneration	Impaired with noise, interference, multipath, and blockage
Bandwidth	No spectrum limitations	Severe Spectrum limitations
Mobility	None	Constant, complex, often unpredictable, and often consuming extensive resources
Power	No need to manage power/battery life in wireline network for end user devices.	Limited power/battery on user device that must be accommodated through network management
Security	A lesser concern due to the physical path between the provider and the user (buried or on aerial infrastructure).	A greater challenge due to the possibility of tracking a user and variety of interfaces
Response to Increased Traffic Demand (i.e., the Capacity Problem)	Capacity increases may be feasible, although soaring demand and increasing congestion issues may call for additional pricing, bandwidth limitations, and prioritization mechanisms	Primarily managed dynamically through prioritization, scheduling, and power allocation
Network Complexity	Relatively simple	Extremely complex
Network Stability, Deployment, and Maintenance	Comparatively stable platform and systems, although high growth in demand and new applications are issues	Extremely dynamic platforms and systems; Deployment and maintenance require constantly dealing with real estate acquisition and zoning issues; Planning and maintenance are more difficult, and continuous maintenance and frequent resetting of network parameters is required; Infrastructure changes to address localized capacity issues can have ripple effects through adjacent cells

Characteristic	Wireline	Wireless
Quality of Service	Easier to implement due to availability of higher capacity and predictability of resource requirements	Quite difficult to implement due to variable capacity, unpredictability of resource requirements, and existence of proprietary mechanisms; Industry moving toward IMS and PCC

4. Challenges of Implementing the FCC's Proposed 2014 Rules on Net Neutrality to Mobile Wireless Networks

The NPRM seeks feedback on the *transparency rule*, the *no-blocking rule*, and the *anti-discrimination/commercial reasonableness rule* in the context of mobile broadband service providers. The NPRM proposes to apply the transparency rule to both fixed and mobile broadband wireless access. Regarding the no-blocking rule, the NPRM proposes to treat mobile and fixed broadband services differently. Furthermore, just as the FCC chose not to apply the 2010 unreasonable discrimination rule to mobile broadband service, the 2014 NPRM tentatively concludes that the replacement rule – or “anti-discrimination/commercial reasonableness” rule – would not be applicable to mobile broadband. Section 4.1 discusses the challenges of applying the enhanced transparency rule to mobile wireless networks. Section 4.2 describes the problems encountered while applying the enhanced no-blocking rule to mobile wireless networks. Section 4.3 briefly explains why the NPRM’s view of not applying the unreasonable discrimination rule and the “anti-discrimination/commercial reasonableness” rule to mobile wireless networks is the correct approach. Extensions of the transparency and no blocking rules beyond those adopted in 2010 would be unwieldy and over-inclusive. Application of an anti-discrimination/commercial reasonableness rule to mobile broadband providers would hamper their ability to innovate, optimize, differentiate, and deliver high quality products and services.

4.1 Transparency Rule and Mobile Wireless Networks

The 2014 NPRM seeks comment on expansions of the transparency rule that would require mobile service providers to disclose information in several categories, including *network management practices*, *performance*, *congestion specifics* (e.g., *speed and packet loss*), *peak load management*, and *parameters of default or best-effort service*. However, as explained below, for mobile providers there are numerous technical and practical problems in meeting these proposed expanded disclosure requirements that make implementation of any enhanced transparency rule problematic, resulting in increased costs, less responsive service due to limitations on network management and would not provide consumers with relevant or useful information.

4.1.1 Network Management Practices

In a typical wireline network, the only variable is the amount of traffic on a given link – all other things such as capacity, etc. are typically static. This makes management of the traffic relatively straightforward using standard queuing techniques (e.g. Weighted Fair Queuing) to ensure all customers receive a fair share of the available bandwidth during congestion caused by a small number of users.

With wireless networks, there are many variables that are all changing simultaneously – signal strength and interference affect capacity, orientation of antenna affects throughput, and obstacles can dynamically interrupt data, among other things. Using just standard wireline techniques would not work well in this environment, and as described below, there are many methods used to make the network function well. During times of congestion, heavy users may have to be treated differently based on multiple variables to ensure proper throughput for all users. This is something accounted for in the standards as well as in most network management practices, and requiring all these technically-driven capabilities to be suspended simply to ensure a “neutral” network can have significant negative consequences.

eNode B Base Station. The *network management practices* in mobile wireless networks are extremely complex and consist of numerous mechanisms that are distributed among various nodes in the network architecture illustrated in Section 2. The achievable radio network performance and user experience are influenced heavily by these network management mechanisms. Sections 2 and 3 identified several network management mechanisms implemented by the eNodeB such as the scheduling algorithm for downlink and uplink resource allocation, the handover algorithm, the load balancing algorithm, handling of the connected mode-idle mode transitions, adaptation to the changing channel conditions, power control, and interfere coordination. Although the standard defines auxiliary tools such as (i) measurement reporting by user equipment and (ii) inter-eNodeB signaling exchange via the standardized X2 interface, these network management mechanisms are proprietary to the infrastructure vendors. Infrastructure vendors differentiate their products based on abilities of these mechanisms. Hence, a mandate to fully disclose these mechanisms would discourage innovations, violate intellectual property rights, and harm both competition and consumers.

Core Network. Just like the network mechanisms implemented at the eNodeB, the network management mechanisms implemented in the Evolved Packet Core and the auxiliary networks of IMS and the Policy and Charging Control networks⁸ could provide a competitive edge and serve to differentiate service providers. The load balancing among the Mobile Management Entities and management of idle mode mobile devices are examples of network management in the Evolved Packet Core that are vendor-proprietary. The service provider may have a specific way of providing a certain level of QoS for a given service by configuring the IMS and the Policy and Charging Control networks (e.g., certain target data rates and certain latency targets). Furthermore, the routers that carry signaling and user traffic between the eNodeB and the Evolved Packet Core and within the Evolved Packet Core may be configured by the implementation-specific network management framework.

Service providers need maximum flexibility in the network management of mobile wireless networks to make the best use of the *scarce radio spectrum* in the presence of the exponentially rising data traffic. For example, [Neel_MobileDataTraffic] reports that the mobile data traffic is expected to grow by a factor of 450 from 2005 to 2015. Furthermore, *scarcity of the radio spectrum* is clearly evident in Exhibit 11 of [Deloitte_SpectrumShortage], where the FCC estimates that the U.S. would experience a spectrum

⁸ While we have mentioned examples of major network management mechanisms, we note that these are not the only mechanisms that exist. Numerous other algorithms that manage radio resources, core network resources, transport network resources, IMS and PCC resources exist. For example, some mechanisms to configure the operations of the radio channels and to coordinate resource utilization between macro cells and small cells would be needed.

deficit of 275 MHz relative to the demand in 2014. Due to the scarcity of precious spectrum, innovative, high-performance, and ever-evolving network management mechanisms are absolutely essential to the overall network performance and user experience. Flexibility in tuning and adapting the network management mechanisms to fast-paced technology evolution, implementation of new features and the uncertainty of the requirements of emerging applications or services require that the network management mechanisms in mobile wireless networks should not be subject to any disclosure requirements. In the fast-paced evolution of wireless standards, multiple revisions exist, as discussed above. Even for a given revision of the standard, the user equipment and the network vendors have multiple software releases to update. Revelations of the network management mechanisms in the eNodeB, the Evolved Packet Core, and the IMS and Policy and Charging Control networks would ultimately harm consumers due to a reduced rate of innovation resulting from adherence to counter-productive implementation of the transparency rule.

The situation is too complex to summarize with a small set of easily defined comparative metrics, and expansion to a more complex, detailed set of base station and/or network performance metrics would violate the confidential nature of the network providers' proprietary technical optimization choices. This would severely impact the pace of innovations in the area of network management.

4.1.2 User Experience and Network Performance

Performance is extremely difficult to estimate reliably for mobile wireless networks, because there are numerous factors that influence the achievable network performance perceived and user performance (user experience). To complicate the performance estimation further, many of these factors are dynamic. Also, many of these factors are application specific, in that they are more important for some applications than for others. As discussed in Section 3, the wireless network is characterized by a variety of factors including dynamic channel conditions, varying number of active users, differing QoS requirements for the services of active users, the available amount of spectrum, user mobility, the capabilities of user equipment and the eNodeB, the types of applications considered, and the generation and the revision within the generation of the wireless standards. All these factors together determine the network and user performance at a given instant. Furthermore, this performance would change from one instant to another as one or more factors change. Reporting average performance over a particular period of time may not make sense and could be misleading to consumers.

The achievable user throughput is a function of the signal-to-interference plus noise ratio, which is influenced by the radio channel conditions that reflect propagation-based path loss, type and severity of signal fading, and amount of interference. Signal-to-interference plus noise ratio, in conjunction with other measurements⁹, also dictates the configuration of the advanced antenna techniques that can be used for a given mobile device at a given instant.

The number of active users and the specific QoS requirements of the services of these users determine how the available radio resources of the network are distributed. For example, in LTE one active user could get up to around 75 Mbps in a case of excellent channel conditions that are conducive to the use of spatial multiplexing technique. In contrast, poor channel conditions resulting from a weak signal (e.g., due to fading and large propagation path loss because the user is far away from the serving base

⁹ Examples of these measurements include rank indication (RI) and precoding matrix indicator (PMI).

station) and strong interference may be able to support only about 1 Mbps.¹⁰ If there are multiple active users with guaranteed bit rate (GBR) requirements, other users involved in non-GBR services such as email and web browsing will experience much lower average throughput. As noted above, the numerous variables inherent to a wireless network may mean that during times of congestion, heavy users may have to be treated differently to ensure proper throughput for all users. Should the FCC mandate the suspension of such network management practices in the name of “neutrality,” significant negative consequences could result.

The throughput experienced by a user would also depend on the service (or application) being received by the user. A seemingly low instantaneous data rate of about 300 kbps would be more than adequate for a VoIP call, while a much higher instantaneous data rate (e.g., few Mbps) would be needed for video streaming or a file download to provide satisfactory user experience. In the absence of the context of the specific service or application and their related QoS requirement, a given value of data rate, or any other metric, such as latency, is not a reliable indicator of the user performance or experience.

The available amount of spectrum directly affects the achievable performance. If a service provider has a 10 MHz LTE channel in one market but only a 5 MHz LTE channel in another market, the achievable throughput can easily differ by a factor of more than two. The larger the channel bandwidth, the higher the achievable throughput. Frequency selective scheduling could provide larger gains in case of larger channel bandwidths.

The impact of user mobility on achievable performance is also significant. In general, a higher velocity of the user equipment results in a larger Doppler shift and typically implies frequent and more severe short-term fades. In contrast, a slowly-moving device (e.g., pedestrian speed) has a smaller Doppler shift and experiences fewer varying signal fades, but the time period for the fade may be much longer and more impactful, as the user may remain within a performance null area for a longer period of time. The signal-to-interference plus noise ratio required to achieve a target throughput (or error rate) can vary significantly due to the impact of the user mobility and the distance from the serving cell.

The network performance and the user performance are affected by the capabilities of the user equipment and the eNodeB. All the eNodeBs do not have support for all the configurations defined by the standard. For example, Release 8 LTE supports parallel transmission of data from four antennas. However, commercial Release 8 LTE deployments typically have two transmit antennas for parallel data transmission. Similarly, not all devices have these same capabilities. Five categories of user equipment are defined for release 8 LTE, and, Category 3 devices are widely used in current commercial deployments in the U.S. and around the globe. Category 3 devices receive signals on two antennas. Furthermore, Category 3 equipment supports QPSK and 16-QAM modulation schemes to transmit data in the uplink. In contrast, Category 5 devices have four antennas to receive the downlink signals and support QPSK, 16-QAM, and 64-QAM to transmit data in the uplink. Such differences in equipment categories are a key reason why the downlink peak data rate is around 300 Mbps for a Category 5 device and around 100 Mbps for a Category 3 device and the uplink peak data rate is around 75 Mbps for a Category 5 device and around 50 Mbps for a Category 3 device [3GPP_TS36.306].

¹⁰ These calculations assume that a (2x2) MIMO (Multiple Input Multiple Output) technique is used when the channel conditions are excellent (i.e., with CQI=15) and a non-MIMO technique at CQI=1 is used.

The generation and the revision within the generation of the wireless standards also have a significant influence on the achievable performance. For example, Release 8 LTE supports theoretical peak data rates of 300 Mbps downlink and 75 Mbps uplink. In contrast, Release 10 LTE-Advanced supports a theoretical peak data rate of 3 Gbps downlink and 1.5 Gbps uplink. Again, defining one set of reasonable metrics is impossible in the face of different generations of handsets.

In summary, mobile broadband providers are committed to complying with the existing transparency rule but, recognizing that the specifics of network and handset performance will vary constantly, the granularity contemplated by the proposed expanded transparency rule would be infeasible. There are simply too many factors (most of which are highly dynamic or variable) that influence network and user performance, making it impractical to predict, guarantee, and/or verify user performance in the context of the expanded transparency rule.

4.1.3 Congestion

The 2014 NPRM envisions disclosure of congestion-related statistics such as speed (i.e., throughput) and packet loss. In the context of mobile wireless networks, such disclosure requirements are unhelpful for several reasons explained below.

First, the dynamic nature of mobile wireless networks leads to wide variations of throughput as discussed in Section 4.1.2 above. For data-centric systems, packet loss is reflected in the overall throughput. Furthermore, some throughput degradation and/or packet loss may not be due to congestion at all; it may simply be due to changes in channel conditions, user mobility, and/or service change. The packet loss rate may not really reflect any congestion.

Separating congestion issues from non-congestion issues through analysis and storing and maintaining such data for the sole purpose of compliance with the transparency rule would need significant investment of resources without any tangible benefit to consumers. As mentioned in Section 3, the eNodeB scheduler operates as fast as every millisecond, and the number of active users can change within a few seconds due to transitions between the idle and connected modes. So-called congestion can widely fluctuate in matter of few seconds. Network optimization processes aimed at addressing congestion can respond to these temporary congestion issues just as quickly. As a result, real-time disclosure of network congestion would be problematic to implement and confusing for consumers, as the network is constantly responding to ever-fluctuating levels of traffic. Section 2 illustrated the LTE network architecture. The complexity of the overall architecture means that network upgrades due to revisions or new feature implementations would almost certainly need extensive troubleshooting efforts which would likely lead to temporary congestion issues. Engineers seeking to comply with such a rule would face an unnecessary burden that could delay solutions to real problems, and cause harm to the subscribers instead of helping users (which is the real goal of the transparency rule). The key to keeping overall network capacity high is to adapt to the traffic over time using sophisticated and proprietary scheduling algorithms. Network neutrality rules which place strict demands on traffic handling and may restrict or prevent certain schedule techniques, would require infrastructure and capacity to be over-engineered to handle otherwise manageable peaks, and hence result in higher costs for consumers.

Since network optimization is an ongoing and iterative process, it is quite likely that some congestion issues that are reported will have been remedied long before they could be incorporated into any required disclosure. Mobile wireless networks have numerous challenges on the radio channel, and,

service providers need to invest heavily in ongoing technology upgrades, network RF planning, design, and optimization activities. The technology for wireless is changing very quickly and will continue to change quickly for the foreseeable future. Service providers will have a learning curve to understand how to deploy this technology and realistically, regulatory policy will (and perhaps must) adjust more slowly to these technology developments. Undue regulation at this point will stifle technology deployment that could increase bandwidth availability and lower costs for the consumer.

4.1.4 Peak Load Management

There are many legitimate reasons why a wireless network operator needs to manage data traffic on its network. In such cases, reporting of such peak load management would have little benefit. Recall from Section 2 that the Policy and Charging Control network works with the Evolved Packet Core to ensure suitable QoS. Such interworking between the Policy and Charging Control network and the Evolved Packet Core means that peak load management of traffic may be carried out such that the QoS for a given Evolved Packet System bearer is met. Each Evolved Packet System bearer has QoS parameters such as the maximum data rate. If the incoming data rate exceeds the subscribed data rate, the Packet Data Network Gateway manages the data to meet the data rate constraint toward the Serving Gateway. Such peak load management is carried out as part of the 3GPP standard's QoS characteristics [3GPP_TS23.203]. The network needs to manage the traffic so that all users can satisfactorily receive services instead of just few users consuming disproportionate amounts of resources. If excessive amount of traffic is received at the eNodeB, the eNodeB may have to buffer the packets, delaying the packets and potentially causing packet loss if the device-specific buffer overflows. Hence, even for the user with higher data rate needs, suitable peak load management is needed.

The resources in mobile wireless networks are scarce, and these scarce resources must be shared among numerous users. If suitable optimization is not carried out, some applications could flood the network with excessive amounts of data traffic (and even signaling traffic), causing degradation to many users in the network. In general, higher data rates result in the consumption of more resources, and, concentration of radio resources among only few subscribers would be unfair to other users. Hence, network optimization could be viewed as a network management mechanism to provide some level of fairness among the uses and users of radio resources. Network operators need the flexibility of such legitimate management to strike a balance among fairness, network performance, and aggregate user performance. The network management in mobile wireless networks must have at its disposal all means, including optimization, to safeguard the interests of all subscribers and to provide the best possible experience to all subscribers instead of just a select few subscribers. This balancing is dynamic and load dependent, so again, one set of uniform metrics cannot meaningfully capture overall performance.

4.1.5 Parameters of Best-Effort Service

The NPRM asks if any parameters can be specified to quantify the best-effort service. Numerical parameter settings that quantify the best-effort service and that are reliable are difficult to guarantee in mobile wireless networks. First of all, commercial mobile wireless networks have a mix of radio access technologies, mobile devices with different capabilities, and eNodeBs with different capabilities. Hence, the achievable performance varies depending upon the specific combination of the technology, the mobile devices, and the eNodeB for a given channel condition.

Even within the narrow scope of a given standard such as LTE and ignoring differences among technologies, compliance with the NPRM-proposed transparency rule in the form of target parameters would be quite challenging. LTE defines nine levels of QoS in terms of QoS Class Indicators (QCIs) [3GPP_TS23.203]. A QoS Class Indicator (QCI) specifies the QoS class. Defining different data rates for these services offers operators additional flexibility. An operator could also define proprietary QCIs. For example, QCI = 1 is suitable for applications such as VoIP. Its priority is 2, and it seeks to provide a minimum data rate, e.g., around 12 kbps. (Of course, keep in mind that a wireless network cannot provide an absolute guarantee. “Guarantee” here means that if the network agrees to grant service with QCI = 1 for a user, it will try its best to honor the granted GBR (Guaranteed Bit Rate). In the worst-case, the call may drop due to a hostile radio environment.¹¹)

Now, let’s contrast QCI = 1 with QCI = 8. An application such as email might fall into QCI = 8. Since VoIP has more stringent delay requirements than email (e.g., 100 ms for VoIP vs. 300 ms for email), its priority is higher than email’s. Also, the target error rate for email is lower than that for VoIP because the integrity of email bits is much more critical than the integrity of VoIP bits. So our goal is to lose no more than one of one million IP packets for email.

A web browsing session typically uses QCI = 8 or 9, which corresponds to so-called best-effort service. However, according to the 3GPP recommendations, the Evolved Packet System bearer with QCI = 8 or 9 is a non-guaranteed bit rate (non-GBR) bearer and therefore has absolutely no guarantee of any minimum data rate. The maximum data rate for such Evolved Packet System bearer is operator-configurable. Commercial LTE networks determine the maximum data rate as a function of the mobile device category. Since there is no guarantee of any minimum data rate for the best-effort service, the most critical parameter (i.e., throughput or data rate) cannot be specified for the best-effort service. Furthermore, the priority of traffic associated with the best-effort bearer is the lowest among all types of Evolved Packet System bearers. Hence, when the eNodeB scheduler becomes busy serving higher-priority bearers, the average throughput can be expected to be impacted for the best-effort bearers.

In summary, the absence of the specification within wireless standards of even the minimum data rate for a best-effort service is a hurdle that cannot be overcome by the transparency rule.

In light of the practical issues described above in Sections 4.1.1 through 4.1.5, applying an enhanced transparency rule to mobile wireless networks is impractical, would stifle innovations, and (most importantly) would not benefit users at all. Even if some information about network management practices were to be disclosed to comply with the transparency rule, such information would most likely be too vague. Metrics for gauging network neutrality do not exist and if they did they would likely become obsolete quickly with the rapid development of technology and new applications. Enforceability of such a rule would be highly questionable and this rule would, in practice, reduce network performance.

¹¹ The packet delay is the one-way time between the device and the edge of the operator’s network. QCI = 1 aims for a delay of less than 100 ms. (The lower the number for priority is, the higher the actual priority.) The packet loss rate of $10^{-2} = 0.01$ or 1% means that an application with QCI = 1 can tolerate the loss of one of 100 packets.

4.2 No-Blocking Rule and Mobile Wireless Networks

The *no-blocking rule* specifies that mobile broadband service cannot prevent consumers from accessing lawful websites and cannot prevent users from using voice or video telephony applications that compete with the mobile broadband service provider's services, subject to reasonable network management. The NPRM further clarifies that mobile broadband service providers would not be violating the rule if they do not degrade a lawful service or content below the minimum level of service. The NPRM is seeking a definition for such minimum level of service and exploring the feasibility of using measurements such as speed, packet loss, and latency delay to quantify the minimum level of service.

Application of the no-blocking rule has several unique challenges in mobile wireless networks. To begin with, the definition of the minimum level of service is not feasible for mobile wireless networks. Throughput is the most important performance metric for data-centric mobile broadband systems, and, as explained in Section 4.1.5 on the best-effort service, LTE does not define any minimum data rate guarantee for such service. Note that non-IMS applications such as consumer-chosen voice and video applications do not travel through the IMS network and are typically placed onto the Evolved Packet System bearer with QCI = 8 or QCI = 9. Recall from Section 2 that signaling for IMS applications such as operator-aware VoIP (e.g., Voice over LTE or VoLTE) travel through the IMS network and that the IMS and Policy and Charging Control networks work with the Evolved Packet Core to provide target QoS, which would include guaranteed bit rate (GBR) for QCI = 1 Evolved Packet System bearer. Hence, any non-IMS user application such as voice and video cannot be expected to have the IMS application-like QoS.

The issues associated with expansion of the no-blocking requirements for mobile wireless networks are similar to those addressed in Sections 4.1.1-4.1.5, above, for implementation of an enhanced transparency requirement. When a single user or single application could overwhelm the limited resources provided to wireless providers, such a provider must be able to block this interfering use to ensure the quality of service expected for many other users. As has been discussed throughout this paper, unlike wireline networks, mobile wireless networks have scarce spectral resources (capacity) that are affected by interference, multipath, blockage, clutter and other conditions which require active management, including blocking of particular applications or users. Without the ability to manage blocking effectively, a wireless provider would be faced with situations where a single user or application could occupy all the radio resources associated with a particular eNodeB – leaving any other subscriber seeking access to that eNodeB without the ability to connect and receive the service expected. Therefore, the current no-blocking regulation continues to be the most appropriate technical path forward. Attempting to apply a broader no blocking rule—even with a safe harbor set of guidelines or other means to cabin off “reasonableness” – is extremely impractical, as discussed in more detail below.

In case of resource crunch, the eNodeB gives higher priority to Evolved Packet System bearers carrying IMS signaling and guaranteed bit rate traffic (e.g., VoIP traffic). Furthermore, according to the Quality of Service Class Indicator characteristics defined in [3GPP_TS23.203], Evolved Packet System bearers are set with a certain Allocation and Retention Priority (ARP), and, by design, best-effort bearers have a lower Allocation and Retention Priority compared to other higher-priority bearers. The best-effort Evolved Packet System bearers carrying email, web browsing, and consumer-installed non-IMS voice and

video applications could potentially be affected adversely as part of routine and legitimate network management.

Without the differentiation capabilities described above, the LTE network will simply not function reliably for some services, or will function in a very inefficient manner. Standards organizations such as 3GPP have spent years working out the details of these capabilities and how they will interoperate, and they should not be modified without thorough technical analysis.

The NPRM is seeking comment on the feasibility of using the following methods to define a *minimum level of service*: a best-effort standard, a minimum quantitative performance standard, and a reasonable person standard. As discussed in Section 4.1.5, a best-effort standard cannot be really quantified for mobile wireless networks. The minimum quantitative performance standard would also be impractical. Finally, the main problem with the reasonable person standard is that a typical end user cannot be expected to be knowledgeable about how mobile wireless networks operate and different people would have different expectations from their networks. The absence of reliable and quantifiable estimates of “reasonableness” makes the reasonable person standard highly subjective and non-enforceable. Wireless providers, based on network management requirements developed within industry standards, should have the right to block any use or application on their wireless network if such use would preclude other subscribers from accessing service. Attempting to limit wireless providers’ ability to block (such as attempting to define “reasonableness”) would not allow the scarce spectral resources available to wireless providers to be used in the most effective and efficient manner.

4.3 Unreasonable Discrimination Rule and Anti-Discrimination/Commercial Reasonableness Rule, and Mobile Wireless Networks

The FCC has stated that the newly-proposed anti-discrimination/commercial reasonableness rule, just like the original 2010 rule, is not intended to be applicable to mobile broadband service. Our view concurs with the FCC view that different treatment for mobile broadband should be continued because differentiation among users and user services is required to provide a satisfactory quality of service to consumers.

As discussed in detail in Section 3.1 above, wireless networks are characterized by: (1) scarce radio resources; (2) radio resource sharing; (3) dynamic channel conditions and varying performance; (4) varying resource consumption; (5) ever-evolving networks and (6) the need to integrate differing devices and infrastructure. Because of these factors, user differentiation due to the dynamic nature of the radio environment is fundamental to the operation of any good scheduling algorithm design for a wireless network. A good scheduling algorithm maximizes network performance while providing good user-perceived experience, not necessarily by treating all users or all applications identically. If the scheduler treats two users with two different channel conditions (e.g., one excellent channel and one poor/noisy channel) in the same manner, the overall network performance would certainly degrade and the average user experience would also deteriorate. Consider Figure 5, where two users are downloading an email with a huge attachment and their channel conditions are constantly changing. Good channel conditions can support a higher data rate, and poor channel conditions support a lower rate as illustrated in Scenario 1 and Scenario 2.

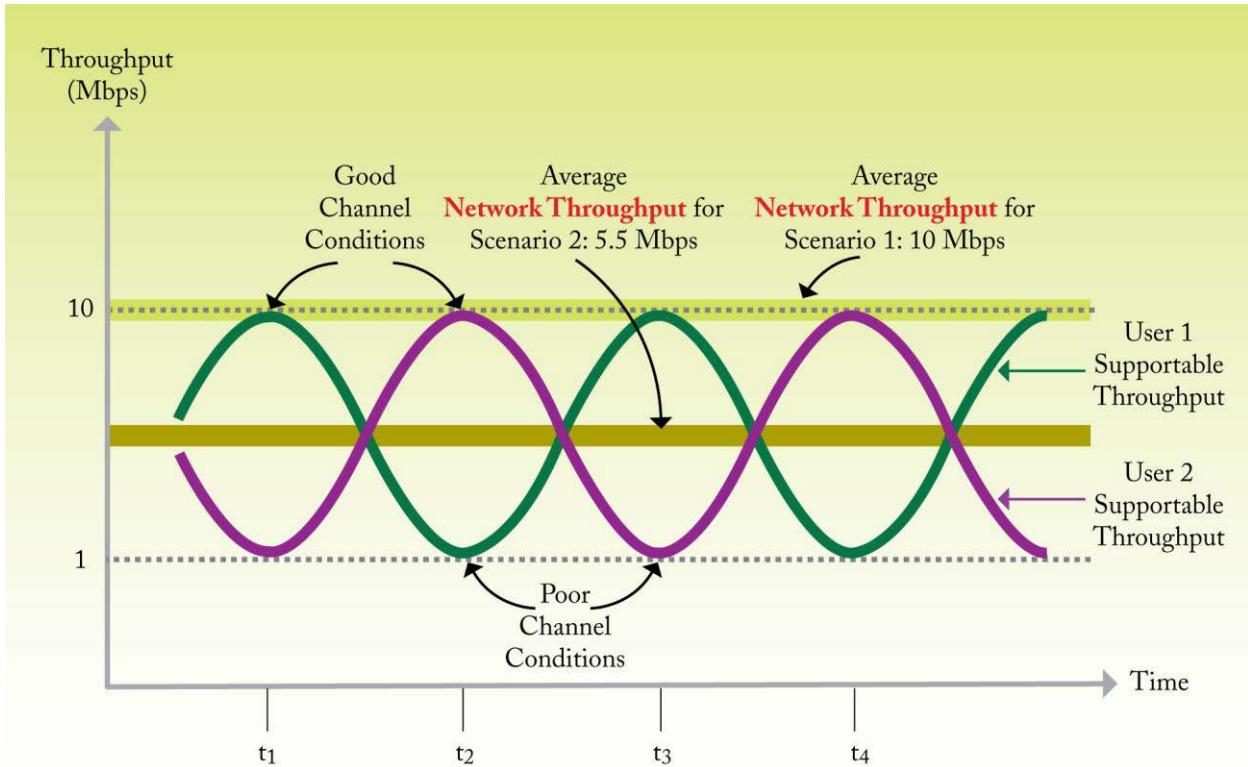


Figure 5. Necessity of User Discrimination Due to Dynamic Radio Environment

Figure 5 shows the user supportable throughput when all the available resources are allocated to the users. In Scenario 1, a high-performance scheduler allocates all the available resources to a user with the best channel conditions and transmits packets to such user. Observe that at time t_1 , User 1 has the best channel conditions and can support 10 Mbps if allocated all resources. The scheduler dedicates the entire 100% of network resources to User 1 and sends a packet to User 1 at 10 Mbps at time t_1 . At time t_2 , User 2 has better channel conditions, and the scheduler allocates all network resources to User 2 and sends a packet to User 2 at 10 Mbps. The average network throughput is 10 Mbps as the network is always sending the packets at 10 Mbps. Sometimes the network sends packets to User 1, while other times, the network sends packets to User 2. The average user throughput that User 1 experiences is 50% of 10 Mbps = 5 Mbps, and the average throughput User 2 experiences is also 50% of 10 Mbps = 5 Mbps because these users are scheduled 50% of the time.

In Scenario 2, an equal-opportunity scheduler equally distributes the network resources at all times. At time t_1 , the network allocates 50% of resources to User 1, leading to User 1 throughput of (50% of 10 Mbps = 5 Mbps). Note that User 1 throughput is 5 Mbps and not 10 Mbps because User 1 is allocated just 50% (and not all 100%) of resources. Similarly, at time t_1 , the network allocates 50% of resources to User 2, leading to User 2 throughput of (50% of 1 Mbps = 0.5 Mbps). The network throughput at t_1 is 5.5 Mbps (User 1 throughput + User 2 throughput = 5 Mbps + 0.5 Mbps = 5.5 Mbps). Now, consider time t_2 , where the allocation of 50% of resources to User 1 results in User 1 throughput of (50% of 1 Mbps = 0.5 Mbps) and the allocation of remaining 50% of resources to User 2 results in User 2 throughput of (50% of 10 Mbps = 5 Mbps). Again, note that the users experience only 50% of the throughput values shown

in Figure 5 because the throughput values correspond to a hypothetical case where all of the network resources are allocated to a single user. The network throughout at t_2 is (User 1 throughput + User 2 throughput = 0.5 Mbps + 5 Mbps = 5.5 Mbps). The average network throughput is then 5.5Mbps. Let's calculate average user throughput. User 1 experiences 5 Mbps 50% of the time and 0.5 Mbps remaining 50% of the time, leading to the average user throughput of 2.75 Mbps ($0.5*5$ Mbps + $0.5*0.5$ Mbps = 2.75 Mbps). Similarly, the average user throughput for User 2 is also 2.75 Mbps. In other words, since the network equally distributes resources between the two users, the network throughput of 5.5 Mbps is equally divided between the two users as (5.5 Mbps/2 = 2.75 Mbps).

In our simple example, the network throughput is reduced by almost 50% (i.e., from 10 Mbps to 5.5 Mbps) in Scenario 2 compared to Scenario 1. Just imagine what would happen to the business models of service operators if the cost of supporting their customers doubles overnight? While the scheduler has optimized network performance in Scenario 1, User 1's throughput and User 2's throughput are also better in Scenario 1 compared to Scenario 2 (e.g., 5 Mbps in Scenario 1 compared to 2.75 Mbps in Scenario 2). Better network performance enables the service operator to cost-effectively provide services to many users simultaneously. Subscription plans for users can then be relatively inexpensive, promoting growth of cellular subscribers and services. The comparison of network performance in Scenarios 1 and 2 shows that differentiation is best for the aggregate network and for all users. Treating all users the same all the time appears more fair at first, but adapting to the radio channel by having the scheduler weight the service schedule against predicted data delivery performance results in better performance for everyone, even though at any moment, not all users are treated the same.

Combined service and user differentiation is also quite important. Assume that User 1 has an ongoing email application and has in the past been promised a maximum data rate of 10 Mbps, and assume further that all the network resources are being consumed by such a user. Suddenly, ten users start making voice calls. The network simply lacks the resources to simultaneously support ten voice users and an email user with a 10 Mbps data rate. If the network's resource management algorithms downgrade the email data rate to perhaps 9 Mbps, then the network can accommodate both the email user and all ten voice calls. If the network fails to differentiate between the voice users and the email user, all ten voice calls would be blocked. In summary, user and service differentiation is essential to aggregate service fairness for the average consumer. Here again, the scheduler is not treating every application identically ('fairly'), but the net aggregate result benefits more users. What set of metrics would represent this fairness? These considerations evolve as the applications mix changes.

Differentiation based on resource consumption is also inherent in a wireless network and facilitates network efficiency and fairness. The network management algorithms must differentiate between users based on the amounts of network resources each user is consuming. For example, current mobile wireless networks commonly limit the amount of resources a single user can consume. If one user consumes an excessive amount of network resources due to a hostile radio environment and/or such user is using bandwidth-intensive data applications, that user may dominate the network so much that no other user can get any service in the absence of pro-active network management.

There are several situations where it is legitimate and beneficial for wireless network operators to differentiate traffic. For example, Wireless technologies are increasingly being used for machine-to-machine services and public welfare systems. It is critical that these systems – such as, for example, wireless monitoring of bridges – be fully functional at all times, and this may require prioritization. In

addition, public safety personnel clearly should have higher priority than regular users. More “ordinary” services, such as voice call, email, and streaming video, all require different quality of service levels, and wireless network operators should be allowed the flexibility to prioritize these diverse services in a manner that ensures that an end user experiences the quality of service necessary for these services to function. User and service differentiation is also essential to service fairness – one user should not be permitted to monopolize network resources at the expense of others.

In summary, the dynamic nature of mobile wireless networks requires a reasonable, necessary, and *dynamic* differentiation among users by the network management to ensure an acceptable aggregate quality of service for all wireless subscribers. To subject mobile broadband providers to claims that such non-uniform network management techniques are ‘unfair’ and violate commercial practices, particularly when combined with the prospect of regulatory rebuke, would significantly impair the ability of providers to experiment with new and innovative network management tools designed to improve consumers’ experiences. Any rule that would prohibit discrimination on mobile wireless networks would be impractical and would actually work against the FCC’s goals of promoting innovation and benefiting consumers.

5. Mobile Wireless Broadband Internet Access: An Integrated Information Service

Mobile broadband service is an integrated service that enables the wireless subscriber to access a variety of services in a wireless fashion. The subscriber’s device communicates with the mobile broadband service provider’s network via complex interactions. The nodes of the entire wireless network infrastructure work together to present a single unified view of the network to the subscriber’s device and to provide service-specific QoS for a user’s services according to the 3GPP LTE framework. All the network components need to do specific processing, which often needs to be customized for a given service, to provide seamless and satisfactory experience of a variety of services for the user. All the complexities associated with subscriber’s experience of wireless services are handled by the subscriber’s device and the broadband service provider’s network without the active involvement of the subscriber.

When the FCC classified wireless broadband Internet access service as an “information service,” it did so based on the correct finding that this service “offers a single, integrated service to end users, Internet access, that inextricably combines the transmission of data with computer processing, information provision, and computer interactivity, for the purpose of enabling end users to run a variety of applications.”¹² This statement, which was made by the FCC in 2007, has only become more emblematic of the wireless ecosystem. As technologies and networks have evolved, subscribers are increasingly using advanced networks for multiple simultaneous data services, such as email, web browsing, and various other applications. Extensive and complex processing in the mobile broadband network allows customers to seamlessly navigate among multiple mobile broadband applications and services at the same time, enjoying a good experience of various applications.

The mobile broadband network consists of numerous network nodes that interact among themselves in different and complex ways and that do custom processing depending upon the type of service or application. Such interactions and custom processing enable the wireless subscriber to obtain an

¹² *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, 22 FCC Rcd 5901, 5911 ¶ 26 (2007).

integrated information service that integrates different types of information to provide a unified service experience (user experience) and that meets specific requirements of applications (e.g., guaranteed data rate or very low packet error rate or very low latency). *Indeed, the mobile broadband service is an integrated information service that requires (i) tight coupling between the mobile device and the network,¹³ (ii) numerous complex interactions¹⁴ between the mobile device and the network and among the network components, and (iii) service-specific custom processing at different network nodes.¹⁵* Let's take a closer look at these three areas.

Tight coupling between the mobile device and the network is essential in providing seamless and satisfactory services to the subscriber. For example, each service requires a certain quality of service, and, the network properly configures the mobile device and the network nodes so that the user has satisfactory experience. According to the 3GPP LTE standard, the overall packet error rate cannot be greater than 0.0001% for services such as email and web browsing (see Table 6.1.7 in 3GPP TS 23.203). However, the raw packet error rate on the LTE air interface is 10%.¹⁶ Hence, the network configures a suitable number of packet retransmissions to reduce the effective packet error rate from 10% to 0.0001%. Furthermore, the mobile device provides feedback on the prevailing downlink radio channel conditions so that the network can use suitable transmission parameters (e.g., the modulation scheme, the amount of redundancy, the type of multiple antenna technique, and the number of Physical Resource Blocks) to provide a satisfactory downlink data rate and hence a satisfactory user experience. Similarly, the mobile device informs the network about the amount and type of data it has in its uplink buffers and the available transmit power. The network allocates a suitable amount of uplink radio resources based on such information and the subscriber can send the data traffic (e.g., email) within acceptable delay limits (e.g., less than 0.3 second). This tight coupling enables end users to receive email, for example, at a data rate that would be expected with very limited errors. Without this network management, the quality of service would deteriorate and be unacceptable to subscribers.

Complex interactions between the mobile device and the network and among the network components take place before the subscriber can obtain even basic wireless services. Mobile devices typically do not have pre-assigned fixed IP addresses, and, the devices cannot obtain any IP-based services such as email and web browsing without IP addresses. Hence, the network *must* allocate an IP address to the mobile device. To provide security over the wireless interface, the network and the device first perform mutual authentication and then locally generate security keys. For example, LTE can secure the wireless interface by encrypting user traffic. The network also sets up several logical connections called Evolved Packet System bearers that help carry user traffic such as email and streaming video. The network

¹³ Such tight coupling is exemplified by packet retransmissions occurring between the user device and the radio network to provide essentially error-free information to the applications such as e-mail and web browsing.

¹⁴ An example of such interaction is the invocation of a Domain Name System (DNS) server by the user device so that the name of a web site (e.g., www.cnn.com) can be translated into an IP address of the server that is in charge of the web site.

¹⁵ An example of such custom processing include fast packet forwarding of delay-sensitive traffic by an IP router and delayed packet forwarding of delay-tolerant traffic by an IP router. The operator's network utilizes multiple IP routers within the network (e.g., between the Serving Gateway and the Packet Data Network Gateway in the LTE network).

¹⁶ The LTE air interface uses the instantaneous target block error rate (BLER) of 10% to improve efficiency of precious radio resources. A suitable combination of the modulation scheme and Turbo coding is used to meet such target BLER for a given radio channel condition.

nodes interact among themselves and the network interacts with the mobile device so that the bearers can be set up. Selected information about the mobile device is stored at different nodes so that packets can reach the correct user via the bearers. Without all these integrated actions, the user would not be able to obtain the Internet services expected (i.e., would not be able to access the desired web site). The wireless provider must manage these complex interactions to provide the seamless experience expected by consumers.

Service-specific custom processing is carried out at different network nodes. Depending upon the policies of the service provider, different types of IP addresses could be allocated to the mobile device for different packet data networks. For example, for the packet data network of the Internet, an IPv4 address could be allocated to the mobile device because of prevalence of IPv4 addresses. In contrast, for IMS-based applications, an IPv6 address could be allocated to the mobile device to benefit from the abundance of IPv6 addresses. Quality of Service (QoS) in an IP network can be provided by an Integrated Services or Differentiated Services framework. The network node provides different QoS to different services to meet the service requirements and user expectations. When a Differentiated Services framework is used, Differentiated Services Code Point (DSCP) is used to mark each IP packet. IP routers use correct packet forwarding treatment to an incoming IP packet. For example, assume that two IP packets arrive at a Packet Data Network Gateway: a delay-sensitive IP packet carrying a streaming video and a delay-tolerant IP packet carrying email. The delay-sensitive IP packet carrying a streaming video can be marked with the DSCP value of 30 and the delay-tolerant IP packet can be marked with the DSCP value of 0. In case of heavy traffic, the IP routers between the Packet Data Network Gateway and the Serving Gateway would quickly forward the delay-sensitive packets (i.e., video streaming packets) and would delay the forwarding of the delay-tolerant packets (i.e., email packets). The IMS and the PCC network nodes also work with one another such that the bearers can help meet different QoS requirements for different services. This in turn allows the wireless provider to ensure that subscribers that are not affected adversely by latency to be delayed, while those applications that are latency sensitive are not delayed. For example, video streaming would not be delayed so that playback is acceptable for a subscriber, while email packets could be marginally delayed but consumers would not be affected by this delay. This network management allows the provider to manage the scarce spectrum resources in an efficient, effective manner, without degrading the subscriber experience.

Close cooperation between the mobile device and the network is needed for cohesive and seamless integrated service experience for the wireless subscriber.

Examples of Integrated Wireless Broadband Services

The tight integration needed to provide wireless broadband services is demonstrated below by how a consumer obtains two services, web browsing and video conferencing. For both of these cases, the mobile device and the broadband network must work together to provide a seamless and integrated service experience for the consumer. Before any services are rendered to the consumer, the mobile device synchronizes with the radio network and performs an attach operation with the network. As part of the attach operation, mutual authentication occurs, and security between the mobile device and the network is established. Furthermore, two default bearers are established, one for the Internet packet data network and one for the IMS Packet Data Network. The Packet Data Network Gateway allocates to the mobile device an IP address for the Internet Packet Data Network and a separate IP address for the IMS Packet Data Network. Additionally, IP addresses of the DNS server and the IMS server are conveyed

to the mobile device. When the consumer initiates video conferencing, additional bearers¹⁷ are established to carry voice and video through numerous interactions among the mobile device, the radio network, the core network, the IMS network and the PCC network. Now that all the groundwork for data traffic has been completed, the IP packets for the email and video conferencing packets start flowing through the network and the consumer reaps the benefits of all the hard work that the mobile device and network nodes have been doing.

Web Browsing on Mobile Broadband Networks

Let's summarize the *major steps involved when the consumer is browsing the web* as illustrated in Figure 6.¹⁸

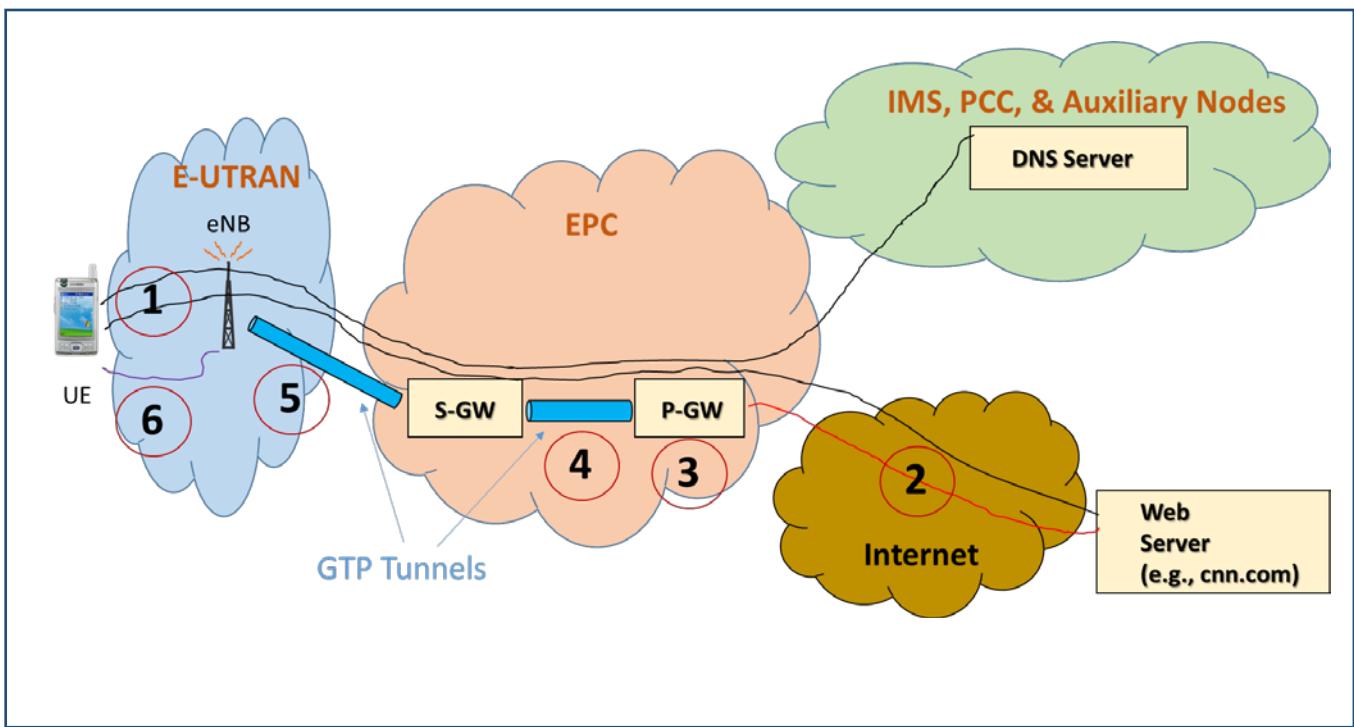


Figure 6. Major Communication Steps for Web Browsing

When the consumer selects www.cnn.com as the web site for browsing in Step 1, the mobile device communicates with the DNS server to find the IP address of the web server in charge of www.cnn.com and then communicates with the web server to set up an end-to-end connection with the web server. In Step 2, the web page from the web server passes through the IP routers of the Internet and arrives at the Packet Data Network Gateway. The Packet Data Network performs translation between the public IP address and the private IP address (if needed) in Step 3. In Step 4, the Packet Data Network

¹⁷ LTE controls QoS at the levels of the EPS bearers. Hence, two bearers are required for two services that need two different QoS levels.

¹⁸ The simplified description here represents one possible approach for providing web browsing and video conferencing services. The LTE standard is quite flexible and operators can choose a variation of the approach described here to offer services to the user. In the interest of simplicity, only selected nodes and connections are shown in the figure.

determines the correct bearer for the incoming IP packet containing the web page and places the IP packet inside a tunnel (representing part of the bearer) toward the Serving Gateway using a protocol called GTP.¹⁹ The Serving Gateway extracts the IP packet and places it inside another tunnel toward the eNodeB using GTP protocol in Step 5. The eNodeB uses several protocols of the air interface protocol stack to format the original IP packet for air interface delivery (including encryption for security) in Step 6 and then transmits the web page packet over the air to the mobile device. In Step 7, the mobile device also uses the protocols of the air interface protocol stack to extract the original IP packet from the air interface (including decryption) and then presents the web page to the consumer. As is evident from these steps, the mobile broadband network nodes and the mobile device work closely together to present web browsing to the consumer as an integrated information service.

Video Conferencing on Mobile Broadband Networks

Figure 7 summarizes the main steps involved when the consumer is participating in video conferencing [Radisys_October2012] [Ericsson_Feb2012].

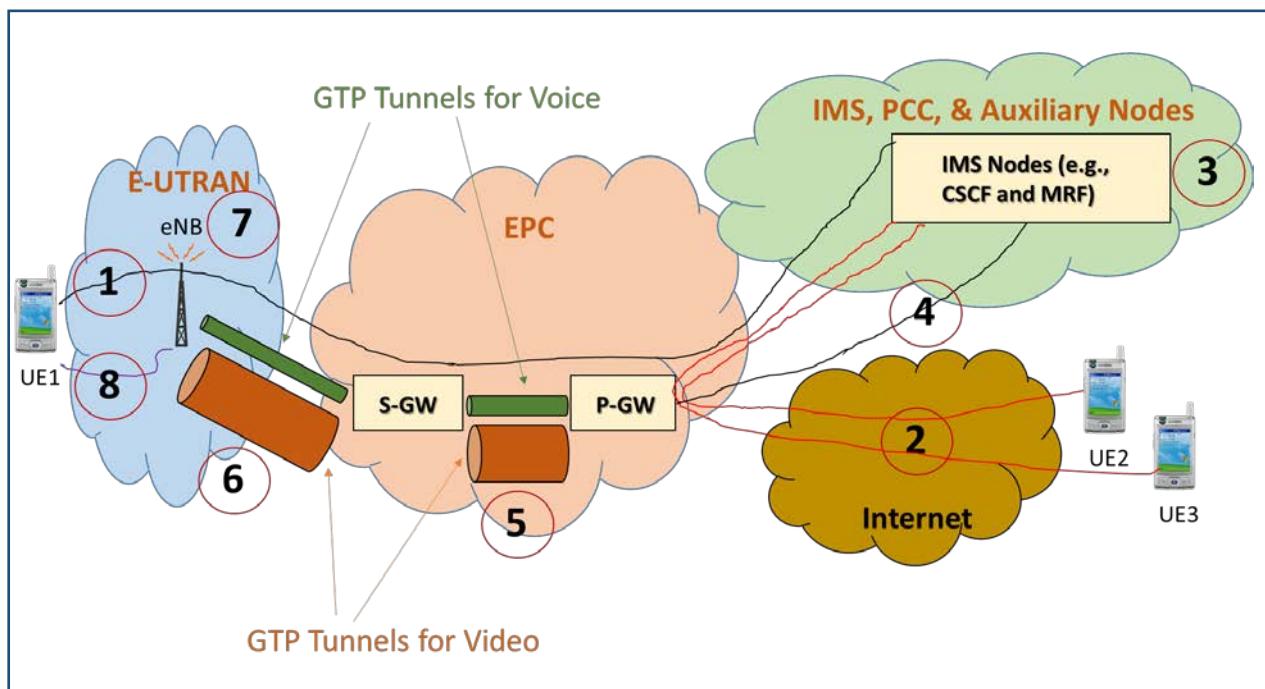


Figure 7. Major Communication Steps for Video Conferencing

¹⁹ GTP stands for GPRS Tunneling Protocol, where GPRS is General Packet Radio Service. GTP enables LTE to support IP mobility, where the user can move from one geographic location to another while maintaining the same IP address. IP mobility is one of key elements of a mobile broadband service.

When the consumer chooses a video conferencing application in Step 1, the mobile device 1 communicates with the IMS network to create communication paths among the participating devices. In Step 2, the voice and video media from other devices such as mobile device 2 and mobile device 3 arrive at the Media Resource Function in the IMS network. The Media Resource Function properly mixes the voice and video media streams (and performs media codec conversion if needed) in Step 3. In Step 4, the Media Resource Function sends the IP packets containing voice and video to the Packet Data Network Gateway. The Packet Data Network Gateway in Step 5 determines the correct bearers for the incoming IP packets, places the voice packets inside one tunnel toward the Serving Gateway using GTP, and places the video packets inside another tunnel toward the Serving Gateway using GTP. The Serving Gateway extracts the IP packets and places them inside other tunnels toward the eNodeB using GTP in Step 6. The eNodeB uses several protocols of the air interface protocol stack to format the original voice and video IP packets for air interface delivery in Step 7 and then sends these IP packets over the air to the mobile device in Step 8. In Step 9, the mobile device 1 uses the help of the air interface protocols to extract the original voice and video packets from the air interface and then plays voice and video to the consumer in the video conferencing application. *As is evident from these main steps, the mobile broadband network nodes and the mobile device work very closely together to offer video conferencing to the consumer as an integrated information service.*

See Appendix I for a more detailed discussion of how the mobile broadband network provides an integrated information service to subscribers.

6. Recommendations

Mobile wireless broadband networks face unique challenges such as the scarcity of spectrum and other radio resources, dynamic radio environment, varied and changing technologies for devices, base stations, and networks, differentiated and evolving services and applications, and exponentially-rising data traffic. Based on the in-depth analysis of the modern mobile wireless networks, we respectfully recommend the following to the FCC.

- ✓ Mobile wireless broadband networks must be treated differently from other communications networks such as fixed wireless networks and wireline networks.
- ✓ Aim for minimal regulations for mobile wireless networks to promote innovations and thereby facilitate achieving the ultimate goals of superior network and spectral efficiency and excellent user experience.
- ✓ Give maximum flexibility to the design and optimization of complex and distributed wireless network management so that the networks operate with maximum possible efficiency under the constraint of limited spectrum.
- ✓ Refrain from establishing any minimum performance standards, because these standards are simply impractical to define or enforce in mobile wireless networks.
- ✓ Ensure that proprietary and competitive management processes are respected and encouraged to motivate continuing innovation and differentiation.

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Appendix I

A Closer Look at the Mobile Broadband Internet Access Service as an Integrated Information Service

Let's dive into the details of how the mobile broadband network provides an integrated information service to the subscriber.²⁰ Consider Figure 8, where the wireless subscriber is using an LTE network for three simultaneous services- web browsing, email, and video conferencing.²¹

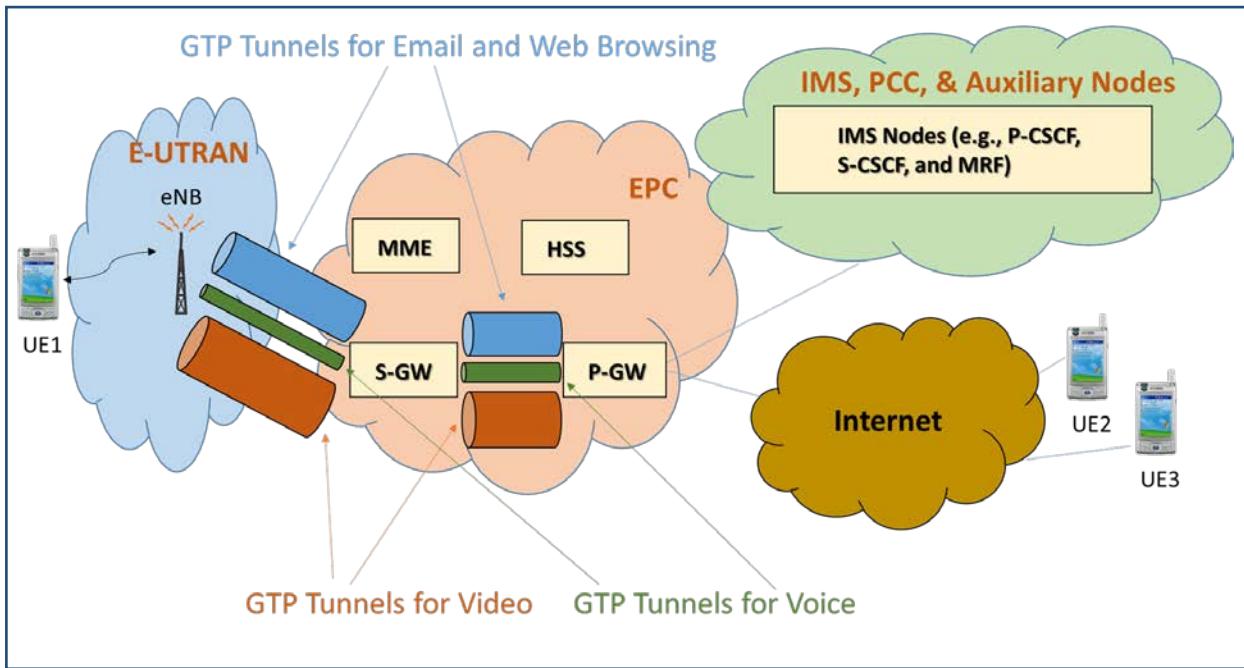


Figure 8. Integrated Information Service Offered by the Mobile Broadband Network

Different network nodes process different aspects of signaling and/or traffic. The following steps are executed to provide the integrated information service to the wireless subscriber: (I) initial attach and default EPS bearer setup toward the IMS network, (II) default EPS bearer setup toward the Internet, (III) dedicated EPS bearer setup toward the IMS network, and (IV) data transfer. Let's take a closer look at these steps below. *These steps show that complex interactions and node-specific custom processing are instrumental in providing an integrated information service experience to the wireless subscriber.*

Initial Attach and Setting up of the Default EPS Bearer Setup toward the IMS Network

As summarized in Section 2.2, the UE carries out the initial attach procedure upon power-up. The UE synchronizes with the eNB and establishes an RRC (Radio Resource Control) signaling connection with a cell. This RRC connection helps the UE and the eNB exchange signaling messages such as the messages

²⁰ The description given here is one possible implementation. The LTE standard is quite flexible and the operator can choose a variation of the approach

²¹ This figure is based on the information given in [Ericsson_February2012] and [Radisys_October2012].

related to handover and EPS bearer setup. The UE and the MME perform mutual authentication. The HSS helps the MME in the authentication process. The signaling connection between the UE and the MME is a NAS (Non-Access Stratum) connection, which can be used for messages such as EPS bearer setup messages. Security is activated for the RRC connection and the NAS connection. The responsibility of securing the air interface between the UE and the eNB lies with the UE and the eNB. The responsibility of securing the NAS signaling connection between the UE and the MME lies with the UE and the MME. The service provider determines which packet data network should be used as the default packet data network. In Figure 6, the Internet and the IMS network are potential candidates as the default network. In our scenario, the network establishes a default EPS bearer with QCI = 5 (which is recommended by the 3GPP [3GPP_TS23.203]) that has the highest priority among the QCIs. During the default EPS bearer setup, the P-GW allocates an IP address to the UE, and, this address is conveyed to the UE by the MME. The MME also conveys to the UE IP addresses of the P-CSCF (Proxy- Call Session Control Function) and the Domain Name System (DNS) server. The P-CSCF is the first point of contact of the UE with the IMS network and performs various functions such as compression of SIP signaling messages and interactions with the PCC to provide end-to-end QoS for IMS-based services. The DNS server is used by the UE to resolve the website names to the IP addresses so that the UE can exchange IP packets with websites. The default EPS bearer toward the IMS network helps the UE and the network exchange SIP signaling messages.

Setting up of the Default EPS Bearer Setup toward the Internet

After the default EPS bearer with the default packet data network (e.g., the IMS network in our scenario) is set up, a different default EPS bearer with QCI-8 or 9 toward the Internet is established. The P-GW allocates an IP address to the UE for the Internet access. This default EPS bearer helps carry traffic corresponding to applications such as email and web browsing.

Setting up of the Dedicated EPS Bearers toward the IMS Network

As discussed earlier in Section 3, LTE controls the QoS at the level of EPS bearer. Although a default EPS bearer toward the IMS network has already been established, the QoS of this EPS bearer is inadequate to carry voice and video traffic. The QCI = 5 EPS bearer is a non-GBR bearer, while the voice and video need data rate guarantees for satisfactory user experience. When a user initiates video conferencing, SIP signaling messages are exchanged between the UE and the IMS network. The P-CSCF observes such signaling messages and conveys the information about the QoS requirements of the call to the Policy and Charging Rules Function (PCRF). The PCRF consults Subscription Profile Repository to check if the QoS requested by the video conferencing application can be accepted. The PCRF translates the generic QoS description extracted from SIP signaling messages into the LTE-specific QoS parameters (e.g., a numerical values for QCI and determination of the GBR) and conveys the LTE-specific QoS to the Policy and Charging Function (PCEF). According to 3GPP, P-GW acts as the PCEF. The P-GW initiates the setup of (i) the dedicated EPS bearer that can carry the voice traffic with suitable QoS and (ii) the dedicated EPS bearer that can carry the video traffic with suitable QoS. The S-GW conveys the dedicated EPS bearer requests to the MME. The MME works with the eNB and the S-GW to set up network resources for the new dedicated EPS bearers. The eNB accepts the dedicated EPS bearer requests if it has adequate radio resources to support the QoS required for the video conferencing service.

The IMS network, and in particular, the Media Resource Function (MRF) plays an important role in supporting the video conferencing service. The MRF consists of the signaling entity called Media Resource Function Controller (MRFC) and the user traffic entity called Media Resource Function Processor (MRFP). The MRFC works with other IMS entities and facilitates the establishment of communication paths among the devices that are participants of video conferencing. The MRFP is responsible for mixing voice streams and video streams so that the mobile device can receive audio and video from all other participants.

Data Transfer

Consider the web browsing service. When the subscriber enters the website name in the browser (e.g., Internet Explorer or Chrome), the mobile device contacts the DNS server to receive the IP address of the website. The mobile device and the web server can now exchange IP traffic such as web pages and acknowledgements to the received IP packets. The IP packets containing the web page from the web server pass through the Internet routers and arrive at the P-GW that gave the UE the IP address associated with the Internet. In case a private IP address had been assigned to the UE, the P-GW translates the public IP address into a private IP address for the journey of the IP packet within the operator's LTE network. The P-GW places the IP packet on the GTP tunnel (associated with the default EPS bearer for the Internet) toward the S-GW. The S-GW removes the IP packet from the P-GW side of the GTP tunnel and places the IP packet on the GTP tunnel toward the eNodeB. The eNodeB extracts the IP packet and passes it through these protocols of the air interface protocol stack so that IP packet is in the format that can survive the hostile and dynamic radio environment- Packet Data Convergence Protocol,²² Radio Link Control,²³ Medium Access Control,²⁴ and Physical Layer.²⁵ The eNodeB then transmits the formatted IP packet over the air. The mobile device acquires the formatted IP packet from the air interface and recovers the original IP packet by using the air interface protocols. Finally, the IP packet is made available to the web browser that displays the actual content to the subscriber.

Let's focus on the video streaming service now. After the video conferencing service has been initiated and the IMS network has helped establish communication paths among the participants, the voice and video traffic can start flowing. Voice and video streams from the participants of the video conferencing arrive at the MRF. The MRF mixes the audio and video streams of the participants and sends the IP packets carrying voice and video to the P-GW. The P-GW has two dedicated bearers with the UE in support of video conferencing, one for voice traffic and one for video traffic. The IP packets containing voice are placed onto the tunnel associated with the voice traffic and the IP packets containing the video are placed onto the tunnel associated with the video traffic. Once the S-GW retrieves the IP packets from the P-GW side of the tunnels, it removes the IP packets from the P-GW side of the GTP tunnels and places the IP packets on the GTP tunnels toward the eNodeB. The eNodeB extracts the IP packets and passes them through the layers of the air interface protocol stack mentioned above. The eNodeB then transmits the formatted IP packets over the air. The mobile device retrieves the formatted IP packets from the air interface and recovers the original IP packets carrying voice and video by using the air

²² Example functions of Packet Data Convergence Protocol are encryption and header compression.

²³ Example functions of Radio Link Control are in-sequence delivery of packets and retransmissions of erroneous packets.

²⁴ Example functions of Medium Access Control are scheduling and management of radio resources and control of physical layer retransmissions.

²⁵ Physical Layer takes care of functions such as modulation, coding, power control, and multiple access.

interface protocols. Finally, the IP packets are sent to the video conferencing application that plays the voice and video content for the subscriber.

The transport network that carries the traffic between eNB and the S-GW and between S-GW and the P-GW also needs to provide different QoS treatments to best-effort traffic such as email and web browsing and delay-sensitive traffic such as voice and video packets. The mechanism such as Differentiated Services (DiffServ) is widely used for QoS in an IP network. DiffServ involves marking of the IP packet by a code called DiffServ Code Point (DSCP). Different values of DSCP are defined for different services so that the IP router that forwards the IP packet containing a given service (e.g., email, web page, voice, or video) toward the destination gives a suitable priority to the incoming IP packet. For example, DSCP=0 means that the service is a delay-tolerant and the IP router could let this IP packet wait in the buffer for some time when it is busy with IP packets carrying other higher priority services. In contrast, DSCP=30 means that the IP packet is carrying a video streaming packet and hence warrants faster packet forwarding from the IP router.

As discussed in the paragraphs above, numerous and complex interactions among the mobile device, the radio network, the core network, the IMS network, and the PCC network are required so that the subscriber can access a variety of Internet access services. *Multiple services are offered to the consumer as a single integrated information service with the mobile device and the network working closely together and carrying out complex, intense, and custom processing.*

ZERORATING

**Do hard rules protect or harm
consumers and competition? Evidence
from Chile, Netherlands and Slovenia**

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AUGUST 15, 2015

INTRODUCTION

Zero rating, the practice of not charging data to a mobile broadband subscriber's contract, is emerging a potent issue in telecom policy. The zero rating of mobile subscriptions has been extant for almost two decades with SMS, MMS, Blackberry Messenger, and WAP services¹ and with smartphone subscriptions for almost a decade with little to no controversy.

Zero rating has become increasingly popular in both developed and developing countries and plays a particularly important role in developing countries, where the costs of mobile data services are higher relative to per capita incomes. About half of all mobile operators employ the strategy in some way.² In fact network operators have used the equivalent of such strategies to incentivize both subscribers and content providers to be part of their network for well over a century.

In the last two years, however, zero rating become a flashpoint in the net neutrality debate.³ Whether a country allows it has become a litmus test for net neutrality supporters to certify the strength of the rules. At issue is whether operators and their customers should have the freedom to create contracts for mobile broadband service based on their preferences and constraints or whether mobile Internet service must be sold in a so-called "neutral" fashion where the only differentiating parameters are speed and megabytes. As the Internet increasingly transitions to mobile platforms, and the likelihood that the next two third of world who yet to come online will do so via mobile, who and how to provision mobile bandwidth has is an important, complex issue.

This paper examines the arguments for and against zero rating and the charges that zero rating hurts competition and consumers. It formulates 5 assertions based on the alleged harms and attempts to test them with empirical analysis from quantitative and qualitative perspectives. The paper reviews the leading database of financial information of the world's mobile operators to see whether the impact of zero rating may be observed, for example with undue financial benefits earned by operators through the use of zero rating. To understand the issue more closely, the paper reviews zero rating in Chile, Netherlands, and Slovenia, countries which have banned some forms of the practice. The paper then examines whether there is harm to consumers and innovation by reviewing a leading database of mobile application market data. The paper concludes by suggesting reasons why zero rating is maligned in telecom policy debates.

¹ "Zero Rated WAP Traffic," Geekzone, September 6, 2005, <http://www.geekzone.co.nz/forums.asp?topicid=4895>.

² Anne Morris, "Report: 45% of Operators Now Offer at Least One Zero-Rated App," *FierceWirelessEurope*, July 15, 2014, <http://www.fiercewireless.com/europe/story/report-45-operators-now-offer-least-one-zero-rated-app/2014-07-15>.

³ John Carbone, "Zero-Rating The Internet, or Why You Should 'Unlike' Facebook: A Partnership of a Different Color.," *Medium*, October 2, 2013, https://medium.com/@john_carbone/zero-rating-the-internet-or-why-you-should-unlike-facebook-ae9f7ec13faa.

Arguments against zero rating

A recent white paper by net neutrality advocacy organization Public Knowledge provides an overview of the arguments against zero rating.⁴ It argues that zero rating violates net neutrality, the principle that all data must be treated equally, and given that zero rating is not a neutral practice, it must be banned. In its place, they assert that only "Affordable Full Access" is acceptable. They claim as well that a zero rated offer is the operator's, not users, choice, and therefore zero rating is discriminatory and wrong. They declare that zero rating limits a user's choice, and that he will only choose zero rated services. They observe that zero rating limits innovation of third party applications and services.

Their opposition to zero rating might also be understood in relation to their advocacy against data caps. Public Knowledge explains,

Zero-rating and data caps may lead to a backslide into the world of scarcity. Data caps have been used as limitations on content usage and designed to create artificial scarcity. This type of scarcity is harmful because of its affect on a user's behavior, specifically regarding users' fear of going over their caps. Playing on users' fears of exceeding their data caps makes cap-exempt regimes more attractive which incentivizes the content providers to pay for prioritization. The potential for data cap abuse in discriminatory ways may outweigh any purported benefit.⁵

A related advocacy paper calls on the Federal Communications Commission to outlaw data caps as part of its new Open Internet Rules.⁶

Though no money changes hands in the bulk of zero rating offers, detractors are concerned about "pay to play" situations, in which they claim startups can't get Internet access, but we have not been able to find such a case. A type of zero rating is called sponsored data in which a content provider subsidizes the cost of a user's subscription. A key application for sponsored data is health care education and delivery. A health provider wants to ensure that low-income pregnant women watch a series of pre-natal videos, a preventative form of health care that improves infant and mother outcomes. Similarly the health care provider is willing to subsidize the entire mobile subscription to encourage adoption of preventative health care and monitoring tools. The cost of avoiding an adverse health event is well worth the price of a broadband. The patient benefits with better health outcome and the health care provider reduces costs.

Another concern is that zero rated programs such as Facebook's Internet.org will create parallel Internets and users will never venture outside of the social network. This situation is examined in the country case studies.

It should be noted that not all net neutrality supporters believe zero rating to be problematic,⁷ however the issue appears to be a growing schism between those who favor soft and hard approaches.

⁴ Carolina Rossini and Taylor Moore, "Exploring Zero-Rating Challenges: Views From Five Countries" (Public Knowledge, July 2015), <https://www.publicknowledge.org/documents/exploring-zero-rating-challenges-views-from-five-countries>.

⁵ Ibid

⁶ Danielle Kehl and Patrick Lucey, "Artificial Scarcity - How Data Caps Harm Consumers and Innovation" (New America, 2015), https://static.newamerica.org/attachments/3556-129/DataCaps_Layout_Final.b37f2b8fae30416fac951dbadb20d85d.pdf.

⁷ Mike Godwin, "What the 'Zero Rating' Debate Reveals About Net Neutrality," *Reason.com*, April 8, 2015, <http://social.reason.com/archives/2015/04/08/nothing-but-net>.

Arguments in favor of zero rating

Some key assumptions in the arguments against zero rating are worth examining. At its heart, net neutrality implies a pure, ideal way in which a user connects, navigates and learns on the Internet, free from influence and intermediaries. However this notion of a neutral experience conflicts with the established theories of the sociology of knowledge⁸ which posit that knowledge is mediated by social constructs. Neutrality is impossible because the Internet, like any medium, is by definition *mediated* or conveyed by intermediaries.⁹ Calling a longing for a “paradise lost”¹⁰ of a golden age of Internet neutrality that never was, net neutrality advocate Alejandro Pisanty critiques the excessive idealism of the net neutrality movement in favor of practical measures. In any case, one shortcoming of net neutrality is that it overwhelming focuses on internet service providers (ISPs) but fails to recognize the influence and non-neutral practices of global platforms, which have significant market power, users bases in the hundreds of millions (if not billions), and far high profitability and market shares than ISPs.

One proof point against neutrality is the popularity of walled gardens. Apple’s hardware and software designs are part of a tightly-controlled, vertically integrated, closed product ecosystem. Apple would not exist if there was the equivalent of network neutrality for computer hardware and software. Similarly “curated” Internet experiences are demanded by users, including The J Net for conservative Jews which blocks offending content; Islamic Mobile¹¹ which offers zero rated mobile access to the Koran and other religious content for Muslims; broadband packages bundled with software and support tailored for the elderly in Denmark;¹² zero rated mobile plans for the World Cup,¹³ and mobile plans designed for grandmothers to message with the grandchildren via WhatsApp.¹⁴

The assertion that all plans must be “affordable full access” assumes that users value all data equally. But many would gladly substitute “low cost limited access” without feeling any twinge of discrimination; rather they feel it is their right. Consumers increasingly demand the ability to pick and choose among the cable channels and eschew paying for the full packages; they see no difference with internet access.

For many users, selecting a provider purely on speed and price is not only difficult, it’s boring. It is preferable for some users to select a plan based upon brand identity,¹⁵ cross-marketing, cross-selling, a particular phone, features, benefits, or functionality they value. In this way, users are looking for operators who best cater to their needs, not necessarily the provider that provides the most data at the lowest price.

⁸ Karl Mannheim. *Ideology and utopia: an introduction to the sociology of knowledge*. Translated by Louis Wirth and Edward Shils. New York: Harcourt, Brace and Company; London: Kegan Paul, Trench, Trubner & Co., 1936

⁹ Christopher Yoo, “Free Speech and the Myth of the Internet as an Unintermediated Experience,” *George Washington Law Review*, Vol. 78, Pg. 697, 2010 University of Pennsylvania, Inst for Law & Econ Research Paper No. 09-33 University of Pennsylvania Law School, Public Law Research Paper No. 09-26 TPRC 2009, September 2009, 77.

¹⁰ Comments by Alejandro Pisanty: “Dynamic Coalition on Network Neutrality” (The Internet Governance Forum, September 2, 2014), <http://www.intgovforum.org/cms/174-igf-2014/transcripts/1923-2014-09-02-dynamic-coalition-on-network-neutrality-room7>.

¹¹ “Free Islamic Ramadan App from Amadan OmanTel,” OmanTel, accessed August 5, 2015, http://www.omantel.om/Omanweblib/Individual/Mobile/islamic_mobile_app.aspx?l.

¹² NemPC or EasyComputer is a bundled service designed for the elderly in Denmark sold as a monthly subscription. It consists of a (1) software package that becomes a “skin” for computers and devices optimized for the key digital activities for the elderly in Denmark (official Danish government websites for health, home care, pension, digital signature etc) and the national banking security for financial applications, NEMID (Easy Identification); (2) 24/7 call center and online tech support; (3) a broadband connection; (4) connected computers and devices. All the items can be purchased a la carte. The service is popular and expanding to similar segments in other countries.

The packages comes with enhanced security features: “NemPC,” accessed August 12, 2015, <http://nempc.dk/produkter.php?page=nempc>.

¹³ <http://www.fonearena.com/blog/131758/rcom-offers-free-access-to-twitter-during-world-cup-2015-introduces-data-recharge-offers.html>

¹⁴ <http://www.hyderabadass.com/2014/02/20/my-indian-grandmother-convinced-me-to-download-an-app-that-just-sold-for-19-billion/>

¹⁵ Virginia Postrel. *The Substance of Style: How the Rise of Aesthetic Value Is Remaking Commerce, Culture, and Consciousness*. Harper Perennial, 2004.

For many users, their choice of phone is personal statement, and though they may buy the newest model, they use only a fraction of its functionality, perhaps only a third of its features,¹⁶ meaning that a large data plan is not always necessary. Others may have a more standard phone, but use it like a workhorse. Offers such as the zero rated version of WhatsApp¹⁷ by EPlus, a leading Germany MVNO, offers free WhatsApp even when the user has no balance on the account.

Some have no interest to access all internet content, even if it is free. A number of users consider the Internet a mecca for pornography, gambling, piracy, and other digital vice. Many are legitimately concerned that mandated all or nothing offers put them at risk to have their security and privacy compromised, particularly for malware that may be embedded in certain content. Such users may also buy subscriptions that block ads because they do not want to come in contact with offending tracking software, as well as to reduce data consumption from advertisements. It follows that not all broadband offers, zero rated or not, appeal to users equally. Baseball lovers might not buy a zero-rated mobile offer tailored for the football fan, but they are not necessarily worse off because those offers are in the marketplace.

There are some valuable reasons to support zero rating which include but are not limited to positive spillovers, network effects, market competition, and lower prices. Simply put, zero rating is a way to increase the number of users, which increases the value of the network.¹⁸ There is a value to get more people on the network, whether it's through universal service, broadband subsidies, or zero rating. Proponents of corporate social responsibility may recognize zero rating as one way a company makes its product more affordable and available to disadvantaged communities. Orange describes it as one of their CSR initiatives.¹⁹ Proponents of government subsidies may see a role for zero rating, as they know public money is not unlimited.

Eisenach observes the double benefit stimulated by zero rating is that users are both content consumers and creators (e.g. Facebook, Wikipedia, Twitter etc).²⁰

Zero rating can also be a driver of competition in the marketplace and is a model most frequently used by entrant operators. As the case studies will show, zero rating is generally deployed by mobile virtual network operators (MVNOs) and resellers. As they cannot differentiate on network quality or price, they only have marketing and customer service. Zero rating becomes increasingly important for them both to establish themselves against incumbents, and perhaps to offer zero rated forms of customer service applications, similar to an 800 toll free number for support.

Zero rating is a type of price differentiation, the practice of offering the same or similar product to different segments and different prices. Network industries, such as broadband networks, have high upfront costs which are generally fixed for a large set of users. Once established, the cost of incremental output declines. It makes sense, therefore, to charge users with lower willingness to pay a discount, and thus cover the overall costs. Yet price differentiation occurs in industries with low-barriers to entry as well, which led William Baumol to conclude that competition forces firms to adopt price differentiation.²¹ In many cases, firms cannot enter the market without it.²²

¹⁶Leopoldina Fortunati and Sakari Taipale. The advanced use of mobile phones in five European countries. *The British Journal of Sociology* Volume 65, Issue 2, pages 317–337, June 2014
<http://onlinelibrary.wiley.com/doi/10.1111/1468-4446.12075/abstract>

¹⁷ "WhatsApp Ohne Guthaben Und Ohne WLAN," *Eplus*, accessed August 7, 2015, <https://www.eplus.de/WhatsApp>.

¹⁸ Jeffrey Eisenach, "The Economics of Zero Rating," Nera Economic Consulting, (March 2015),
<http://www.nera.com/content/dam/nera/publications/2015/EconomicsofZeroRating.pdf>.

¹⁹ "Committed to Europe - Ensuring an Open Internet for All," *Orange*, April 2015,
http://www.orange.com/en/content/download/30121/838284/version/2/file/Orange_open_internet2015.pdf.

²⁰ Supra

²¹ Baumol, William J., "Regulation Misled by Misread Theory - Perfect Competition and Competition-Imposed Price Discrimination" (AEI-Brookings Joint Center 2005 Distinguished Lecture Presented at the American Enterprise Institute,

It is puzzling why price differentiation is so maligned for mobile broadband access and yet embraced, if not demanded, in many other areas. An eminent example is differential prices for medicines, particularly in developing countries. A recent study²³ by the British government observes,

Adapting drug prices to the purchasing power of consumers in different geographical or socioeconomic segments could potentially be a very effective way to improve access to medicines for people living in low and middle-income countries. A well-implemented differential pricing system could also lead to increase in sales for pharmaceutical manufacturers.

Price differentiation is commonplace in ticket sales for movies, sports, and cultural events. For example discount tickets for students and the elderly are a matter of course, as are reduced prices for off-peak performance times. With regard to transportation, whether bus, plane, train, or ferry, reduced ticket prices are also offered to certain segments of the population. Additionally there are discounts for early purchase, off peak purchase, and so on. Many plan their visits to restaurants to take advantage of early bird specials, late night specials, half-priced happy hour, and so on.

Even the US Federal Trade Commission²⁴ recognizes that loss leader pricing strategies can be competition enhancing, the practice of selling one product at below cost to stimulate related products and services. For example, supermarkets may stock bread and milk at or below cost but earn revenue on other items. Pubs may sell low-priced food but earn a profit on alcohol. Many establishments may offer low cost entertainment but earn revenue on refreshment.

Similarly the freemium²⁵ model is widely practiced in digital industries. This consists of a free digital offer for software, media, games, or other service, but a charge or premium charged for special features, increased functionality, or virtual goods. LinkedIn, Amazon, online newspapers, and countless other companies offer freemiums. It is not logical that such companies should be allowed to offer for free—or zero rate²⁶—certain aspects of their service to stimulate adoption and yet broadband providers cannot.

September 22, 2015), http://www.aei.org/wp-content/uploads/2014/03/-regulation-misled-by-misread-theory_105820523401.pdf.

²² Baumol explains, "Not only will each firm be forced to adopt discriminatory prices, but each firm is likely to be forced to adopt a unique vector of prices, each of which is dictated by the market. Thus, this paper seeks to show why price discrimination may occur-and may occur frequently-not despite relative ease of entry (or other competitive pressures) but because of it. In fact, I will show that in highly competitive markets, firms may have no choice: Competition can force them to adopt the vector of profit maximizing discriminatory prices. Moreover, the second central proposition of the paper argues that, in equilibrium, these discriminatory prices are not haphazard in their welfare properties but will generally constitute a Ramsey optimum-satisfying the second-best welfare attributes of revenue constrained economic welfare. Neither conclusion means that the public interest requires all industries that employ discriminatory prices to be exempted automatically from regulation. But it does imply the converse: that such industries should not automatically be deemed appropriate objects of regulatory oversight."

²³ Prashant Yadav, "Differential Pricing for Pharmaceuticals: Review of Current Knowledge, New Findings and Ideas for Action" (MIT - Zaragoza International Logistics Program Zaragoza Logistics Center, August 2010), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67672/diff-pricing-pharma.pdf.

²⁴ Federal Trade Commission and Patrick DeGraba, *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers* (Pennylhill Press, 2013).

²⁵ Lukin, Jarid, "Jarid Lukin (@jblukin) | Twitter," November 7, 2014, <https://twitter.com/jblukin>.

²⁶ Michael Katz, comments: "Should Wireless Technologies Be Regulated Differently?," ISOC-DC TV - Live Events, (October 15, 2014), <http://www.isoc-dc.org/isoc-dc-tv/>.

ANALYSIS

This paper has covered arguments for and against net neutrality. This section discusses mobile operators' financial performance in specific countries and the issue of Internet traffic at exchange points and the backbone. Zero rating comprises one element of an operator's sales and marketing strategy which it uses to earn revenue. Such revenue is necessary to be viable to make network investments and upgrades. Thus the ways in which bandwidth is paid—whether by end users, content/application providers, or both—is both important and complex.

The analysis attempts to test the following assertions made by the opponents of zero rating.

1. The operator that offers zero rating will win market share.
2. The zero rated service will win market share.
3. The presence of zero rating will preclude the emergence of new applications and services.
4. Users do not go to non-zero rated content. If Facebook is free, they don't venture beyond it.
5. Operators that zero rate their own content foreclose other content.

This section provides an overview of a large financial database for mobile operators and then drills down to three countries which have specifically banned zero rating practices. Case studies are offered to describe the factors which emerged to make zero rating illegal. Thereafter a brief review of the tests of harm is offered. Finally the assertions of zero rating detractors are tested using data on mobile applications. The Merrill Lynch Bank America Wireless Matrix is a database of collected publicly available financial statements from the world's mobile operators collated and organized by country with on a set of metrics over a period of time. For some measures data is not available, so that table is blank for the particular country.

Financial Analysis

The data examined covers the period 2007 to 2013. The analysis is started in 2007, the year in which the iPhone was launched and because it marks the shift to the modern era of broadband data subscriptions sold for smartphones. We focus on Year on Year (YoY) increments and assume that user demand for digital service will drive the purchase of zero-rating contracts and interest to access sites.

It should be noted that some data, particularly for developing countries may have been collected or estimated with heterodox methods and may be inconsistent or incomplete. We note any items that we believe to be material.

The following countries were chosen because of their dynamic emerging economies, fast development of mobile services, the existence of zero-rating contracts, and in some cases, the presence of net neutrality rules. For the data set, we tried to identify per country whether zero-rating was implemented, the correlation with the year in which smartphones were introduced to the local market, and the type of tariffs available.

The block of Latin America countries (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) in the study share a common geographical location and multiple similar cultures, however the history of mobile networks is quite different in each and their net neutrality policies.

Argentina is a country with one of the longest-running commercial mobile network (1989), with the use of smartphones and data contracts established around 2010-2011.

Brazil and Mexico follow with similar numbers. The other countries have been able to fast forward their assimilation to digital services in the last three of four years.

As shown in table 1, the some countries had years of continuous expansion but others such as Colombia and Peru, the saturation of the urban market has reduced expansion. Mature markets such as Brazil and Argentina are still growing, but at low rates.

For comparison a set of Africa countries were selected: Algeria, Egypt, Nigeria and South Africa. They have been chosen because of the faster development of mobile networks, adoption of mobile payments, and clear drive towards the generalized mobile technology for both private and public use.

South Africa is one of the African countries with the oldest mobile networks, followed closely by Egypt and Nigeria. The rapid adoption and success of mobile networks in Africa is well documented,²⁷ though it appears that hyperfast growth has slowed since 2010. Growth in subscribers remains above 10% per year.

The explosion of mobile networks in Latin America and Africa parallels a reality where a significant proportion of population still lacks basic access to food, clothing and shelter.²⁸

	%	CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	32.7%	30.2%	15.0%	20.7%	21.9%	18.9%	18.0%
	Brazil	27.3%	20.8%	9.1%	10.0%	11.9%	6.3%	1.3%
	Chile	29.4%	16.7%	-5.9%	17.1%	15.1%	10.3%	5.0%
	Colombia	22.8%	3.8%	-1.9%	7.3%	14.7%	7.5%	4.4%
	Mexico	22.3%	11.6%	3.7%	10.0%	0.4%	9.1%	-1.2%
	Peru	31.5%	22.3%	6.7%	13.7%	13.3%	10.1%	8.7%
Africa	Algeria	14.9%	3.3%	-1.4%	1.9%	12.5%	15.2%	3.7%
	Egypt	31.2%	30.9%	9.5%	6.8%	-1.0%	4.7%	4.5%
	Nigeria	56.4%	26.8%	21.6%	-3.5%	31.4%	6.4%	4.6%
	South Africa	16.0%	5.4%	9.5%	12.4%	4.2%	4.2%	-1.8%

Table 1: The growth of subscribers Year to Year (YoY) in the period 2007 to 2013.

One interpretation of table above is that as adoption slows, incentives such as zero rating can help get more people on the network. It might also reflect a point of diminishing marginal returns. All of those who have had the wherewithal to adopt mobile broadband to date have done so. In order to get the next tranche on board requires a stimulation to demand, either in the form of incentive (lower price, zero rating etc) and/or increase in the user's interest, skills etc. It might be observed that zero rating offers a self-reinforcing way to educate new users about the Internet; they get a free trial to do something they haven't used before. Getting new customers on the network also helps to cover costs and provide revenue for further investments.

Table 2 is a summary of the mobile network operators in the regions studied. All these companies are registered in local and international stock markets and many have strategic partnerships with telecom operators from outside the region such as Telefonica, Telecom Italia and others.

²⁷ GSMA. "Women&Mobile: A Global Opportunity - A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries." London, UK: GSMA Development Fun -Cherie Blair Foundation for Women, 2010. http://www.gsmworld.com/images/mwomen_pr_assets/women_mobileReport.pdf.

²⁸ GSMA, and Deloitte. "Brazil Mobile Observatory." London: GSMA, 2012. http://www.gsma.com/spectrum/wp-content/uploads/2012/10/gsma_brazil_obs_web_09_12-1.pdf.

Country	Telecom providers
Argentina	Telecom Argentina (TI), Movistar Argentina (TEF), Movicom (BLS), Claro (AMX), NIHD
Brazil	Vivo (Telefonica), TIM Brazil (TI), Claro Brazil (AMX), Oi (PT), NIHD, Other
Chile	Movistar Chile (TEF), Entel Chile, Bellsouth (CHL), Claro Chile (AMX)
Colombia	Comcel (AMX), Movistar Colombia (TEF), Tigo Colombia (MICC)
Mexico	Telcel (AMX), Iusacell, Movistar Mexico (TEF), Unefon, NIHD
Peru	Movistar Perú (TEF), Claro Perú (AMX) , BellSouth, Nextel
Algeria	Djezzy, Mobilis, Ooredoo
Egypt	ECMS (Mobinil), Vodafone, Etisalat Egypt
Nigeria	MTN, Airtel (Bharti), Globacom, Etisalat, Others
South Africa	Vodacom, MTN, Cell C, Telkom

Table 2: Mobile providers by country.

Although the growth is impressive in the countries selected, the use of contracts differ according to local conditions. There are many niche markets depending which sector of the population is experiencing fast economic growth.

Strategies for sales and marketing differ and impact service revenue growth. Because of the diverse economies and inflation rates, we compare the percentage of year to year expansion in the local currency. For all countries in the study, service revenue as a whole has been declining for years. This is part of a larger global trend for operators which are transitioning from a paradigm of selling voice and messaging to one of selling data.

The shift is not necessarily profitable for operators, even though the amount of data consumed by end users is generally increasing. Net neutrality advocates assert that operators should simply compete on data, but most operators face heavy price competition because of multiple providers in the marketplace. Additionally their largest source of revenue, voice and messaging, has been significantly reduced by the proliferation of free alternatives such as Skype, WhatsApp, Facebook Messenger etc. Thus net neutrality rules are a double-whammy for operators; not only are they not allowed to manage their networks with increasing data demands, they cannot make offers to cover their costs.

		CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	32.7%	30.2%	15.0%	20.7%	21.9%	18.9%	18.0%
	Brazil	27.3%	20.8%	9.1%	10.0%	11.9%	6.3%	1.3%
	Chile	29.4%	16.7%	-5.9%	17.1%	15.1%	10.3%	5.0%
	Colombia	22.8%	3.8%	-1.9%	7.3%	14.7%	7.5%	4.4%
	Mexico	22.3%	11.6%	3.7%	10.0%	0.4%	9.1%	-1.2%
	Peru	31.5%	22.3%	6.7%	13.7%	13.3%	10.1%	8.7%
Africa	Algeria	14.9%	3.3%	-1.4%	1.9%	12.5%	15.2%	3.7%
	Egypt	31.2%	30.9%	9.5%	6.8%	-1.0%	4.7%	4.5%
	Nigeria	56.4%	26.8%	21.6%	-3.5%	31.4%	6.4%	4.6%
	South Africa	16.0%	5.4%	9.5%	12.4%	4.2%	4.2%	-1.8%

Table 3: Service Revenue Growth. % calculated on local currency.

Our table 4 shows a different perspective, but data is available only for a few countries. While total service revenue is declining, average revenue *per user* (ARPU) is growing. This demonstrates that users want to access to more applications and services with their mobile broadband subscription. It would seem to be the proof that assertion #4 is false, that users do not go to non- zero rated content. This chart clearly shows that subscribers

are increasingly paying for data subscriptions. However this chart does not tell us what percentage of any operator's subscriber base has been transitioned to data packages. To be sure, operators want to increase the value of any single customer, but the rate of success likely varies across operators and with the sophistication of their networks. It is also important to note that these figures are not necessarily synchronized with profitability. Though any one customer could be more profitable for an operator with a data package, it is not necessarily the case that selling data is more profitable for operators as traditional SMS or voice was before.

		CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	18.8%	24.9%	28.9%	31.4%	36.6%	40.8%	45.8%
	Brazil	7.4%	9.2%	12.4%	15.7%	18.7%	22.5%	26.3%
	Chile	N.A						
	Colombia	N.A						
	Mexico	13.3%	15.9%	20.3%	24.2%	29.7%	35.0%	39.0%
Africa	Peru	N.A						
	Algeria	N.A						
	Egypt	4.6%	6.6%	8.5%	9.8%	11.0%	12.5%	13.7%
	Nigeria	3.5%	4.0%	5.0%	6.0%	7.4%	21.0%	22.7%
	South Africa	9.9%	12.8%	15.6%	19.0%	22.0%	26.4%	30.2%

Table 4: Monthly ARPU YoY Growth.

Smartphones in 2007 were extremely expensive for users of the countries in this analysis. However smartphones have significantly fallen in price (as well as used smartphones have become available), something that helps make data packages more affordable. Though some data is missing the following table, it shows the relative success that operators' have made in transitioning to selling data instead of voice and SMS. Operators in these countries still earn more than half of their revenues from voice and SMS, in many cases on 2G infrastructures. This presents a challenge and opportunity.

The challenge is meeting the expectation of the international community that operators should deploy broadband infrastructure, even though relative demand for broadband is low and the revenue to support it has yet to be earned. The opportunity is finding the business model to bridge the gap. This is where zero rating, along with other types of offers come into play.

To explain the situation, a column showing the percentage of the population using the Internet is added. Though the 2014 operator data is not available, the comparison between the 2013 percentage of data service revenues compared to the 2015 estimated internet adoption provides some indication of the opportunity for operators to sell mobile broadband to people who have yet to adopt the Internet, provided offers can made in a compelling way. In the countries below, at least a quarter, if not half, of the population has yet to come online. This population generally represents people of lower income and perhaps education, so it is of particular importance that offers be low-cost and accessible. There should not too be many contract restrictions or signup requirements (e.g. bank references etc); as such, prepaid offers are so important.²⁹ For those who

²⁹ Roslyn Layton, Role of Prepaid in Africa, Chapter in The African Mobile Story, River Publishers, 2014.

have never tried the Internet, having an incentive such as a free trial, will support adoption.

More generally the mobile broadband penetration in the developing world is 39.1 persons for every 100. This exceeds the number of people who have computers and Internet at home, roughly one third of the population of the developing world.³⁰

	CY07	CY08	CY09	CY10	CY11	CY12	CY13	% Pop using Internet 2015 ³¹
Argentina	18.8%	24.9%	28.9%	31.4%	36.6%	40.8%	45.8%	64.70
Brazil	7.4%	9.2%	12.4%	15.7%	18.7%	22.5%	26.3%	57.60
Chile	N.A	72.35						
Colombia	N.A	52.57						
Mexico	13.3%	15.9%	20.3%	24.2%	29.7%	35.0%	39.0%	44.39
Peru	N.A	40.20						
Algeria	N.A	18.09						
Egypt	4.6%	6.6%	8.5%	9.8%	11.0%	12.5%	13.7%	31.70
Nigeria	3.5%	4.0%	5.0%	6.0%	7.4%	21.0%	22.7%	42.68
South Africa	9.9%	12.8%	15.6%	19.0%	22.0%	26.4%	30.2%	49

Table 5: Data % of service revenues

Another challenge in the provision of mobile services is that prices generally have no relation to fixed costs such as spectrum, and in some cases, operating costs such as traffic delivery. Mobile service markets are so competitive, that spectrum is generally a sunk cost. Another issue for mobile operators in developing countries is that users disproportionately request data from far away countries. This also adds to the challenge of pricing mobile broadband competitively and affordably.

Traffic analysis

An important issue that is overlooked in the discussion of zero rating is an economic analysis of the disproportionately high level of traffic generated by the top 10 mobile applications and the aggregation of traffic at exchanges and backbones. Net neutrality wants to ensure equal access to sites and services for end users, but such performance can only be achieved by keeping good provision, upgrade, and maintenance of the telecom network, which implies costs and relationships between the pricing of services and expenditure.

How traffic is aggregated and the impact the transport cost of data through backbone networks is transferred to users is not clearly understood, nor is such vital information

³⁰ "Core Household Indicators" (ITU World Telecommunication/ICT Indicators Database., 2015), <http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/CoreHouseholdIndicator.xls>.

³¹ Metadata for Percentage of Individuals Using the Internet," 2015, http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/Individuals_Internet_2000-2014.xls.

readily available. Not having the information or mischaracterizing the situation can lead to false conclusions. Some basic trends are known however and are helpful to review.³²

Video is a huge and growing portion of the traffic delivered to mobile devices, comprising more than two-thirds of all traffic in some countries. Significantly, just two entities, Google/YouTube and Netflix take an overwhelming share of this traffic.

Data centers are integral to the way the Internet works, not only because of the prevalence of virtualization and cloud services, but also because they provide the means to structure traffic worldwide. This puts considerable power in the hands of a few big players, including Google, Facebook, and Amazon. Akamai, Level 3, and other content delivery providers are important, as are the data centers of banks and telecom providers.

The structure of the traffic flows differ significantly from the archetypal model of the three layered internet (infrastructure, transport, service/data). Internet exchanges and private contracts for peering and transit re-draw routing worldwide. The structure today is more modular and "platformized." The idea of content/application providers passively accessing transport networks has given way to the reality of proactive approaches in which content provider develop individualized solutions and relationships for advanced, dynamic delivery and competitive differentiation. Content providers avail themselves to non-neutral pricing as a matter of course. This means that Internet service providers (ISPs), including mobile operators, simply don't have the market power that net neutrality advocates claim.

Differential treatment of traffic is the norm, and this is what content providers want when they purchase traffic delivery solutions from a range of intermediary providers.

Decisions about transit and data centers by content/applications providers have material impacts to end users. For example, people in Latin America use global (American) platforms such as Google, Facebook and Twitter to talk with people around the corner. How those platforms are provisioned locally and regionally has technical, regulatory, and geopolitical implications. For example Google built a CDN in Chile, allowing traffic to be redistributed from the Miami internet exchange. This improves the experience for its end users in Chile.

In Europe, the practical evidence shows that Europeans largely use American platforms to communicate with other Europeans. Unfortunately the Amsterdam Internet Exchange (AMIX) has not been forthcoming to allow academics to measure or test these traffic trends.³³

³² Weller, Dennis, and Bill Woodcock. "Internet Traffic Exchange: Market Developments and Policy Challenges." OECD Digital Economy Papers, No. 207, OECD Publishing., 2012. <http://www.internetsociety.org/doc/weller-d-and-b-woodcock-2012-internet-traffic-exchange-market-developments-and-policy-challenges>.

Liebenau, Jonathan, S. Elaluf-Calderwood, and P. Karrberg. "European Internet Traffic: Problems and Prospects of Growth and Competition - White Paper." London: London School of Economics and Political Science, 2013.

Liebenau, Jonathan, S. Elaluf-Calderwood, and P. Karrberg. "Strategic Challenges for the European Telecom Sector: The Consequences of Imbalances in Internet Traffic." *Journal of Information Policy* 2 (2012): 248-72.

³³ Silvius, Stephanie. "Internet Exchange Points: A Closer Look at the Differences between Continental Europe and the Rest of the World." Amsterdam: EURO-IX, 2011.

Case studies of zero rating in Chile, Netherlands, and Slovenia

Given that the country level financial information offers limited opportunity to address the five assertions, case studies are offered to give further insight and context. Chile, Netherlands, and Slovenia are three countries with hard net neutrality laws and bans on forms of zero rating. This section explores a number of factors and dynamics related to the banning of zero rating. It generally starts with a belief amongst net neutrality advocates that regulators are not doing enough to enforce net neutrality rules. While advocates recognize that blocking and throttling either don't happen or are rare occurrences, it is seen as urgent to address what they consider a growing problem, the presence of price differentiated offers in the marketplace. The net neutrality organizations make formal complaints to regulators and competition authorities with a similar argumentation: The country has a net neutrality law requiring all data to be treated equally. Ergo zero rating is a violation.

In each of the three countries, the first response of telecom regulator was that zero rating is not a violation. There seems to be a reluctance of the regulator to rule that zero rating is discriminatory, whether for a recognition of its benefits, a waste of political capital on an insignificant issue in light of more pressing priorities; or even misgiving about net neutrality itself.

Undeterred, net neutrality advocates step up the campaign against zero rating by writing blogs and enjoining sympathetic journalists to take up the story. In each of the three countries, advocates have succeeded with bans. However, the rulings decisions are flawed, according to net neutrality advocates. Bans are not uniform across all offers and providers. Many stakeholders complain that efforts made to provide more clarity end up creating more confusion. Moreover regulators find themselves in embarrassing situations in which they have to backtrack on judgements, correct earlier statements, and mediate moral decisions about why zero rating is ok for Wikipedia but not for WhatsApp.

We find as well that net neutrality advocates and organizations are closely tied to the regulatory authority and government. In one case, a net neutrality advocate rises to a position of regulatory power to implement the zero rating ban himself. Victory is declared by net neutrality advocates when operators raise or remove data caps.

Chile

In 2010 Chile was the first country in the world to make a net neutrality law.³⁴ The effort was an outcome of many years of lawsuits between operators and attempted telecom regulation that was ultimately found unlawful. To make rules, the country's communications laws needed to be updated to vest the proper authority within the telecom regulator, a situation currently in play in the US, as the FCC faces lawsuits for its attempt to make net neutrality rules. The situation is indicative of outdated communications laws that Congress needs to modernize. But just because net neutrality rules are in place does not necessarily mean the issue has more clarity. The Chilean case illustrates that rules can create more disputes.

Virgin Mobile launched an MVNO on Movistar network's in Chile in April 2012. Because virtual operators resell network access, they cannot differentiate on speeds or quality, so they must differentiate on marketing, customer service, and other non-network parameters. As such zero rating is an important tool for MVNOs.

Virgin Mobile Chile used a common marketing strategy employed by MVNOs: paint the established operators as dinosaurs and celebrate customers as "rock stars". "Chileans

³⁴ *Consagra el Principio de Neutralidad en la Red Para Los Consumidores y Usuarios de Internet*, General de Telecomunicaciones Ley 18.168 (August 26, 2010), <http://www.leychile.cl/Navegar?idNorma=1016570&buscar=NEUTRALIDAD+DE+RED>

can now get fair flat rate calling and great Data bundles and "Anti-Plans"³⁵ with everything they need. And Virgin Mobile Chile throws in extra goodies like Unlimited Whatsapp when you buy data. The Rock Star customer support team has brought a new level of care to the Chile market, and customers are the most satisfied in the market," notes the operator's Chilean website.³⁶

A year after launch, the company had 200,000 customers which the CEO owes to "a simple offer, without asterisks, flat rate data, convenient bags of minutes, and a call center."³⁷ Over three years, the company earned 1% of the Chilean market and is on track to have 400,000 customers by the end of 2015, half of which are post-paid.³⁸ Other explanations for its success include laws in 2012 that allow number portability and unlocking of phones.³⁹ Virgin Mobile has extended its concept to Mexico and Colombia and has a goal of winning 5% of the Chilean market.⁴⁰

To be sure, with 70 percent of its customers aged 15-35, of which 70% have data plans and 85% have smartphones, WhatsApp would be one of the popular apps to include in an offer. In response to Subtel's decision to ban zero rating, the CEO explained,

Well, certainly it had an impact because we had to revise our offer. We have not eliminated the promotion, but we had to change it. Back when you bought a package of data, we gave free Whatsapp for the 30 day duration of the package, and if a customer left without any balance, the customer could continue using WhatsApp to the end of the period. Now we continue offering this service for free, that is, that the use of data Whatsapp not count toward the package, but the moment in which the client runs out of contract data, he cannot continue using WhatsApp. That is, customers have Whatsapp free while having data package.⁴¹

However the CEO asserts that zero rating has less importance in light of other activities, which include its distribution strategy through the large retail chains Ripley and Falabella and wholesaling with small shops. Virgin Mobile operates its own distribution channels with kiosks in subway stations and its website. The country also adopted a framework to support MVNOs⁴² and made a law to ensure number portability. The success of Virgin Mobile cannot be attributed directly to its zero rated offer.

It would be expected that net neutrality advocates would appreciate such service-based competition in the market, but no. Neutralidad Sí! in concert with CivicoONG complained to the regulator that Virgin Mobile's offer of free WhatsApp was an attack on the law of net neutrality. They asserted that Virgin Mobile is creating a disincentive to use competing messaging services such as Line and Telegram. Correspondence between Neutralidad Sí and the regulator was reviewed. The original complaint, No. 324923 posted on January 29, 2013, has been removed,⁴³ but the rest of the exchange remains.

In the correspondence, the regulator reiterated that the Chilean rules state that operators cannot arbitrarily block, interfere, discriminate, hinder or restrict the right of any Internet user to use, send, receive or offer any content, application, or legal service. Offers cannot arbitrarily distinguish content, applications, or service based on source or

³⁵ Anti-plan was the idea of an offer that is not constrained to the traditional telecom contract, e.g. long contract life, termination fees, extra charges etc

³⁶ "Virgin Mobile Chile," [Virgin.com](http://www.virgin.com/company/virgin-mobile-chile), accessed August 5, 2015, <http://www.virgin.com/company/virgin-mobile-chile>.

³⁷ "Virgin Mobile Cuenta En Chile Con Más de 200.000 Clientes," *CIOAL The Standard IT*, April 17, 2013, <http://www.cioal.com/2013/04/17/virgin-mobile-cuenta-en-su-primer-ano-en-chile-con-mas-de-200-000-clientes/>.

³⁸ Markus Zallman, "Virgin Mobile Chile Targets 400,000 Mobile Subs by End- 2015," *MVNO Dynamics*, April 22, 2015, <http://www.mvnodeynamics.com/2015/04/22/virgin-mobile-chile-targets-400000-mobile-subs-end-2015/>.

³⁹ "Virgin Mobile Chile's MVNO Signs up 36,000 Subscribers," *MVNO Dynamics*, July 24, 2012, <http://www.mvnodeynamics.com/2012/07/24/virgin-mobile-chiles-mvno-signs-up-36000-subscribers/>.

⁴⁰ Leticia Pautasio, "Queremos Alcanzar 300.000 Clientes Al Cierre de 2014," *Telesemana*, April 13, 2014, <http://www.telesemana.com/blog/2014/08/13/queremos-alcanzar-300-000-clientes-al-cierre-de-2014/>.

⁴¹ Ibid

⁴² Ibid

⁴³ Civico ONG, "Denuncia Por 'Whatsapp Gratis' En SUBTEL," Storify, accessed August 5, 2015, <http://storify.com/ongCivico/denuncia-por-whatsapp-gratis-en-subtel>.

owner. The legislation still allows operators to manage traffic within a set of constraints, provided that the actions do not impact competition. The purpose of the law is to ensure that services, applications, and content are offered without discrimination to the time the user access is allowed without arbitrary restrictions and that access be provided in a competitive way.

The offer by Virgin Mobile and WhatsApp did not prevent access to other applications, according to the regulator. It only releases metering for the one application for the period of the offer, and therefore does not constitute a breach of net neutrality. The user can also access the application even when he has no balance.

Neutralidad Sí! responds the same day. They extrapolate that it will lead to situations in which users are coerced with rebates and discounts to use "search engine X" or "video provider Y". Secondly they object to the idea that "traffic management and network management" do not harm competition. They note that if access to WhatsApp is free then it effectively harms other competitors because to access to them must be paid.

The regulator replies that it has revisited the net neutrality law and reiterates the points. As for the threat described, that an operator is favoring one application over another, this is not case because the offer is not restricting the right of users to access the Internet, which is the point of the law.

Neutralidad Sí! responds with a reference to Article 19 of the Civil Code: "When the meaning of the law is clear, its wording be disregarded under the pretext of consulting its spirit." They reiterate the words "discriminate" and "offer" that exist in the net neutrality law and the Royal Academy of the Spanish language definition of discrimination being "select excluding". They suggest that if other services receive the same treatment as WhatsApp, the arbitrary nature of the discrimination will be eliminated.

The complaint was brought to the Secretariat of the Regulator and then closed with the explanation that the regulator had provided an adequate explanation. The Neutralidad Sí! blog says that the regulator's response was "awkward" and did not rule on the merits.

It appears that the issue gets no further attention until a new chair comes to the telecom regulator. Pedro Huichalaf, former head of related net neutrality advocacy organization ONGMeta, took office in March 2014.⁴⁴ The ban on zero rating of selected social media sites is pronounced illegal the following month.⁴⁵

The official decision notes that companies are not punished for offering zero rating, but are invited to end the practice, or to provide the benefits to all traffic of the same class. Some confusion emerged once the decision was released as to nature of the word "arbitrary", whether traffic is treated an an "arbitrary" or deliberate way. At the time of the ruling, Wikipedia Zero was not yet available, but the rule ostensibly outlawed it. Wikipedia noted the Chilean decision is "example of when net neutrality — which is an important principle for the free and open internet — is poorly implemented to prevent free dissemination of knowledge."⁴⁶ The regulator then needed to relent and allow Wikipedia to be an exclusive zero rated service, noting that there is a clear difference between Wikipedia Zero and unlimited social messaging.⁴⁷ Neutralidad Sí called the exception for Wikipedia, the "last unicorn of the 'good Internet'", a double standard.

Neutralidad Sí appears to be dissatisfied because the regulator while pronouncing the practice illegal, does not do enough to prosecute or punish telecom providers for the

⁴⁴ "Renuncia de Pedro Huichalaf Por Nominación Como Subsecretario de Telecomunicaciones," ONG META, accessed August 5, 2015, <http://ongmeta.cl/renuncia-de-pedro-huichalaf-por-nominacion-como-subsecretario/>.

⁴⁵ *Zero Rating of Such Social Media as Pronounced Illegal*, 2014, http://www.subtel.gob.cl/transparencia/Perfiles/Transparencia20285/Normativas/Oficios/14oc_0040.pdf.

⁴⁶ Yana Welinder, "[Wikimedia Announcements] [PRESS RELEASE] Airtel Offers Nigerians Free Access to Wikipedia," June 1, 2014, <https://lists.wikimedia.org/pipermail/wikimedia-l/2014-June/072336.html>.

⁴⁷ <http://www.vpschile.cl/servidor-virtual/3821/1/internet/wikipedia-zero-avanza-en-chile.html>

practice. The organization says that the situation is contradictory and calls on the regulator to clarify. The comments under the blog blame Neutralidad Sí for making the zero rating complaint in the first place. The commenter notes that the ban hurts poor people who can't communicate with their family through WhatsApp. Another comment refers to the slippery slope of ill-defined rules such as the ban on zero rating, what may be legal today will not be tomorrow and vice versa. Additionally he faults the organization for not recognizing how internet companies (Facebook) take advantage of users' information with free services. Another commenter criticizes the net neutrality rhetoric of "free Internet" because technically a zero rated offer is free access.

Earlier heads of the Chilean regulator criticized the ruling. On Twitter, one called it "populist idiocy from a small group of activists. A new form of regulatory capture."⁴⁸ Another penned an opinion piece in the leading newspaper titled "positively discriminatory, but not arbitrary, in favor of the poor."⁴⁹

To put the issue into perspective, we reviewed official materials of the Chilean telecom regulator. Along with the consumer authority, it publishes an annual report of complaints related to telecommunications. The report⁵⁰ for 2012-2013 is telling in what consumers complain about; which companies; and how complaints are resolved. Specifically we were interested to see whether consumers complained to the regulator that zero rating is harmful.

Complaints about mobile communications make up about half of all the complaints in the country for the period. About 2 of every 200 mobile subscribers complain. For mobile communications, the single largest set of complaints is about phones (13%) and problems with phones connecting with networks leading to slow speeds (11%). Thereafter the bulk of complaints (56%) have to do with the contracts themselves, issues of customer care information is faulty, wrong or inadequate; disputes on charges for additional services; charges made for services not used; contract termination; term of warranty for phone; lack of accurate and timely information; and billing cycle change. In fact the largest single complaint across all telecommunications networks is incorrect charges, 27%. The report notes that complaints were resolved at least two-thirds of the time for all but one mobile operator. The report notes that total complaints declined 3.6% from 2012 to 2013.

Importantly the report does not list specific net neutrality or zero rating complaints, and if they exist, they do not amount to any more than 1.8% of complaints, the smallest category of any collected complaint. It would be expected that if zero rating was so destructive to consumer welfare and competition that it would garner at least 1.8% of complaints to the regulator. Moreover, if the zero rated version of WhatsApp was hurting competition, it would be expected that Facebook Messenger, Line, Telegraph, and other services would have complained. No evidence of this can be found on the regulator's website. The only complaint we could find was that of Neutralidad Sí!

Chilean consumers increasingly demand content that is not Chilean. It is housed in far locations and takes time to reach Chile. This can also be observed that when one is in Europe accessing a Chilean website, one may experience latency. Sandvine notes,

In Latin American mobile networks, two companies, Facebook and Google, now control over 60% of total traffic in the region. This dominance is driven by the popularity of low cost Android smartphones in the region as well as Facebook's

⁴⁸ "Sobre Redes Sociales Gratis (with Image, Tweets) · ongCívico," *Storify*, accessed August 5, 2015, <http://storify.com/ongCívico/sobre-redes-sociales-gratis>.

⁴⁹ Pepe Huerta, "Redes Sociales Gratis Y La Circular de SUBTEL. ¿Dónde Surgió El Problema?," *Neutralidad Sí*, June 2, 2014, <http://www.neutralidadesi.org/2014/06/02/redes-sociales-gratis-y-la-circular-de-subtel-donde-surgio-el-problema/>.

⁵⁰ "Servicio Nacional Del Consumidor | SERNAC Y SUBTEL Dan a Conocer Ranking de Reclamos En El Mercado de Telecomunicaciones," Sernac, (January 24, 2014), <http://www.sernac.cl/sernac-y-subtel-dan-a-conocer-ranking-de-reclamos-en-el-mercado-de-las-telecomunicaciones/>.

decision to embrace social networking and messaging through their acquisitions of Instagram and WhatsApp. With such concentration, corporate decisions by these major players, like Facebook's decision to auto-play videos uploaded to its site, can instantly and dramatically impact subscribers and network operators.⁵¹

The issue can be resolved with intermediaries such as content delivery services, video encoding, and content formatting. Generally content owners purchase these services to ensure the fidelity of their content, as well as to lower their operating costs (better formatting reduces storage cost and energy consumption). However it is not necessarily clear that all content owners will have a strategy for Chile, especially if they don't license their content for the country.

Given that contract complaints are a leading issue, it begs the question why the regulator does not focus more on transparency requirements. Such an approach was taken by the Swedish regulator (PTS) in 2009, establishing guidelines in 2009⁵² in lieu of making a net neutrality law. In the Swedish perspective, net neutrality is about ensuring transparency in pricing, service offerings, network quality, as well as upstream and downstream capacity so that consumers are clear in what they purchase and can easily switch providers. PTS claims its consumer-centric, light-touch approach is successful and has improved operating norms so much that adopting to the EU's new solution is a step backward.⁵³

In a recent presentation⁵⁴ to the Body of European Regulators for Electronic Communications (BEREC), Subtel chair Huichalaf declared that zero rating is attractive from the point of view of users. However he believes that the regulator still has a role to decide whether such offers should be allowed.

Netherlands

The Netherlands is recognized by the OECD as the world's most competitive broadband market for the number of multiple broadband facilities available.⁵⁵ On account being the world's flattest and most densely populated country, there are nearly two wired infrastructures (copper and cable) to every residence, three mobile networks (and a fourth under construction), resellers on top of the copper infrastructure; and dozens of virtual mobile providers. Fiber is available in some cities as well. It is counterintuitive that net neutrality laws should be so strict, for if ever a market existed where consumers could switch if they didn't like their provider, it is the Netherlands.

Since adopting the net neutrality law, a number of financial indicators reveal a worsening situation for Dutch telecoms, though a number of trends were already in play well before the law, including declining voice revenue and service revenue growth. The Netherlands is a saturated market in both fixed and mobile. Growth of subscribers is flat in fixed. In mobile, it has been declining since 2011 when it had a high of 105% and has fallen below 100%. There are no new customers for operators; the only possibility is to poach each other's customers. Frequently this can mean a race to the bottom. The monthly churn rate for the industry is 2.5%, relatively high for a postpaid market. This indicates that customers can and do change providers.

⁵¹ "Sandvine - Global Internet Phenomena - Latin American Report May 2015," Sandvine, (May 2015), <https://www.sandvine.com/trends/global-internet-phenomena/>.

⁵² Post-och Telestyrelsen (PTS), "Nätneutralitet", <http://www.pts.se/sv/Bransch/Internet/Oppenhet-till-internet/>

⁵³ ETNO, "Ola Bergström, Director at Swedish Post and Telecom Authority - PTS, Gives an Interview at ETNO-MLex Summit 2014," viEUws, July 7, 2014, [www.vieuws.eu/etno/etno-mlex-summit-2014-interview-with-ola-bergstrom-director-for-international-affairs-swedish-post-and-telecom-authority-pts/](http://www.vieuws.eu/etno/etno-etno-mlex-summit-2014-interview-with-ola-bergstrom-director-for-international-affairs-swedish-post-and-telecom-authority-pts/)

⁵⁴ Pedro Huichalaf, "Neutralidad de La Red: Explorando El Impacto En REGULATEL," *Gobierno de Chile*, July 2015, <http://berec.europa.eu/files/doc/4.%20PPT-%20CHILE%20-%20REGULATEL%20-%20BCN.pdf>

⁵⁵ See section 3 on Coverage and Geography. "OECD Broadband Portal," July 23, 2015, <http://www.oecd.org/sti/broadband/oecd broadband portal.htm>.

Nevertheless financial results reveal that costs are managed prudently. To maintain profitability in a strict regulatory environment where new business models are not allowed, the only recourse is to lay off workers. In 2014, KPN laid off 2000 in the consumer branch and another 500 in the corporate.⁵⁶ This follows other cuts in recent years across the industry.

Net neutrality advocacy organization Bits of Freedom has been instrumental to bring attention to net neutrality.⁵⁷ Though they had conducted campaigns for a number of years on the topic, they found little interest with the general public. However a statement from a KPN executive, suggesting that the company would charge users to access WhatsApp, catapulted Bits of Freedom (BoF)'s efforts to center stage. In addition to viral take-up of the issue in the media, the stakeholders BoF had cultivated, including key parliamentary sponsors, allowed the organization, in just two months, to push through the legislation it had created. There was no hearing of mobile operators or investigation of traffic management. The Law was promulgated in 2012 and came into force the following year.

The Dutch Parliament had been revising its Telecommunication Act during this period, and BoF found support among a number of Parliamentarians. It also provided the lawmakers with a proposed text for the law⁵⁸ as well as position papers developed under the support of the Council of Europe (an agency empowered to protect human rights) to support the legislation.⁵⁹ Encouraging Dutch innovation in internet services and applications was a reason given to support net neutrality.

From the operators' side, the uptake of the free SMS applications in lieu of proprietary services materially affected revenue. KPN, for one, was not prepared for the shift. For the first time in many quarters, the company issued a profit warning.

In its quarterly announcement, it noted a large drop in SMS revenue in Q1 of 2011 and lowered EBITA projections by €200 million euros from the prior year. KPN also noted that to lower costs, it would lay off 25% of its Dutch workforce, about 4000-5000 employees.⁶⁰ Before making the suggestion of charging for WhatsApp, KPN obtained permission from the Dutch telecom regulator OPTA.⁶¹ The regulator approved the offer and noted, "This means more choice for consumers, which allows subscriptions can take better suited to use. We therefore welcome such a development, on condition that the provider is transparent about the cost."⁶²

What is frequently described as a predatory situation between operators and third party applications, might also be viewed as operators having the wrong business model in a time of change. Until 2010, data consumption on mobile devices was limited in the Netherlands, and the price reflected that users did not demand it very much. But with smartphones and emerging online services, consumers started to shift their consumption. This came at a time where the prevailing terminating regime in the caller

⁵⁶ Janene Van Jaarsveldt, "KPN to Cut 580 Jobs," *NL Times*, December 10, 2014, <http://www.nltimes.nl/2014/12/10/kpn-cut-580-jobs/>.

⁵⁷ Roslyn Layton, "Net Neutrality in the Netherlands: Dutch Solution or Dutch Disease?," 24th European Regional ITS Conference, Florence 2013 (International Telecommunications Society (ITS), 2013), <http://econpapers.repec.org/paper/zbwitse13/88488.htm>.

⁵⁸ Matthijs van Bergen, intern at Bits of Freedom "played a consulting role in the establishment of net neutrality legislation in the Netherlands." <https://www.linkedin.com/in/matthijsvanbergen>

⁵⁹ "Protecting Human Rights through Network Neutrality: Furthering Internet Users' Interest, Modernising Human Rights and Safeguarding the Open Internet" (Steering Committee on Media and Information Society (CDMSI), December 3, 2013), [http://www.coe.int/t/dghl/standardsetting/media/CDMSI/CDMSI\(2013\)Misc19_en.pdf](http://www.coe.int/t/dghl/standardsetting/media/CDMSI/CDMSI(2013)Misc19_en.pdf).

⁶⁰ "2011 EBITDA Outlook Adjusted Downwards, Free Cash Flow Confirmed," KPN, (April 21, 2011), <http://corporate.kpn.com/press/2011-ebitda-outlook-adjusted-downwards-free-cash-flow-confirmed.htm>. Hear KPN CEO Elco Blok <http://nos.nl/audio/234661-ontwikkelingen-hebben-negatieve-invloed-op-omzet.html>

⁶¹ OPTA is the Dutch Post and Telecommunications Authority, the now closed Dutch telecom regulator. It was subsumed into ACM (Consumer and Market Authority) in early 2013

⁶² Arnoud Wokke, "KPN: 'Chatheffing' Voor Mobielf Internet Komt Deze Zomer," Tweakers, (April 21, 2011), <http://tweakers.net/nieuws/74017/kpn-chatheffing-voor-mobielf-internet-komt-deze-zomer.html>.

pays, both increased the price of voice and SMS, but also created an incentive for off-net termination.⁶³

It is important to note that WhatsApp has remained in the top position as the most popular messaging app in the Netherlands for years. No operator or competitor has succeeded to impact its position.

Once the law came into effect, there were no reports of net neutrality violations for some time.⁶⁴ One view is that the law was working to deter violations. On the other hand, it be embarrassing politically if no violations occur, for it may appear that the law was made too hastily. As such, there could be political pressure to find a problem to justify the law ex post.

In January 2013 the new telecom regulator, now rationalized in the Dutch Consumer and Market Authority (ACM) commissioned a study⁶⁵ of over-the-top (OTT) services. Rather than prohibiting the development of third party applications and services, operators facilitate OTT services through their provision of mobile broadband. Increasingly consumers use these services. It also noted the declining power of mobile operators, specifically, "On sales level we see a shift from KPN to cable and a parallel of shifting market shares. Mobile data market is the engine of growth, with WiFi as a substitute for mobile or mobile data. The mobile service revenue and ARPU show a slight downward trend."⁶⁶

Meanwhile in Brussels, the European Parliament passed a net neutrality resolution on April 3, 2014. The Alliance for Liberal Democrats for Europe (ALDE) drove its passage with Dutch Member of Parliament Marietje Schaake.⁶⁷ She celebrated the passage on the website of D66, the Dutch Democratic Party, noting "Conversely, Europe must also ensure that Internet and communication technologies are regulated too. More and more countries and the UN are working on laws and regulations to enhance the control of governments."⁶⁸ Though the Parliament's resolution requires the agreement of the European Commission and the Council of Ministers (head of state of the EU member nations) to become law,⁶⁹ the resolution triggered the Dutch to strengthen the interpretation of their net neutrality law, specifically to eliminate exceptions for zero rating.

The Dutch Ministry of Economic Affairs started a process to discuss how the net neutrality law should be interpreted, how strict it should be, and what to do about the practice zero rating, called "loose" or stand-alone services. A consultation was held in May 2014.⁷⁰ Among the 30 respondents was Netflix,⁷¹ which just a few months before, signed on as

⁶³ An important point to underscore for the US is that having a termination in which both sides paid reduced any incentive to block VOIP and SMS applications on smartphones.

⁶⁴ There was one complaint about T-Mobile throttling wifi on trains. ACM ruled that it is acceptable for T-Mobile to manage its networks for congestion. Peer to peer and file sharing applications create a lot of traffic and this harms other applications, especially on a train where 2G/3G service is offered. The moving trains also makes the connection difficult. Managing the traffic is acceptable in this circumstance. "Correspondentie Afsluiten onderzoek 'T-Mobile HotSpot in de trein' | ACM.nl," Correspondentie, (December 30, 2013), <https://www.acm.nl/nl/publicaties/publicatie/12508/Afsluiten-onderzoek-T-Mobile-HotSpot-in-de-trein/>.

"Nieuwsbericht T-Mobile mag gratis internet in NS-treinen beperken," Nieuwsbericht, (December 30, 2013), <https://www.acm.nl/nl/publicaties/publicatie/12507/T-Mobile-mag-gratis-internet-in-NS-treinen-beperken/>.

⁶⁵ "Onderzoek Overzicht markt voor over-the-top diensten Nederland - januari 2013 (Telecompaper) | ACM.nl," Onderzoek, (July 23, 2013), <https://www.acm.nl/nl/publicaties/publicatie/11717/Overzicht-markt-voor-over-the-top-diensten---Nederland---januari-2013-TelcoCompaper/>.

⁶⁶ Ibid

⁶⁷ Marietje Schaake, "Europees Parlement Steunt Voorstel Schaake Voor Netneutraliteit in Europese Wet," D66, April 3, 2014, <https://d66.nl/europees-parlement-steunt-voorstel-schaake-voor-netneutraliteit-europese-wet/>.

⁶⁸ "Digitale Vrijheid Prioriteit in EU-Buitenlandbeleid - Doe Mee, Word Lid!," D66, November 7, 2014, <https://d66.nl/ep-commissie-steunt-d66-digitale-vrijheid-prioriteit-in-eu-buitenlandbeleid/>.

⁶⁹ This was ultimately resolved on June 30, 2015 with rules coming into force on April 30, 2016. "Commission Welcomes Agreement to End Roaming Charges and to Guarantee an Open Internet," European Commission, June 30, 2015, http://europa.eu/rapid/press-release_IP-15-5265_en.htm.

⁷⁰ "Consultatie Beleidsregel netneutraliteit," consultatie, (May 2, 2014), <http://www.internetconsultatie.nl/netneutraliteit/>.

⁷¹ "Consultatie Beleidsregel netneutraliteit, reactie," webpagina, (May 28, 2014), <http://www.internetconsultatie.nl/netneutraliteit/reactie/71331718-03d9-43be-9d87-43d2cdff1355>.

the first customer in the New York office of the Amsterdam Internet Exchange⁷² (The company has since moved its European headquarters to Amsterdam and plans to use the location to help grow its business in the Middle East and Africa.⁷³) Netflix commended the Ministry's efforts, supported a strict policy against zero rating, noted that net neutrality stimulates innovation, and suggested a broad interpretation of net neutrality, effectively ensuring that consumers increasingly choose flat rate packages. The outcome of the consultation is strict version of net neutrality with a strict interpretation which the regulator must enforce.⁷⁴ Interestingly Netflix is zero rated in Australia as part of its partnership with fixed lined operator iiNet.⁷⁵ The company calls the introduction of Netflix to the Australian market a game changer.⁷⁶

On June 5, 2014 in "Net neutrality the work in progress"⁷⁷ Bits of Freedom described the process conducted by the Ministry of Economic Affairs to clarify ambiguities in the Dutch net neutrality law. It criticized Facebook, Vodafone, RTL, and Endless Spotify⁷⁸, a zero rated program offered by Hi, a virtual mobile provider (owned by KPN) offering discount services focused on the youth market. The blog refers to an article⁷⁹ mentioning the Vodafone's Sizz⁸⁰ and T-Mobile's Deezer. The article includes a quotation from the Dutch regulator, calling Endless Spotify a "stand alone service", meaning that purchase of the subscription is not tied to the purchase of a data package, therefore it does not violate net neutrality.⁸¹

It notes that such stand-alone services are by "allowed by the letter of the law, but runs counter to the intent of the law. Positive discrimination is discrimination. The ACM sees no problem." BoF continues, "We thought about whether other Internet areas must meet the same kind of neutrality values. Some claim that 'soft neutrality' is not enough and that efforts should be made for 'hard neutrality', including peering and transit. And what about search? Or application stores? Another response to the consultation argued that the rules should also apply to the provision of IPv4 and IPv6."

For the week of September 20, 2014 BoF notes on its blog,⁸² "We were visiting the ACM to discuss net neutrality and its enforcement. We began our analysis of the law in the Netherlands; very interesting in light of the upcoming European law⁸³ and the current debate in the US."⁸⁴

Some two years after the Dutch net neutrality law took effect, ACM fined two operators for violations. Vodafone had only 3200 customers on its HBO Go app, was fined €200,000, and was ordered to end the offer. It is likely that the fine is more than the company earned on the service.

⁷² "Netflix Signs On To New York Open Internet Exchange," *Amsterdam Internet Exchange*, December 2, 2013, <https://ams-ix.net/newsitems/124>.

⁷³ <http://www.iamsterdam.com/en/business/invest/business-news/netflix-officially-opens-european-headquarters-in-amsterdam>

⁷⁴ "Besluit van de Minister van Economische Zaken van 11 mei 2015, nr. WJZ/15062267, houdende beleidsregel inzake de toepassing door de Autoriteit Consument en Markt van artikel 7.4a van de Telecommunicatiewet (Beleidsregel netneutraliteit)," officiële publicatie, *officieelbekendmakingen*, (May 15, 2015), <https://zoek.officieelbekendmakingen.nl/stcrt-2015-13478.html>.

⁷⁵ <https://gigaom.com/2015/03/02/netflix-wont-count-against-iinet-broadband-caps-in-australia/>

⁷⁶ <http://www.iinet.net.au/about/mediacentre/releases/2015-03-03-quota-free-netflix.html>

⁷⁷ Floris Kreiken, "Netneutraliteit Blijft Work-in-Progress," *Bits Of Freedom*, June 5, 2014,

<https://www.bof.nl/2014/06/05/netneutraliteit-blijft-work-in-progress/>.

⁷⁸ "Hi Introduceert Eindeloos Spotify: Onbeperkt Muziek Streamen Op Je Mobiel Zonder Dat Dit MB's Kost," KPN, (January 6, 2014), <http://corporate.kpn.com/pers/persberichten/hi-introduceert-eindeloos-spotify-onbeperkt-muziek-streamen-op-je-mobiel-zonder-dat-dit-mbs-kost.htm>.

⁷⁹ Arnoud Wokke, "Hi Haalt Verbruik Spotify-App Niet Meer van Databundel Af," *Tweakers*, January 6, 2014, <http://tweakers.net/nieuws/93502/hi-haalt-verbruik-spotify-app-niet-meer-van-databundel-af.html>.

⁸⁰ Andreas Udo de Haes, "Vodafone En T-Mobile Schenden Netneutraliteit," *Webwereld*, June 17, 2013, <http://webwereld.nl/netwerken/78147-vodafone-en-t-mobile-schenden-netneutraliteit>.

⁸¹ The price to the user is the same whether he buys the subscription from Spotify or Hi, but in the latter, the data use is not charged to the subscription.

⁸² Door Tim Toornvliet, "De Week in 417 Woorden," *Bits of Freedom*, September 20, 2014, <https://www.bof.nl/2014/09/20/de-week-in-417-woorden/>.

⁸³ Link in article points to <https://www.bof.nl/2014/04/03/persbericht-netneutraliteit/>

⁸⁴ Link in article points to "ISPs Mislead Public, FCC About Protecting the Open Internet," *Electronic Frontier Foundation*, September 15, 2014, <https://www.eff.org/press/releases/isps-mislead-public-fcc-about-protecting-open-internet>.

KPN was fined €250,000 for what amounted to blocking on a free wifi network. The company admitted its mistake, a setting that had been in place its wifi networks, which it forgot to update once the net neutrality rules came into effect. About one third of the wifi traffic was at Schiphol Airport and the free service was designed as a convenience for travelers for a short and quick internet connection upon landing, for example to check messages and email. BitTorrent, FTP, SSHA, Telnet and VoIP were blocked to ensure the smooth functioning of the free service. The blocks are now removed but presumably the free basic internet service doesn't run as well. Interestingly a number of comments under the BoF blog mention that they have 4G services so wifi not important to them anyway.

In May 2015 KPN was ordered to end zero rated Spotify contracts, though the traffic generated by Spotify traffic is negligible on KPN networks. It is interesting to note that while zero rated offers of Spotify may be maligned by net neutrality advocates, for Spotify, one of only a handful of successful European startups, the partnership with telecom operators has proven important for its growth.⁸⁵ Not only can Spotify leverage an operator's billing system (avoid the cost of using its own system and give customers the benefit of not having to enter payment credentials into a new system), Spotify earns valuable paying customer. Most free users of Spotify never upgrade to the premium version, but in a telco partnership, subscribers who are already paying for a mobile subscription are more willing to take on an additional paid service because of the convenience of the bundle.

Not only is the sale of premium subscriptions essential for Spotify's survival, the revenue earned plays an important role to lessen music piracy and to help bring revenue to the music industry. Sweden's music industry was decimated by the rise of digital music on the Internet; revenues declined steadily from 2002 to 2009. With the introduction of Spotify, however, the industry has managed a 20% gain in the last three years.⁸⁶

The Netherlands fared even worse with its traditional music industry than Sweden, but Spotify helped to reduce piracy in the country, with 29% of the 1.8 million Dutch BitTorrent pirates taking just 1 music file in 2012. The top 10% of the pirates account for half of the content obtained illegally, some 16 files each or more.⁸⁷ Passive pirates don't bother to pirate material when then can get a reliable, quality music experience for a good price.

In Sweden, digital music revenues account for almost 60% of all music industry revenue. In Netherlands the amount is just 27%, but if it could increase to the level of Sweden, ideally with more uptake of services such as Spotify, there would be an additional \$124 million for the music industry and musicians. In any case, digital music sales grew by increased by 66% in the country in 2012, the highest of any country in Western Europe.⁸⁸

While music piracy may be on the wane as a number of viable music streaming alternatives have emerged, piracy of film is going strong. Having more Spotify-like solutions for film is preferable to criminalizing pirates. And yet HBO Go, one such solution, is maligned by net neutrality advocates.

In a statement on June 1, 2015, the ACM praised the state of Dutch 4G networks and increased mobile data consumption. They note,⁸⁹

⁸⁵ "Adventures in the Netherlands:" (Spotify, July 17, 2013), <https://press.spotify.com/dk/2013/07/17/adventures-in-netherlands/>.

⁸⁶ Ibid p. 9

⁸⁷ Ibid p. 1

⁸⁸ Ibid p. 24

⁸⁹ "Investeringen uitrol 4G bijna voltooid, apps besparen op dataverbruik," Nieuwsbericht, ACM, (June 1, 2015), <https://www.acm.nl/nl/publicaties/publicatie/14305/Investeringen-uitrol-4G-bijna-voltooid-apps-besparen-op-dataverbruik/>.

After Mobile operators' investment to roll out 4G is almost complete. After a peak of investment in 2013 of €2 billion, the investment in 2014 fell back to more than € 800 million. Henk Don, board ACM: "With the introduction of 4G has paved the way for fast internet on your smartphone. And there are many uses. The consumption of mobile data is doubled. "This is attributable to approximately 4 million consumers who are relatively common and many Internet via their phone. For example, to stream movies or music. The number of customers using 4G also doubled in a year to about 40 percent. What is evident from the Telecom Monitor is that the rapid growth of data consumption is leveling off.

The net neutrality law that was supposed to be a "silver bullet" has created new problems.⁹⁰ Instead of a flowering of local content and services, the Netherlands experiences the "Netflix effect"⁹¹ in which a single American company consumes twenty percent of the country's bandwidth with a small subset of users. Netflix is one of the most downloaded apps in the Dutch Google Play store. Its competitor HBO Go which was ultimately impacted in the net neutrality debate is far from a threat, sitting in the long tail distribution.

As for innovation in Dutch mobile services and applications in August 2015, only two Dutch apps feature in the top 25; Marktplaats, the second hand marketplace and Buienradar for the weather. In the Google Play Store they are #12 and #13 respectively and in the Apple App Store, #18 and #19. The flowering of Dutch content and innovation has not occurred since the implementation of the country's net neutrality law.

Slovenia

Zero rating, called free data transfer in Slovenia, was a common practice among operators and existed in country since 2007. Consumers could choose from a number of zero rating programs, including free access to music, online storage, and customer service applications to manage their mobile subscriptions. The net neutrality law in Slovenia was created primarily about concerns of theoretical harms and was the culmination of more than a year of public proceedings⁹², but did not include an official investigation of traffic management practices.⁹³ A line about price differentiation was removed in the final version of the law which was promulgated on December 31, 2012.⁹⁴ This omission appears to be a linchpin for the legal battle on zero rating going forward.

To understand the sequence of events, a personal interview⁹⁵ was conducted with Dr. Dusan Caf, a leading net neutrality advocate who has been instrumental to effecting a ban on zero rating in Slovenia.⁹⁶

⁹⁰ Ibid

⁹¹ van Eijk, Nico, *The Proof of the Pudding Is in the Eating: Net Neutrality in Practice, the Dutch Example*, SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, August 2, 2014), <http://papers.ssrn.com/abstract=2417933>.

⁹²"Posvet v Zvezni Z Osnutkom Predloga Novega Zakona O Elektronskih Komunikacijah," *Ministrstvo Za Visoko Šolstvo, Znanost in Tehnologijo*, November 10, 2011, http://www.artiv.mvvt.gov.si/si/delovna_področja/informacijska_družba/elektronske_komunikacije_in_posta/javne_obravnave_predlogi/arthiv/.

⁹³ "I am afraid that there wasn't any comprehensive analysis carried out (related to net neutrality) prior to the adoption of the current electronic communications law and net neutrality provisions - neither by the NRA nor the ministry," notes Dusan Caf in an email August 9, 2015.

⁹⁴ Article 203 of the Electronic Communications Act (Official Gazette of the Republic of Slovenia, Nr. 109/12, 110/13, 40/14 – ZIN-B and 54/14 – CC dec.)

⁹⁵ Telephone Interview August 7, 2015

⁹⁶"Priporabe Na Osnutek Predlog Zakona O Elektronskih Komunikacijah," *Svet ZA Elektronske Komunikacije*, July 5, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/3/Priporabe-na-osnutek-predlog-Zakona-o-elektronskih-komunikacij-ZEKom-1.aspx#.Vc4MNa1J24B>.

"Priporabe Na Predlog Zakona O Elektronskih Komunikacijah (ZEKom-1) - EPA: 667 - VI > SEK," *Svet ZA Elektronske Komunikacije*, November 18, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/275/Priporabe-na-predlog-Zakona-o-elektronskih-komunikacijah-ZEKom-1--EPA-667--VI.aspx#.Vc4MnK1J24B>.

"Predlog Amandmajev K Predlogu Zakona O Elektronskih Komunikacijah (ZEKom-1, Druga Obravnava, EPA 667 - VI) > SEK," *Svet ZA Elektronske Komunikacije*, December 20, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/274/Predlog-amandmajev-k-predlogu-Zakona-o-elektronskih-komunikacijah-ZEKom-1-druga-obravnava-EPA-667--VI.aspx#.Vc4M8a1J24B>.

Caf holds two key positions⁹⁷ in telecommunications, one as Chair of the Electronic Communications Council (a body appointed by the National Assembly) and another as Chair of the Council of the Agency for Communications Networks and services of the Republic of Slovenia (AKOS, the telecom regulator).⁹⁸ An engineer by training, Caf has been a consultant to a number of telecom and IT companies in Slovenia, though he assures that his honorary positions are not a conflict of interest, and if they were, he would exclude himself from voting.⁹⁹

In a blog¹⁰⁰ on December 9, 2013 Caf decried the state of the Slovenian telecom market 15 years after liberalization. The media is a poor observer, and the debate as lacking depth, he wrote. "Professional analysis" is needed to explain the gap, and "Captured regulators" are the root of the problem, he declared. To address these problems, he proposed increasing the transparency of the regulatory process, strengthening the efficiency and effectiveness of regulation, strengthening the development of electronic communications, and improving the wellbeing of citizens.

Caf called Slovenia's net neutrality law strict, but not being implemented prior to 2015. The problem with zero rating emerged with mobile broadband prices being too low. He cited the offer of €25 for 1 GB of data and €30 for 100 GB. Caf called these offers "good for consumers in the short run, but not sustainable in the long run" and believed that they needed to be stopped. "This is not a two-sided market," he said.

Caf does not know whether consumers complained about the offers to the regulator. His organization is not privy to such complaints. They only learn what is published by the telecom regulator or the competition authority. However one person did complain to the SEK, that he wanted to use his account balance to choose which sites should be zero rated.

One June 22, 2014 Caf published a blog¹⁰¹ titled "Free download mobile content jeopardizes the neutrality of the Internet" critiquing the zero rating offers of Telekom Slovenia and Si.mobil which "unduly encourage (users) to procure their services or applications and their partners, because of the high price of data transfer but they complicate the selection and use of competing products." Caf also notes, "Mere legal protection of net neutrality is not enough. It is important that AKOS enforce the regulatory principles" and that the SEK discusses the situation at its June meeting, he notes. Caf said that he made a point to write in English to bring international attention to the issue in Slovenia

On behalf of SEK on July 17, 2014, Caf made a formal complaint about zero rating to the telecom regulator, but did not receive a response. He believed that the regulator was reluctant to make a ruling on zero rating.

⁹⁷ "Dusan Caf to Head Slovenian Regulator - Report," *Telecompaper*, January 14, 2014, <http://www.telecompaper.com/news/dusan-caf-to-head-slovenian-regulator-report--993155>.

⁹⁸ The Agency Council is authorised to give opinions to the programme of work, the financial plan and the annual report of AKOS; approve the statute adopted by the Agency Director; propose the appointment or dismissal of the Agency Director; propose a temporary prohibition on the performance of functions by the Director; propose the early dismissal of members of the Agency Council. The Members of the Agency Council or persons authorised by the Agency Council may inspect the business accounts as defined in the Slovenian Accounting Standards and the AKOS' accounting documents. Upon every such request by the Agency, the Agency director must submit to the Council a report on the operations of the Agency and any other information that the Agency Council requires in order to carry out its functions. The Agency Council may suggest improvements in the operation of the Agency to the Agency director, as well as point out to him any irregularities in the AKOS operations and notify the competent bodies of these irregularities. "Profile of AKOS," February 6, 2014, http://epra3-production.s3.amazonaws.com/organisations/documents/30/original/Profile_AKOS_SI_02_2014_final.pdf?1391706889.

⁹⁹ Ales Percic, "Neuradno: Na Čelo Sveta Akosa Dušan Caf," *Finance.si*, January 29, 2014, <http://www.finance.si/8355990/Neuradno-Na-%C4%8Delo-sveta-Akosa-Du%C5%A1an-Caf>.

¹⁰⁰ "Competitive Analysis & Foresight: Ugrabljeni Regulatorji," CAF, December 9, 2013, <http://blog.caf.si/2013/12/ugrabljeni-regulatorji.html>.

¹⁰¹ "Competitive Analysis & Foresight: Brezplačen Prenos Vsebine Ogroža Nevtralnost Mobilnega Interneta," Competitive Analysis & Foresight, (June 22, 2014), <http://blog.caf.si/2014/06/brezplacen-prenos-vsebine-ogroza-nevtralnost-mobilnega-interneta.html>.

Caf said he made a point to mention only Telekom Slovenia and Si.Mobil in his complaint. He did not want to implicate the smaller providers Tusmobil and Amis because they need zero rating offers to differentiate themselves in the marketplace. The complaint describes that Telecom Slovenia's unlimited data transfer offers the ability to view the matches of the UEFA Champions League, watch films HBO GO, and access proprietary online storage. Telecom's own service "discriminates against end users using competing products", notes the complaint.

The complaint is critical of Si.Mobil's unrestricted offer to view the World Cup and unlimited access to the VOYO content over a two year period. It claims that free video data is problematic because it is a fastest growing category of service and makes up the bulk of internet traffic, and that offers with unmetered traffic exceed the amount of data used on basic packages. Moreover operators are offering unmetered service to the exclusive content they have licensed but not giving the same conditions to competing content. It is described as discriminatory to users because they have to use metered access to enjoy competing services on the same platform. The letter states that operators are violating Slovenia's net neutrality rules and that Telecom Slovenia is abusing its dominant position in the marketplace.

Caf regrets that, in the end, the regulator punished the smaller providers by ordering them to stop all their zero rated practices, while the incumbent received a lighter reprimand. Telekom Slovenia was required only to end the zero rated music service for Deezer, but was allowed to keep zero rating its proprietary video application. That the smaller operators received a tougher punishment supports Caf's assertion that the telecom regulator favors the state-owned Telecom Slovenia.

Concurrently Caf sent the complaint to the Slovenia Competition Protection Agency, which did reply on September 4, 2014.¹⁰² They recognized the concerns about discriminatory traffic management, but note that the risk is significantly lower in a transparent and competitive environment. Net neutrality puts emphasis on the requirement that operators transparently disclose their practices regarding managing internet traffic. In a transparent environment, consumers, if unhappy with traffic management practices, can switch providers. They observe that differentiated offerings are important because they are

. . . the fruit of competitive advantages and therefore increase efficiency and bring consumers the benefits (i.e. cheaper cinema tickets for students). Thus price discrimination increases the availability of the product to more cost-sensitive consumers and ensures an overall increase in sales volume, thereby lowering average the overall costs and increasing efficiency. The boundary between pro-competitive and anti-competitive conduct can be thin, so borderline cases should be assessed. But intervention is necessary only in cases where economic analysis shows that the injury to the consumers outweigh the benefits to consumers.

The competition authority notes that Telecom Slovenia has not abused its market power. It could be tested with an in-depth investigation that would begin with defining the relevant market, in this case the market for data transfer. It notes that Slovenia is a market with at least three mobile providers which will evolve significantly in the coming years. It notes that the market for mobile services is primarily characterized by call services, and with the different prices for calls on and off net, the effect of data transfer services is negligible. Moreover, even though Telecom Slovenia has a 50 percent market

¹⁰² A copy of the reply is not available on the authority's website, however it is referenced in the EU Scoreboard document on the link for Slovenia. "Scoreboard 2015 - Report on the Implementation of the Telecommunications Regulatory Package (per Country)," *Digital Agenda for Europe*, June 19, 2015, <http://digital-agenda/en/news/scoreboard-2015-report-implementation-telecommunications-regulatory-package-country>.

share and falling, it does not have the power to control the market for Internet applications, even with its zero rated offer. It notes,

Vertical relationships can bring benefits to consumers. For example, by offering free Internet encourages Telecom Slovenia to invest in expensive exclusive content such as UEFA Champions League. Si.mobil might not have invested EUR 60 million in the acquisition of spectrum if it expected that it would not be able to grow the market for newly built broadband 'highways' through various campaigns for free use of data transmission.

It notes further that sports rights and copyrighted content when licensed to a buyer (e.g. Telecom Slovenia) and offered in a zero rated program do not constitute a violation of competition. Moreover the operator's offer of Deezer and a proprietary cloud service does not harm the market for such services, as there are many choices worldwide from which users can access.

As for the price of the offer, the competition authority notes that the operator does not engage in either improving the quality of the zero rated products or degrading other applications, but rather in a form of discount or positive discrimination. To assess this, it is necessary to examine the price and costs of the offer and the services contained within. It observes that the voice is the largest cost driver and that the use of Deezer is negligible, amounting to a few cents out of an offer of €26 per month.

The competition authority notes that the emergence of zero rating reflects fierce competition in the mobile marketplace and even with current limits, consumers still have the freedom to decide what kind of content they want.

It notes further that the net neutrality rules are designed to protect competition for the purpose of the benefit of consumers. It is therefore necessary to determine the effect of zero rating on consumers. No intervention should be made if there is no evidence of consumer harm. The competition authority describes situations in which it considers extreme and necessary for intervention, for example the Microsoft browser case, but the zero rating issue in Slovenia is not one. The authority made a point as well that critics consider the Dutch net neutrality too extreme because operators are restricted from making offers.

Caf rejected the competition authority's conclusion, in particular because it made an analysis based on mobile prices from 2012. However if 2014 prices were used, the impact of zero rating would likely be even smaller because prices have fallen in the period.

Caf worked with the country's leading newspaper to bring attention to the issue. On November 12 an article¹⁰³ appeared in the newspaper *Delo* (English: Labour) by Matjaž Ropret¹⁰⁴ introducing the topic of zero rating as problematic and reporting on developments in the USA. The article concludes with a screen shot of Frank Underwood of Netflix's "House of Cards" with the caption "You need the gatekeeper." Underneath the photo is the caption "Providers such as Netflix in the US have paid operators for smooth transfer of content to subscribers."

The article links to another article that appeared in *Delo* from Slovenian correspondents in the US titled "Political cuisine on the future of the Internet: White House asks independent telecom commission for the Internet be declared a public service, which is

¹⁰³ Matjaz Ropret, "Izmuzljiva Internetska Nevralnost," *Infoteh*, November 12, 2014, <http://www.delo.si/mnenja/blogi/izmuzljiva-internetna-nevralnost.html>.

¹⁰⁴ Matjaz Ropret, "Tehnokamra – Internetska Nevralnost," *Delo*, November 14, 2014, <http://www.delo.si/multimedija/video/tehnokamra-internetna-nevralnost.html>.

controlled by the state.”¹⁰⁵ The article describes President Obama’s net neutrality announcement and some political background in the US. In a sidebar it notes that after ratifying its own net neutrality law two years earlier, Slovenia experienced its first complaint under the concept of zero rating.

On November 14, *Delo* published a short article¹⁰⁶ embedded with a video¹⁰⁷ highlighting Barack Obama’s previous net neutrality announcement¹⁰⁸ followed by a presentation by Dusan Caf and *Delo* tech journalists Matjaž Ropret and Lenart J. Kučić¹⁰⁹ discussing the situation of net neutrality in Slovenia. During the discussion Caf produces a tablet where he points to a copy of the Slovenia net neutrality law and how the section on zero rating was removed as part of the final rulemaking.

A blog¹¹⁰ by Caf on December 5 characterizes Slovenia as a country that has net neutrality rules but does not enforce them. It describes a country where “Net neutrality (is) weakened by industry lobbying and inactive regulator” and recounts how zero rating, originally included in the Slovenia rules was removed by “lobbying from the industry”. Caf also warns about the “spreading of discriminatory practices” and refers to a study of zero rated offers in the EU.¹¹¹ He notes that SEK sent a letter to AKOS describing the discriminatory practices of Telekom Slovenije but “based on the regulator’s strong pro-industry stance the outcome is uncertain.”

It is not clear whether from media pressure or international influence, but AKOS relented and commenced a review on zero rating on December 18. Soon after Caf appeared in an interview¹¹² in *Europolitics* in which the journalist questioned whether undue pressure has been put on the Slovenian telecom regulator. Caf notes that even though authorities pronounce zero rating beneficial to consumers, the practice is still problematic. “An efficient regulator is required in order that legislation adopted should really be implemented. However, I think it is important to resolve the matter of zero rating, and not to tie competition law on neutrality, since procedures and market analyses take too long,” he notes.

On January 10, 2015 *Delo* published an article¹¹³ of some 2500 words explaining net neutrality by comparing the internet to the road network where all drivers have the same rights. Telecom operators are characterized as deploying sneaky business models such as zero rating. Dusan Caf’s efforts to end the practice are described.

A blog¹¹⁴ from Caf appeared two days later in an attempt to increase the pressure on the telecom regulator to ban zero rating. He refers to the complaint SEK made to the regulator in July 2014 followed by “nearly three months of analysis, in which we analyzed the controversial business practice of mobile operators.” He notes that at the end of 2014 Telekom Slovenia had 50% market share and Si.Mobile 36%.

¹⁰⁵ Sebastijan Kopusar, “Politične Kuhinje O Prihodnosti Interneta,” *Delo*, November 12, 2014, <http://www.del.si/znanje/infoteh/politicne-kuhinje-o-prihodnosti-interneta.html>.

¹⁰⁶ Matjaž Ropret, “Tehnokamra – Interneta Nevrtnost,” *Delo*, (November 14, 2014), <http://www.del.si/multimedija/video/tehnokamra-interneta-nevrtnost.html>.

¹⁰⁷ Tehnokamra - Interneta Nevrtnost, 2014, https://www.youtube.com/watch?v=_PBaeuvDC_w.

¹⁰⁸ Ezra Mehaber, “President Obama Urges FCC to Implement Stronger Net Neutrality Rules,” *The White House*, November 10, 2014, <http://www.whitehouse.gov/blog/2014/11/10/president-obama-urges-fcc-implement-stronger-net-neutrality-rules>.

¹⁰⁹ Lenart Kucic, “Lenart J. Kučić Blog,” accessed July 27, 2015, <http://www.lenartkucic.net/about/>. The journalist also writes books critiquing the media. Lenart Kucic, “Lenart J. Kučić’s Bibliography,” accessed July 27, 2015, <http://www.lenartkucic.net/bibliography/>.

¹¹⁰ “Competitive Analysis & Foresight: Zero-Rating Violates Slovenian Net Neutrality Law,” *Competitive Analysis & Foresight*, December 5, 2014, <http://blog.caf.si/2014/12/zero-rating-violates-slovenian-net-neutrality-law.html>.

¹¹¹ “List of 75 Zero-Rated, Potentially Anti-Competitive Mobile Applications/services, Violating Net Neutrality, in EU28,” *DF Monitor*, October 2014, http://dfmonitor.eu/insights/2014_oct_zerorate/.

¹¹² Nathalie Steiwer, “Zero Rating: Slovenian Regulator Exposed to Excessive Pressure,” *Europolitics*, January 5, 2015, <http://europolitics.info/tech/zero-rating-slovenian-regulator-exposed-excessive-pressure>.

¹¹³ Lenart Kucic, “Internet Nevrtnost Kot Javno Cestno Omrežje?,” *Delo*, January 10, 2015, <http://www.del.si/sobotna/internet-nevrtnost-kot-javno-cestno-omrezje.html>. See appendix for Google translated article

¹¹⁴ “Competitive Analysis & Foresight: Nevrtnost Interneta vse Bolj Vroča,” *CAF*, January 12, 2015, <http://blog.caf.si/2015/01/nevrtnost-interneta-vse-bolj-vroca.html>.

On January 23, 2015 AKOS announced its decision,¹¹⁵ finding Telecom Slovenia's zero rating of Deezer and Si.Mobil's zero rated offering of the cloud platform Hangar Mapa to be net neutrality violations. An announcement in English followed on January 26, the only news story on the English language section of its website.¹¹⁶ Telekom Slovenia's zero rating of UEFA Champions League, HBO GO, and the online storage TviN continues. In neither case did the regulator mention any evidence for harm to consumers or competition because of the offers.

On February 20, 2015 AKOS similarly found Amis Mobile with its proprietary TV service and Tusmobil with its customer service platform in violation of net neutrality.¹¹⁷ The operators were required to end the banned practices in 60 days.

In response Caf posted a blog¹¹⁸ celebrating the regulator's decision banning offers from Telekom Slovenia and Si.Mobil. He notes that SEK conducted an examination of the practices and that telecom regulators attended its meetings. He notes that the competition authority "issued the opinion after a consultation with AKOS in which regulators exchanged and shared views and information on net neutrality issues." He describes the competition authority opinion as "based on dubious facts and presumptions." He faults the competition protection authority for declining to begin an investigation.

Caf recounts his efforts to speed the regulatory process and enlighten senior officials whose views were "generalized and lacked thorough analysis". He recounts the steps that made the ban possible: his blogs and articles, his analysis indicating a potential breach of competition law, and the support of leading technology journalists. He reiterates his earlier blog of December 5 of why zero rating is a violation of the Slovenian net neutrality law. He notes that while the decisions only apply to music and cloud services, that they should also apply to video streaming. He notes that, "Consumers may shortly expect new data plans and enjoy open and non-discriminatory access to the internet."

Following the announcement of the banning of the zero rated services of Tusmobil and Amis, Caf penned another blog.¹¹⁹ While he was pleased with the action against the other operators, he called the allowance of zero rating by Telekom Slovenia "unacceptable and AKOS shall intervene as soon as possible. There is no legal ground in communications or media law for any exemption of internet streaming of sporting events or cloud storage traffic."

He notes that these "the decisions have already had a positive impact and, as we correctly predicted, consumers benefited from the regulator's net neutrality decisions. Telecom Slovenia and Si.mobile have both come up with special offers and packages with larger data caps or inexpensive data cap options. Consumers may shortly expect even more plans with larger data caps."

Caf describes the mobile market today as competitive, particularly because of price competition driven by American owned cable provider Telemach in their cross-selling of service from Tusmobil.

¹¹⁵ "Akos Ugotovil Kršitve Načela Nevralnosti Interneta," Akos, January 23, 2015, <http://www.akos-rs.si/akos-ugotovil-krsitve-nacela-nevralnosti-interneta>.

¹¹⁶ "AKOS Finds Violations of the Principle of Net Neutrality," Akos, January 26, 2015, <http://www.akos-rs.si/akos-finds-violations-of-the-principle-of-net-neutrality>.

¹¹⁷ "Akos Ugotovil Kršitve Načela Nevralnosti Interneta Tudi Pri Storitvah Amisa in Tušmobila," Akos, February 20, 2015, <http://www.akos-rs.si/akos-ugotovil-krsitve-nacela-nevralnosti-interneta-tudi-pri-storitvah-amisa-in-tusmobila>.

¹¹⁸ "Competitive Analysis & Foresight: Telekom Slovenije and Si.mobil Found in Breach of Net Neutrality," *Competitive Analysis & Foresight*, January 25, 2015, <http://blog.caf.si/2015/01/telekom-slovenije-and-simobil-found-in-breach-of-net-neutrality.html>.

¹¹⁹ "Competitive Analysis & Foresight: Another Win for Net Neutrality Advocates in Slovenia: AKOS Issues New Decisions Limiting Zero-Rating," *Competitive Analysis & Foresight*, February 22, 2015, <http://blog.caf.si/2015/02/another-win-for-net-neutrality-advocates-in-slovenia-akos-issues-new-decisions-limiting-zero-rating.html>.

On June 27, 2015 an article¹²⁰ explores Caf's evolution from professor and consultant to the telecom industry and Chamber of Commerce to his most recognizable position as the leader of the Council for Electronic Communications. The same day two additional articles^{121 122} appear on Caf and his accomplishments.

On July 1, 2015, the day after the EU's concluded agreement on net neutrality, Caf is interviewed¹²³ by Slovenian Radio and TV saying that Slovenia users are less protected, as the new EU rules "override" Slovenia's. The article notes a tweet from a Ministry of Education official who sees it differently, Slovenia "is (was) alone in demonstrating the principle is the wrong approach," he notes.

The European Union is the midst of an effort to create a Digital Single Market. One of goals of which is to strengthen European based small and medium enterprises (SME) on the Internet.¹²⁴ Once it took effect, AKOS's ban on zero rating caused traffic to certain Slovenian content and applications to fall by half. Operators' customer support centers saw a five-fold increase in telephone calls because subscribers could no longer top up their account balance online for free.¹²⁵ A Slovenian cloud provider experienced a marked, but not devastating, decline in traffic as a result of the ban.¹²⁶ To be sure, no content provider's marketing strategy relies entirely on zero rating.

Operators are appealing the regulator's decision on material and procedural grounds. They have also requested a constitutional review of the nation's communications law. Should the national court be unable to address the issue, it will be referred to the Court of Justice of the European Union. Operators argue that AKOS' decision contravenes BEREC's and EU's view on zero rating, which they call "sponsored connectivity" and a competitive practice. They charge that AKOS acted prematurely, given that pan-EU rules were still be considered. The current regulatory framework prohibits regulation beyond the exhaustively listed authorizations, of which the ban is. Moreover Slovenia and Netherlands are the only two European countries with "fundamentalist interpretation" of net neutrality, and they cannot exceed EU norms.

Testing the alleged harms of zero rating

The case studies provide some information about zero rating in the specific countries. Together with market research on mobile applications, we attempt to find evidence for the claims of those opposed to zero rating. Given their specific arguments, we pose the following assertions and attempt to test them.

1. The operator that offers zero rating will win market share.
 2. The zero rated service will win market share.
 3. The presence of zero rating will preclude the emergence of new applications and services.
 4. Users do not go to non- zero rated content. If Facebook is free, they don't venture beyond it.
 5. Operators that are zero rating their own content foreclose other content.

¹²⁰ Ales Lednik, "Večer: Kršijo Zakon, Nihče Ne Trzne," *Vecer*, June 27, 2015, <http://www.vecer.com/clanek/20150627/125307>.

¹²¹ "Dušan Caf : V Državni Lasti Bo Telekom Težko Konkurenčen," *Finance.si*, June 27, 2015, <http://www.finance.si/8824292/Du%C5%A1an-Caf-V-dr%C5%BEavni-lasti-bo-Telekom-te%C5%BEeko-konkurenco%C4%8Dden>.

¹²² "STA: Caf Za Večer: V Državni Lasti Bo Telekom Težko Konkurenčen," *Sta*, June 27, 2015, <https://www.sta.si/2150491/caf-za-vecer-v-drzavni-lasti-bo-telekom-tezko-konkurencen>.

¹²³<https://www.sdg.si/2130491/can-vecer-v-zivljenju-tastu-bo-tecnologij-tezki-klikureceni/>

¹²⁴ <http://ec.europa.eu/priorities/digital-single-market/>

¹²⁵ Confidential interview.

¹²⁶ Confidential interview.

Additionally we want to know whether consumers experience harm. A consumer harm test¹²⁷ examines whether the following results from a particular activity: higher prices, lower output; or reduced product innovation. A related set of questions in competition analysis have to do with whether a firm possesses significant market power (SMP) and whether the firm exercises it. So for example, if a firm without market power employs zero rating, it need not be banned because it is not a threat to the marketplace. The Slovenian competition authority described this.

Testing the assertions is not necessarily easy because critics of zero rating don't provide specifics for their charges. For example, how is market share for operators defined, as subscribers or revenue? How is market share defined for services, by number of downloads, users, usage, or revenue per user? These are just a few of the relevant parameters to consider, but the market research data is limited to app store rank. It does not provide the specific number of downloads or revenue per application.

The market for mobile applications has some similarity to search engines and web traffic in that the most popular destinations gather a disproportionate amount of traffic. They have a typical power law distribution in which the top twenty destinations gather 80 percent or more of traffic. But while it is next to impossible to break into the top 10 or even 25 of the world's most popular websites, new applications emerge in the top 10 of mobile app stores every month. New apps tend to emerge by "viral" means (popularity in social networks). There is a notion that an app could get a shortcut to the top rank in the app store through zero rating, but our investigation could find no examples of such overnight success. In any event, we did observe that there are a number of mobile apps that are popular worldwide, regardless of the country or offer.

To understand the market for mobile applications we used the public version of AppAnnie.com, a leading market research tool for mobile applications which aggregates download and revenue data for app stores by country and app marketplace (Google Play, Apple App Store etc). The number of downloads per app is not given, but appearance in the top ten of the app store indicates high level of downloads, approximately 10,000 to 25,000 per day. While it will depend on the country and the category, the top 100-200 apps are significant for the market, assuming the depth of the particular category. After position 200 the significance falls precipitously and below 300 ceases to matter. One can understand the phenomena from Google's search engine that the first three results get the lion's share of clicks, followed by the remaining 7 on the first page, but generally users never go past the first page. Thus appearing in the top 10 for the category is important.

AppAnnie.com offers more than a dozen categories for apps including health, travel, kids, business and so on, but three key categories are messaging/social networking apps (WhatsApp, Facebook Messenger, Line, KakaoTalk, WeChat); Entertainment (Netflix, YouTube, HBO, Hulu), and Games (Clash of Clans, Candy Crush, Game of War). The platform also organizes the information for free and paid applications. This is significant because how an application earns revenue varies. For example, some apps earn a fee when a user downloads them in the store. In other cases, the app is free but revenue is earned inside the app either through advertising (itself a form of zero rating, free app subsidized by advertising) or in-app purchases, for example micro-transactions within game play. So, popularity does not necessarily translate to profitability.

Music streaming took off quickly on mobile phones, but video streaming has taken a longer time to take hold. This is due to in part to large file size (which been addressed through better content formatting and application design, more advanced devices, and

¹²⁷ *The Foundations of European Union Competition Law: The Objective and Principles of Article 102*
<http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199226153.001.0001/acprof-9780199226153-chapter-8>

new networks) and copyright. This is important from a net neutrality perspective because while one may want to access a particular mobile entertainment application, it may be blocked because of geographic or copyright restriction. As such, Netflix, HBO Now and Hulu are highly ranked apps and top revenue earners in the US where they have licensed content for the region.

However Netflix has licensed content for a number of geographies as is a popular app in many countries. The rise of video streaming via mobile is driving a trend for cord cutting.¹²⁸ It is important to note that, with the exception of certain copyright content, mobile app markets are essentially global. Users are able to access applications and services from around the world, as well as from their own country. However it brings attention to important issues for the European Union as they would like to see greater visibility and success for European-based innovation.

While Google and Facebook dominate a number of categories, games is one area where new players from a variety of countries have emerged with popular titles and sustainable business models. This includes of course publishers from the US, China, South Korea, and Japan, but a massive multiplayer game such as Agar.io from Miniclip in Switzerland has taken the world by storm, as have other titles from Vietnam and France.

While the web has been, and remains to a large extent, an American phenomenon, as measured by the proliferation of American websites dominating traffic and revenue, the mobile Internet is driven in large part by China, a country with large base of broadband-connected smartphone users and world class application providers. In fact Apple's App Store has more downloads in China than in the US.¹²⁹ China has a number of powerhouse video streaming providers including Tencent, Baidu's iQIYI, Sohu TV, Youku Tudou ,and LeTV. AppAnnie.com notes,

Over the past few years, these services evolved from YouTube-like user-generated content video platforms to Netflix-like providers of professional shows. They have successfully attracted audiences from traditional broadcasting TVs by offering the content on omni-platforms including desktop, mobile, set-top boxes and digital TV. They have also enticed users to their platforms by securing rights to a broad range of foreign and domestic premium content including drama series like House of Cards and The Wife's Lies, hit TV shows like Voice of China and Happy Camp, recent movies like Interstellar and Gone With the Bullets and live broadcasting of premium sports like the English Premier League and the NBA, as well as making their own exclusive content. Mobile video streaming delivers significant value to consumers by enabling them to consume content anytime and anywhere on devices that are more affordable than TVs and PCs. Recognizing this huge opportunity, traditional TV networks in China like Hunan Broadcasting System have also joined the competition for mobile audiences by launching their own apps like ImgoTV.¹³⁰

Our examination consisted of reviewing the performance of the various zero rated applications in the app stores amongst other mobile applications the period of January 2013 through July 2015 for Netherlands (Spotify, Sizz, HBO Go) and Slovenia (TViN, Deezer, and others). For Chile we began the observation from January 2012 through the present for WhatsApp. Data is offered on a monthly basis, so we developed annual averages to describe relevant movement year over year. We also examined the prevalence of local country applications, as this is seen as an important outcome for many policymakers. Market share data on the operators was found on the respective regulators' websites.

¹²⁸ "HBO NOW Pushing the Cord-Cutting Trend," *App Annie Blog*, August 4, 2015, <http://blog.appannie.com/hbo-now-pushing-the-cord-cutting-trend/>.

¹²⁹ "Report: China Surpasses United States by iOS Downloads," *App Annie Blog*, April 28, 2015, <http://blog.appannie.com/china-surpasses-united-states-ios-downloads/>.

¹³⁰ Ibid

	Chile	Netherlands	Slovenia
The operator that offers zero rating wins market share.	Since launch, Virgin Mobile has grown consistently since launch but has less than 1% of the Chilean mobile market. It is difficult therefore to attribute its success to zero rating because the rate is the same with or without the zero rated offer.	No. Between 2012-2014, market share amongst mobile operators in the Netherlands was relatively constant, within 5 percent. A modest gain for service providers and virtual providers has been recorded over the period. ¹³¹ KPN, which had a zero rated offer, experienced a modest decline.	No. The incumbent with two zero rated offers experienced a reduced market share.
The zero rated service wins market share.	Can't be definitively determined. WhatsApp was already a popular service in Chile before zero rating began. On Apple devices it actually lost market share while on Android it stayed relatively constant. Messenger, Twitter, Skype, Badoo, Google Hangouts, Emoji, LINE, Telegram, imo, Talking Tom and Viber are also popular messaging apps.	Vodafone's Sizz never entered the top 500 most downloaded apps for the period. HBO Go was #450 in 2012, #483 in 2013 and not in the top 500 in 2014-2015. There is no consistent offer for Spotify during the period, and it was frequently not zero rated. However its ranking increased from an average of 42 (Apple) and 30 (Android) in 2013 to from 12 and 8 respectively in 2015. Globally Spotify has increased ranking in all countries, whether zero rating is present or not.	No for Telecom Slovenia's TViN. The ranking falls from 67 to 85 between 2013 and 2015 in the Apple store. No for Deezer; it fell from 116 to 133 for the period. VOYO fell from 116 to 125. For Hangar Mapa, Tsukabina, and TV.Si, they either never appear or show briefly with a low rank. For HBO Go, it rises from 282 to 68. As of Aug 15, 2015, it ranks at 291 for Apple.
The presence of zero rating will preclude the emergence of new applications and services.	Can't be determined. Facebook's Messenger and WhatsApp, ranked closely. Twitter, Instagram and Snapchat are popular. For Chilean apps as of Aug 15, 2015 in Apple, The Voice TV show app #1; marketplace Yapo at 12 (14 in Google), and the government's "Youth Card" at 21, allows youth differentiated pricing for various activities in Chile.	No. New apps from a variety of countries appear each month in the ranking. However it does not appear that the Dutch net neutrality law stimulates new Dutch applications, as was hoped. Only two Dutch apps appear in the top 25 of top ranked apps in either Apple or Android.	No. New apps from a variety of countries appear each month in the ranking. As of Aug 15, 2015 for Slovenia apps in Google Play, the market Bohla appears at 48, and 24ur.com, Slovenian news at 76. For Apple, the ASfalt traffic app at 19, bohla.com at 30, BOX app by Telekom Slovenija to manage TV programs, and 24ur.com at 90.

¹³¹"Onderzoek Telecommunitor derde kwartaal 2014," Onderzoek, ACM.nl, (February 11, 2015), <https://www.acm.nl/nl/publicaties/publicatie/13838/Telecommunitor-derde-kwartaal-2014/>.

As for the assertion that users do not go beyond zero rated content, we could not find evidence for that assertion in any of the three countries. As for the assertion that operators which zero rate their own content foreclose other content, we could not find any evidence for that either. The only country with proprietary content was Slovenia. The operators' content was extremely niche-oriented competing in a large, global marketplace. The content appears to be non-rivalrous, that is its presence is appreciated by those who value it, but it does not detract from the experience of other users. In any event, its rank is so low that it does not "threaten" other content.

As pointed out by the competition authority in Slovenia, the zero rated offers in many cases consume only minimal data, and at best, may only impact price by a few cents per month. In other words, the data consumption for apps such as Spotify, WhatsApp, and Deezer is so small in relation to other services that it cannot be observed. If anything, purveyors of the most popular applications work to reduce the data consumption of their applications. Facebook re-engineered its mobile platform, decreasing average monthly data use from 14MB/mo to 2MB/mo.¹³²

Naturally video applications consume the most data, so these cases are interesting to review. Vodafone Netherlands only had 3200 subscribers for its zero rated HBO Go application when it was ordered to end the practice. That the application was zero rated did not deter other content in the marketplace. Vodafone did not gain an advantage over competitors by zero rating the app.

In the case of Slovenia, the zero rated offers actually increased output on the market, even though they were not the most widely demanded application. For example Telecom Slovenia purchased sports rights and extended that benefit to its customers doubly with its investment and by zero rating the application. But the zero rated TViN service actually suffered a loss in ranking in the app store during the period. VOYO was a content service that was zero rated for a two year period, and it suffered a decline in app store rank as well. It shows that not all content is valued equally if it is free. Zero rating is not the competitive advantage that detractors like to describe it. More likely, as Baumol described, it is just one of a range of offers that providers have to make to survive in the marketplace.

It cannot be observed that zero rating has reduced innovation in any of the countries. In anything bans on the practice have hurt users the most. This is particularly the case for the subscribers of Vodafone and Tuskabina. The bans against customer service applications such as Sizz (Vodafone Netherlands) and Tuskabina (Tuskabina Slovenia) were offered as courtesies, so that customers would not have to use data to top up their mobile subscription or minutes to call customer support. Neither of these operators hold dominant market positions anyway so punishing them for consumer-friendly activities seems harsh.

On balance for the three countries, it appears that the impact of zero rating is negligible but not negative.

¹³² See Mark Zuckerberg comments at Mobile World Congress in 2014 at 28:20
<https://www.youtube.com/watch?v=VHwkHZpXqWc>.

Zero Rating and Freedom of Speech

There is no doubt that zero rating is a potent policy issue. For advocates in many countries, zero rating and the larger net neutrality debate has become synonymous with free speech.

However it has been observed that making net neutrality laws in developing countries is premature because the majority of the population of these countries has never been online, and as such, cannot experience the Internet for themselves. Zero rating is perhaps the quickest, cheapest way to get the poor online, but that option is vigorously challenged.

It may be the case that people in developing countries could benefit from net neutrality, but the choice of how the Internet should be is made for them. The decision to make net neutrality rules has path dependencies with implications for more than just network access. Net neutrality rules across 20 countries have provisions related to copyright, data retention, pricing, surveillance, and more.¹³³

Compared to people who are not online, net neutrality advocates are elite, sophisticated, and well-educated. They probably have computers at home with wireline access as well as the latest smartphone. A low or no data cap plan is their preference. But people who have never been online do not have the same expectation of Internet access. For a Chinese, the Internet might be equated a non-branded smartphone, WeChat messaging, Baidu search, and Youku video. It need not conform to a gold standard of neutrality, but it still can be a thrilling experience.

For Westerners, concepts such as free speech and freedom of expression are established and enshrined in constitutions and case law. But for a number of developing countries, these concepts are still in the making. There is no doubt that Internet freedom is important in these countries, as it is everywhere. But where Internet penetration is low and television, radio and print are still the dominant media, the pursuit of freedom for all media may be more appropriate than just net neutrality.

In any case, the question may boil down to whether those not yet online have sufficient economic power. As mentioned, developing countries may have mobile networks but still lag on key indicators for quality of life. There is no doubt that zero rating offers an opportunity for poor people to access the Internet, become politically aware, and hold leaders more accountable. Such empowerment could be destabilizing for the status quo.

This paper has focused specifically on Chile, Netherlands, and Slovenia. The following section offers an American perspective on net neutrality, particularly in light of nine legal challenges to the FCC's net neutrality rules, the third time the telecom authority is in court for making rules. However even Slovenia has free enterprise laws. Such arguments may be important in a former communist and war-torn country where entrepreneurs and private enterprises try to build a market economy.

Critics contend that zero rating is "discriminatory", but in the United States, zero rating is likely a form of speech that is protected by the First Amendment of the Constitution.¹³⁴ Zero rating conforms to all aspects of the classic definition of marketing: product, price, place, and promotion.¹³⁵ Thus bans on zero rating may be bans on free speech. To be sure, "deception" and false advertising are not allowed, but the freedom to make an offer in the marketplace is a fundamental as speech itself.

¹³³ See forthcoming paper by Roslyn Layton for a comparison of net neutrality rules in 20 countries.

¹³⁴ "Advertising and the First Amendment," *LawPublish*, accessed August 5, 2015,

<http://www.lawpublish.com/amend1.html>.

¹³⁵ McCarthy, Jerome E. (1960). *Basic Marketing. A Managerial Approach*. Homewood, IL: Richard D. Irwin.

This argument¹³⁶ will soon have a test in court. It holds that a broadband provider is no different from a newspaper, printing press, or broadcaster from a constitutional perspective. Broadband access is speech just as print or broadcast.

The distinction between technical and commercial reasons is irrelevant for the First Amendment. Indeed for a network, technical and commercial concerns are one in the same. Thus some net neutrality rules against how operators price and manage their networks may be unconstitutional. Legal scholar Fred Campbell explains¹³⁷

It is constitutionally irrelevant that the content-related restrictions in the open Internet rules also implicate business concerns.¹³⁸ The Court has long held that the commercial nature of the press does not deprive it of First Amendment protection, because there is no constitutionally permissible way for the government to separate the business interests of the press from its editorial function.¹³⁹ The existence of "commercial activity, in itself, is no justification for narrowing the protection of expression secured by the First Amendment,"¹⁴⁰ in part because even early printers were capitalists who were regarded as innovators.¹⁴¹ The combination of the profit motive "with other motives that were self-serving and altruistic, and even evangelistic, at times," played a role in the "rapid expansion of early printing industries."¹⁴² The editorial and business interests of the press have always been inextricably intertwined,¹⁴³ and the Press Clause has always forbidden government attempts to unravel them.¹⁴⁴

While the court may recognize an argument for common carriage, this does mean free carriage. Thus an operator's discretion of how to charge for delivery is protected as well. Price differentiation is enshrined in almost every country through the post, with priority, regular, and reduced rate postage. It is understood that there is social value to give mass media and books a lower price of delivery because it supports communication, expression and the exchange of ideas.

Moreover rather than declare such practices inherently harmful, however, the Supreme Court has upheld the government's right to engage in paid prioritization of the mail for the purpose of subsidizing particular forms of speech.¹⁴⁵

In this way, it is no different for some Internet content to get the "book rate" or the zero rate. It supports overall expression.

In some respects the zero rated Internet.org, a platform for Facebook and locally relevant content for developing countries is not unlike the very original conception of zero rating, a term¹⁴⁶ that comes from the international trade and tax policy of the European Economic Community in the 1950s. When value added tax (VAT) was imposed on goods distributed in what is today the European Union, certain "essential" items such as food, medicines, books, equipment for the disabled and were "zero rated" and not taxed. While it probably makes net neutrality advocates wince, Facebook is an essential for the Internet.

¹³⁶ Fred Campbell, "CBIT Amicus Brief: FCC Net Neutrality Rules Violate First Amendment," *Center for Boundless Innovation in Technology*, August 6, 2015, <http://cbit.org/blog/2015/08/cbit-files-amicus-brief-fcc-net-neutrality-rules-violate-first-amendment/>.

¹³⁷ Fred Campbell, *The First Amendment and the Internet: The Press Clause Protects the Internet Transmission of Mass Media Content from Common Carrier Regulation*, 94 NEB. L. REV. ____ (2016). See also <http://cbit.org/blog/2015/06/cbit-white-paper-how-net-neutrality-invites-the-feds-to-ignore-the-first-amendment-censor-the-internet/> at p 32-33, 51

¹³⁸ *Bigelow*, 421 U.S. at 818, quoting *Ginzburg v. United States*, 383 U.S. 463, 474 (1966). ("The existence of 'commercial activity, in itself, is no justification for narrowing the protection of expression secured by the First Amendment.'").

¹³⁹ See *Tornillo*, 418 U.S. 241, 258.

¹⁴⁰ *Bigelow*, 421 U.S. at 818, quoting *Ginzburg v. United States*, 383 U.S. 463, 474 (1966).

¹⁴¹ Elizabeth L. Einstein, *The Printing Press as an Agent of Change*, p. 22 (Cambridge University Press, 14th printing, 2009).

¹⁴² See *id.* at p. 23.

¹⁴³ See *id.* ("It seems more accurate to describe many publishers as being *both* businessmen *and* literary dispensers of glory.").

¹⁴⁴ The Press Clause has not been amended since its initial ratification.

¹⁴⁵ *Hannegan v. Esquire, Inc.*, 327 U.S. 146, 151 (1946).

¹⁴⁶ Harry Wallop, "General Election 2010: A Brief History of the Value Added Tax," April 13, 2010, <http://www.telegraph.co.uk/news/election-2010/7582869/VAT-a-brief-history.html>.

But it is not the case that all expression must be treated equally. "The Supreme Court has rejected the notion that the government has an interest in equalizing the relative ability of individuals or groups to speak.¹⁴⁷ "[T]he concept that government may restrict the speech of some elements of our society in order to enhance the relative voice of others is wholly foreign to the First Amendment,"¹⁴⁸ notes Campbell.¹⁴⁹

Marketing and advertising to support the provision of service, content, access to users has been a quintessential part of every medium, whether radio, TV, print, search engine, social network, and music streaming. Classified advertisements, a forerunner to search advertising, supported Benjamin Franklin's *Pennsylvania Gazette* in 1728. The telephone newspaper of the 1890s, a forerunner of today's mobile broadband, was funded both by spoken ads and price differentiated subscriptions for different audiences.¹⁵⁰ Radio broadcasting would have been unknown in America had it not been for content providers' zero rated programming.

To stimulate purchase of receivers from the De Forest Radio Company, owner Lee De Forest negotiated the Metropolitan Opera and the Columbia Graphophone Co., to zero rated their music content. Free broadcasts helped introduce America to this new medium. Thereafter it became commonplace for consumer product companies to sponsor radio shows. This was a norm for American television. Revenues from advertisers were used to expand radio and television networks and technologies. Unsurprisingly Internet companies such as Google, Facebook, Yahoo and others have availed themselves to zero rating style business models, so that their users need not pay money for the service. Google zero-rates search and its other products. Facebook sponsors its platform with advertising.

Marketing is also important to promote devices. Imagine if AT&T had not been able to make an exclusive distribution agreement with Apple for the iPhone in 2007. Nokia, in fact, invented the smartphone in 1996 but never got the credit because it failed to communicate to customers in a compelling way.¹⁵¹ Consumers were able to take advantage of the iPhone in spite of its high price of \$399 because AT&T through its subsidy of the phone created a form of zero rating of the cost of the phone to the end user. Additionally Apple could leverage the marketing and distribution of its device in AT&T's subscriber network. Such a partnership was needed to launch the idea of the smartphone in the consumer imagination¹⁵²; it opened the door to other smartphones and fostered the development of mobile platforms on which WhatsApp, Spotify, Netflix, and other mobile applications have flourished. A zero rating like ban on partnerships between operators and device makers could have precluded significant mobile innovation.

Marketing is also essential for firms to differentiate themselves in the marketplace, and even more important for service based competitors which resell service on established networks. Consider the communication on the following two Chilean websites, one for Movistar and the other for WOM. Movistar, the market leader, features a bourgeois husband and wife in their properly appointed home with an offer of 150 voice minutes or 500 MB of data for a set price. WOM, an MVNO, features two girls at party sharing a lemon wedge by mouth with the offer is 30 GB of data for \$25. These are two different customer sets with different needs and budgets. Marketing is essential for each operator to acquire customers.

¹⁴⁷ See *Citizens United*, 558 U.S. at 350.

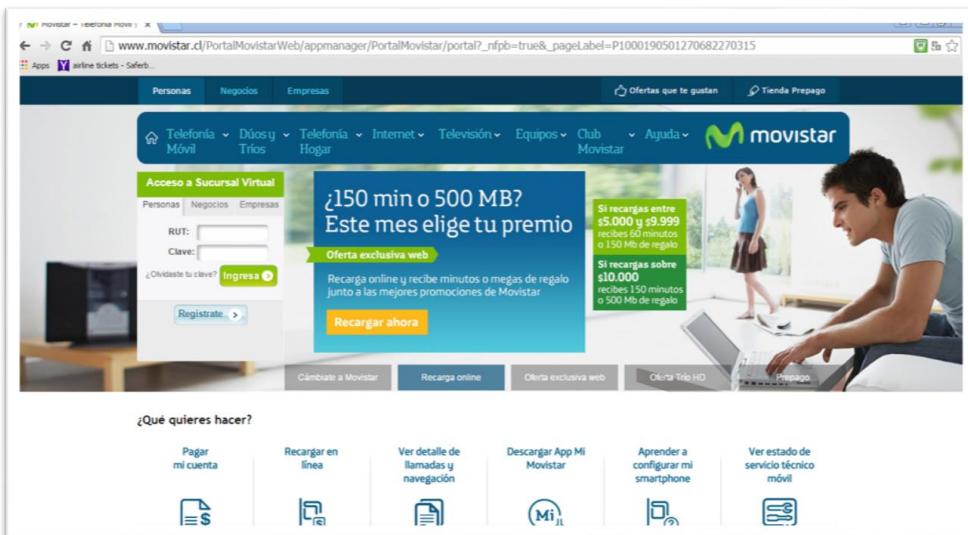
¹⁴⁸ *Buckley v. Valeo*, 424 U.S. 1, 48-49 (1976).

¹⁴⁹ Supra

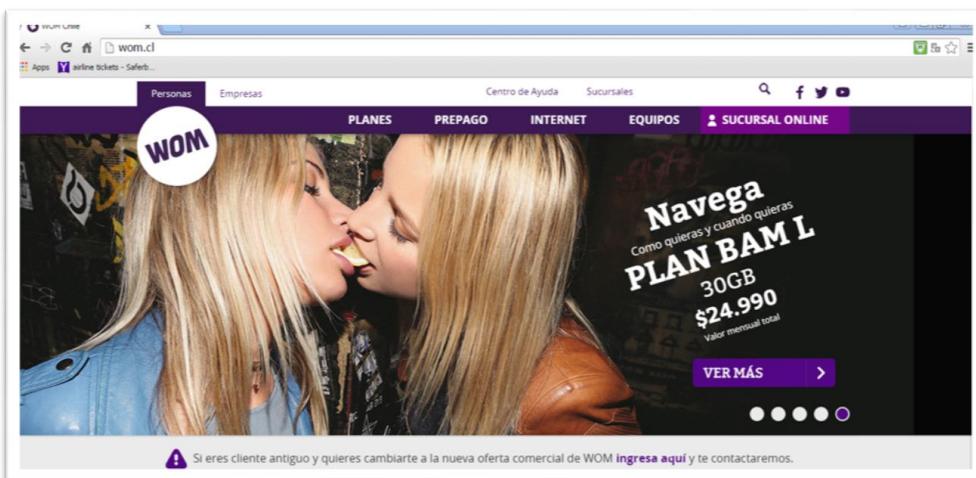
¹⁵⁰ Roslyn Layton. "What the 19th Century Telephone Newspaper Tells us about Today's Internet." August 13, 2015. <http://www.techpolicydaily.com/internet/telephone-newspaper-todays-internet/>

¹⁵¹ "Nokia 9000 Communicator Detailed Specs," *PDAdb.net*, accessed August 14, 2015, http://pdadb.net/index.php?m=specs&id=879&view=1&c=nokia_9000.communicator.

¹⁵² Strand Consult iPhone Report, 2009. <http://www.strandconsult.dk/sw3896.asp>



Movistar's Homepage



WOM's Homepage

Why the War on Zero Rating

This paper has examined the arguments for and against zero rating. It examines the key concerns about zero rating and attempts to find evidence for the claims. It reviewed the leading database of financial information for mobile operators and the leading database of application performance in mobile app stores. We conducted primary research in the three countries that ban zero rating. The case studies highlighted a number of similarities in the countries, including strong net neutrality laws, reluctant regulators, and the role of powerful advocacy organization to make zero rating illegal. While this demonstrates the success of these organizations to activate the media and policymakers, the case studies highlight the lack of analysis, evidence, and investigation in net neutrality policy, showing that each country is highly idiosyncratic in its rulemaking.

Through a variety of quantitative and qualitative techniques, we have attempted to find evidence for the harm that zero rating allegedly creates to consumers and competition.

In short, we cannot find evidence that shows that zero rating creates harm. We find that zero rating has a negligible but not negative impact on the marketplace.

Zero rating is one of a number of marketing techniques that mobile operators need to employ in competitive marketplace. For some operators in the study, their outcomes are the opposite predicted by critics. Some operators that deployed zero rating actually lost market share, and their zero rated applications were insignificant in terms of rank. We do not believe that this is a result of zero rating, but rather that zero rating is the result of the operator's competitive situation. To rephrase Baumol, operators don't deploy zero rating because they can, but because they must.

It is strange however that a service that has such a minimal impact should be so maligned. It is also an inconsistent that zero rating is rampant across Internet applications and services (e.g. advertising supported games, search, social networks, music streaming etc) but arbitrarily prohibited on mobile broadband services.

We noticed that in the three countries that advocates have a goal to make flat rate internet subscriptions and high data caps (preferably no data caps) the norm, if not the law. While such offers have appeal, they necessarily mean low volume users, whether by choice or budget constraint, are forced to pay more for internet access. Meanwhile high volume users, those who want to stream movies or play video games, pay proportionately less for their service. Such a situation would be a particular boon to companies such as Netflix, whose streaming service takes up a disproportionate share of mobile traffic. Thus it appears that campaigns against zero rating are waged as a way to pressure mobile operators to change their pricing in favor of users who consume high volume video and against those users who have never used the Internet but want an incentive to try.

2.2.3 NASSCOM



Response to TRAI Consultation Paper on

Differential Pricing for Data Services

**Consultation Paper No: 8/2015
December 2015**

Response to TRAI Consultation Paper

Differential Pricing for Data Services

I. Introduction

Issues concerning Differential Pricing for Data Services need careful consideration because of their possible impact on Net Neutrality. The importance of preserving Net Neutrality was clearly brought out in our response to the TRAI consultation paper on Regulation of OTT Players in April, 2015. Our response to that paper may therefore be taken as an integral part of this response. For convenience of reference, it is annexed to this response.

At the outset therefore, we reiterate the characteristics of Net Neutrality set out in that response.

Excerpt from NASSCOM submission to TRAI in April 2015 - In response to OTT consultation paper

Net Neutrality in our view should be characterized by the following attributes

- 1** User to have the unfettered right of making an informed choice in deciding content / services to access
- 2** No discretion to TSPs to censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet
- 3** No right of TSPs to throttle lawful internet traffic on the basis of content, applications, services or non-harmful devices. In fact, opening of the content of transmissions other than when required under laid down legal processes, is illegal.
- 4** No right of TSPs to speed-up / favour lawful internet traffic over other lawful traffic in exchange for consideration of any kind¹
- 5** Critical that there be a level playing field for all Internet platforms and services including particularly entrepreneurial start-ups so that they are not squeezed out by either TSPs or large/global Internet Platforms and Service providers through anti-competitive tie-ups or practices
- 6** Prioritization of Emergency or any other services as prescribed by the regulator accompanied by public declaration and without price discrimination
- 7** Clear and declared definition of acceptable technical practices by TSPs for management of network traffic in conformity with above principles
- 8** No double dipping by Telecom Service Providers. Charges would be levied only from end customers based on data consumption and not from Internet Platforms and Applications
- 9** Security restrictions as required for ensuring reliable services and lawful demand of security agencies.

¹ Commercial or non-commercial gains

A sustainable and fair pricing plan should abide by the following:

- *Pricing should not be used as an entry barrier/ enabler against competing Internet Platforms and Services, by ISPs that provide substitute services.*
 - *Data plans offered by telecom companies to the consumer has to be neutral between their own and competing Internet Platforms and Services*
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In continuation of our previous submission, we therefore maintain that TSPs should not be allowed to don the role of gatekeepers and use tariff plans to decide what users should access.

We appreciate the reiteration of the core principles of Net Neutrality in this Consultation Paper. We believe that the principles indicated by us in our earlier response and by TRAI in this paper should not be compromised. We advocate application of these principles to the Indian context.

Presently, India is characterized by low Internet penetration and even lower broadband penetration. Even where connectivity is available, reliability of power supply affects availability. Additionally there are challenges of low levels of digital literacy and limited local language support/ content in a country wherein less than 10% of the population speak English.

Proliferation of socially and locally relevant content and services is still at an early stage of evolution even though e-commerce has spread fairly rapidly. These monumental challenges lead to the conclusion that continuous innovation, both in technology solutions and business models is an essential ingredient of any solution to these daunting challenges. Hence the need to preserve a conducive environment for continuous innovation is a critical national priority.

At the same time, business models and innovations that enhance access or affordability without violating the principles of Net Neutrality listed should not be barred. Equally, faster proliferation of access or enhancing affordability should not come at the cost of constraining the innovation eco-system/ environment even marginally. The Government's initiatives towards Start up India, Stand up India are important efforts to promote innovation in the country. Given the obvious need for collective, concerted and focused efforts to enable/ incentivize relevant content, services, access and overcome the digital divide, it is also important that subject to the overriding priority of not constraining innovation or violating Net Neutrality

principles, the regulator should, where warranted, mandate/ allow differential pricing for certain types/ classes of services that are deemed by the regulator to be in public interest.

Parameters based on technical aspects of the network connection maybe used to offer different enabling tariff models as is in vogue today -

- Time (e.g. price per minute varies between day and night or workday and weekend) - Subscribers are offered incentives, such as better QoS or discounts, when they use mobile data at specific times or locations when the network is typically underutilized. The mobile service provider benefits by subscribers using capacity that would otherwise be wasted. This network optimization might also slow a provider's need to grow network capacity.
- Bandwidth - Quality of service (QoS)-based offers in real time. Subscribers pay more on a monthly or per-use basis to receive a higher QoS or better speed than the average user e.g. additional speed for a certain amount of time or application-based QoS.
- Volume (e.g. price per Megabyte) or capacity based

We believe that the regulator has an important role as innovative services and products are introduced, including innovation in pricing and business models.

II. Response to Questions posed by TRAI consultation paper**Question 1**

Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Based on the criteria of Net Neutrality outlined by NASSCOM – ‘No discretion to TSPs to censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet’ - as well as the principles outlined in the Consultation Paper, we oppose any model where TSPs have a say or discretion to choose content that is made available at favourable rates, speed etc. TSPs should not be allowed to price different kinds of services differently, for example higher prices for video streaming, accessing ecommerce website etc., thereby segmenting the Internet. These cardinal principles remain applicable even in cases where differential pricing is proposed in partnership with a platform provider. Any differential pricing for a priority set of services that are deemed to be in public interest, eg. Emergency services, TSPs own maintenance/billing services, wi-fi hotspots, etc. should be offered only on the basis of explicit directives/ approvals of the regulator.

Question 2

If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

In India, low cost solutions are a key focus area for India in diverse technology fields. This is also true for telecom and data services, where from a consumer perspective, affordability is important, and much development effort and innovation is targeted towards this objective.

Given the undeniable imperative for collective, concerted and focused efforts to enable/ incentivize relevant content, services, access to overcome the digital divide, it is important that subject to the overriding priority of not constraining innovation and not violating Net Neutrality principles, the regulator should be empowered, such that where and when warranted, they can mandate/ allow differential pricing for certain types/ classes of services that are deemed by the regulator to be in public

interest. This could include for example emergency and essential citizen services. TSPs own maintenance/ billing services, wi-fi hotspots, etc. may also be offered with lower rates / nil rates only on the basis of explicit directives/ approvals of the regulator.

Based on recent debates globally, it is important that any differential pricing proposals by TSPs² or TSPs and their partners are evaluated carefully by the regulator, *prior to launch*, to ensure net neutrality is maintained. The regulator will therefore need to play a key role in evaluating such programs even if they are projected to enable increased access or any other such socially desirable end. All such programs should abide by the basic principles of net neutrality. Such programs should not discriminate between content providers thereby leading to or enabling anti-competitive behavior. It is also critical that such differential pricing should not become a tool that facilitates market dominance or enables anti-competitive behavior by either TSP or platform provider or result in direct or indirect commercial benefit including by leveraging the value of customer data that gets generated in the process. This is particularly important in the Indian context, wherein the absence of a privacy law, enables widespread abuse/ misuse of such information for commercial gain.

If differential pricing is permitted by the regulator in the larger public interest in response to a request by the service provider(s), the onus of proving the larger public good should be on the TSP and its partners, if any and subject to a wider public consultation by the regulator before arriving at a final decision. Further, even after approval, a suitable oversight mechanism, either by the regulator directly, or through regulator designated, independent third party not-for-profit entities would be desirable to avoid misuse/ expansion of any authorization given.

We therefore recommend independent not for profit entities with independent Boards, that could own and manage such differential pricing programs that are deemed to be in the public interest and philanthropic in nature and they should be an integral part of the proposal to the regulator for approval. Such not for profit entities may be allowed to raise funds from multiple sources including TSP / platform provider. All contributions to these not for profit entities should be eligible to be counted as a part of CSR contribution as mandated by Companies Act.

With many TSPs themselves offering different apps, competing products and services differential pricing where rates are lower for select service providers within a class of services will lead to anticompetitive behavior. The same apprehensions are valid in case of collaborative partner services. Therefore, lower prices for own or partner content/ service should be explicitly disallowed, lower prices in exchange of consideration received from the partner content/service provider should not be

² TRAI has regulatory mandate on TSPs only

allowed, except for the purpose of short term business promotions that have explicit time duration not exceeding 3 months.

Differential pricing may lead to anti-competitive behavior or preferential access that can act as a barrier to new entrants. Further, creating walled Internet with select services and content can also potentially drive up the cost of the internet outside of the set of select services/ content / products.

We are therefore unequivocally against any plan where there is any sort of commercial consideration from any content / app provider in order to be included in any in any plan that has a walled garden. We are also opposed to any plan that creates a walled garden that could potentially unfairly discriminate against certain apps, content providers.

Further, conformance to norms of data privacy as well as full disclosure of terms and conditions including creating awareness of all implications should be required.

Therefore tariff plans that offer concessional rates with the specific purpose of greater social good such as increasing access should require prior approval of the regulator, even if they are non-commercial in nature and are stated to abide by basic tenets of Net Neutrality as outlined by the TRAI. Full justification including details of the terms and conditions and how these map onto the principles of net neutrality as stated by TRAI in the discussion paper would be essential. As a standard practice, public consultations maybe initiated on the specifics of any plan, before a regulator decision is made. TRAI would need to check data tariff plans for consistency with various regulatory principles/guidelines, which include the following:

- Non-Discriminatory
- Transparency
- Not Anti-competitive
- Non-Predatory
- Non-Ambiguous
- Not Misleading

In summary, we propose mandatory prior approvals by the regulator, and sharing of periodic information on tariff plans that seek to price lower or zero rate services and content under such programs. These programs should abide by the principles of net neutrality.

Differential pricing plans and options should be an exception rather than the rule, including those positioned to address the difficult problem of getting more and more people online in India without compromising on the principles of Net Neutrality.

Question 3

Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Instead of prioritizing differential pricing for select data services for wide access, legitimate and transparent business models should be adopted without segmenting the internet or skewing competition.

Some examples are already quoted in the paper. Government is offering hot spots and free WIFI in various public spaces. Similar models can be adopted by companies who wish to work towards increasing access to internet usage and this maybe proposed to be counted under the CSR mandate of corporates as governed by the Companies Act in India. For example, corporates can come together to bridge the digital divide through training, distribution of bandwidth amongst first time users etc. maybe considered, where neither content / service provides nor TSPs have a role to play. Suggested models

1. Free data access by TSPs, Content and Service providers: Free data is provided to the customers without any stipulations thereby offering to the customers, choice to select which apps/websites to use. This could be done through coupons, that maybe issued by the TSPs or service / content providers but do not have any stipulations or restrictions on how it should be used. Under this model service providers can offer managed service for public locations (e.g., coffee shops, hotels, airports, stadiums, railway stations) that want to provide free access to their customers and employees. Similarly content / service providers can offer discount coupons for data access to their customers.
2. Government offers free data: An example is the proposed initiative of the Delhi Government that is offering free internet access subject to cap on data used / day or month. This could be through identified wifi zones.
3. Corporates channelize their efforts towards digital literacy and access: While many corporates are investing in digital literacy programs today, corporates maybe encouraged to consider developing programs whereby they invest and cover opex cost to offer free/ discounted data to the uninitiated, without any stipulations on usage. This can be done in partnership with TSPs. E.g. Public transport such as Bus, Train and Cabs can be Wi-Fi enabled. The time available

during travel and commute can therefore be used to explore and access. This can be done as a part of their CSR initiative³ or otherwise.

4. Time based models (e.g. price per minute varies between day and night or workday and weekend) - Subscribers are offered incentives, such as better QoS or discounts, when they use mobile data at specific times or locations when the network is typically underutilized. The mobile service provider benefits by subscribers using capacity that would otherwise be wasted. This network optimization might also slow a provider's need to grow network capacity.

Therefore zero rating is not and should not be the only model to achieve the larger goal of increased access and utility of the Internet in India.

Question 4

Is there any other issue that should be considered in the present consultation on differential pricing for data services?

From a customer perspective, zero rate access to TSPs billing portals and online help functions is much desired. No one wants to pay for such services and information. The differential pricing norms should not make such services expensive.

Any tariff plan of the telecom service provider should ensure

1. Innovation without permissions
2. Data charges that are application agnostic
3. Customer has the unfettered right to choose

One other aspect is that in the present day context, the commercial value of user information is an important parameter. In that context, differential tariff plans can exploit this value in direct and indirect ways. The lack of a privacy law in the country is a concern here, since such a law would have circumscribed the legitimate use of such user generated and privileged information. In the absence of such a law, it is all the more important that differential pricing plans are vetted carefully by the regulator.

³ As mandated in the Companies Act in India, and therefore there is need to provide for it in the Companies Act.

Annexure

**NASSCOM response to TRAI
On regulatory framework for OTT
April 2015**

Response to TRAI
Consultation Paper on
**REGULATORY FRAMEWORK
FOR OTT PLAYERS**

Consultation Paper No: 2/2015

NASSCOM RESPONSE TO TRAI CONSULTATION PAPER ON REGULATORY FRAMEWORK FOR OTT PLAYERS

Preamble

The advent of the Internet, the proliferation of mobile telephony in the country, the emergence of newer technologies and platforms like social media, big data/analytics, cloud, IoT, etc., the maturing of the IT industry in the country into a global force driving adoption of digital technologies, the burgeoning growth of the ICT start up / innovation eco-system in India and the adoption of a Digital India vision by the Government constitute a confluence of circumstances that hold the promise of breakthrough economic development and transformation for the country.

Yet, for that promise to be realized, it is vitally important that certain strategic objectives are clearly spelt out at the national level and underpin various policy and regulatory interventions in this space. NASSCOM believes that the following are critical elements of this framework:

- i. India is fortunate to have arguably the most powerful IT service delivery industry in the world today. This capability needs to be leveraged maximally to achieve the lofty vision of Digital India. Yet, mere adoption of these technologies is not adequate to meet India's needs, much less achieve its full potential; significant innovation is needed, both in technology and business models. In this context, the rapidly maturing entrepreneur - startup – innovation – product ecosystem (which is the 4th largest in the world today and will be the 2nd largest within 2 years) is a powerful new complement to the established IT-BPM industry and acts as a force multiplier. Hence the eco-system that is being built in the country should assign the highest priority to enabling such innovation and eliminating any impediments and roadblocks to such innovation. Given the Indian context, much of this innovation will come from small/new companies driven by young entrepreneurs with ideas, knowledge, energy and vision but limited means. This category requires a supportive environment. There should be no roadblocks to the rapid adoption of ICT-enabled and/or innovative models that emerge from this high-energy

eco-system, on which the hopes of a digital revolution in the country rest. In particular, any need for licensing of such applications, innovative or otherwise, is a death knell in this milieu.

- ii. Rapid country-wide proliferation of such solutions requires ubiquitous telecommunications infrastructure. Given that over 90% of such infrastructure is driven by the private sector in India, a viable and healthy business environment for TSP service providers is also an essential ingredient for the digital revolution in India.

NASSCOM believes that it is a misperception that these two objectives are in any way mutually exclusive or constitute a zero-sum game. On the contrary, success lies in creating and enabling a virtuous synergy between these two objectives.

A major challenge to pursuing these twin objectives is brought out in the TRAI consultation paper. The emergence of the Internet, the data revolution ensuing in its wake and the emergence of a whole new breed of Application Service providers has disrupted existing equilibria and business models in several (if not most) sectors. Telecom is no exception. In fact, the IT industry has been, in many ways disruptive even of its own traditional business models.

As far as telecom is concerned, the main issue has been brought out in the TRAI paper, namely that TSPs are moving from a voice-dominated to a data dominated era and the pressures arising there from. The complexity arises because the current business model and revenue model of TSPs is largely dominated by voice, which is relatively low in terms of data intensity. Para 2.37 and 2.38 of the TRAI consultation paper have brought out this dichotomy clearly. However, once mobile penetration reaches saturation levels (which it is fast approaching), then voice traffic will plateau and data traffic will constitute the bulk of growth in demand for increased telecom infrastructure. Data traffic then becomes the driver of demand for more telecom infrastructure. It would therefore be evident that the existing misalignment between sources of revenue and drivers of demand for telecommunication services is unsustainable. The sooner it is removed and the demand driver and revenue streams are synergized, the faster will be the migration to a more sustainable and future-proof telecommunications eco-system in the country.

In fact, it is our belief that it is precisely this effort to identify problems and carve out solutions without addressing this basic conundrum of misalignment between sources of revenue and drivers of demand for telecommunication services, that has led to suggestions that appear to resolve apparent difficulties to achieving rapid proliferation of telecom infrastructure (objective ii), but create enormous barriers for rapid adoption of ICT-enabled and/or innovative models (objective i) and have the net effect of nullifying possible gains from migration to a digital, connected India.

There is absolutely no need from a logical point of view, no competence from a legal point of view and no practicability from a technology point of view of bringing in the type of regulations/ controls on Internet platforms and Applications (referred to as OTT services in the TRAI paper) envisaged in the consultation paper that limit the scope and potential of the eco-system that needs to deliver on objective (i) above.

In the long run, migration to a revenue stream calibrated to the demand/consumption of data is a possible solution. In such a scenario, Internet Platforms and Applications spur demand for data that in turn generates additional revenues for TSPs. A synergistic eco-system would thus ensue. In fact, many of the issues highlighted would disappear once this state is reached. Thereafter, only normal regulatory principles of preventing anti-competitive practices would be necessary. As brought out in our detailed replies to specific questions, this migration is neither needed instantly, nor is an imperative at present based on available financial data as elaborated in our detailed replies to the questions. The migration can happen over a period of time and it is for the TSPs and the regulator to evolve the most appropriate path and timelines for such migration. NASSCOM is of the firm view that the Internet Platforms and Applications need not be dragged into this equation.

Today there are already adequate laws controlling their operations under the IT Act, not to mention the conventional IPC, CrPC, etc. In fact, as the consultation paper itself points out, TRAI has no jurisdiction over non-communication service providing Internet Platforms and Applications. NASSCOM believes that the comments contained in this response apply to all Internet platform and service providers (referred to as OTT in the consultation paper) and that the issue does not warrant any such distinction into communication and non-communication Internet Platforms and Applications and indeed, such distinction is impractical, arbitrary and highly contentious since nearly all such services incorporate some element of communication.

The only issues that need to be addressed therefore, are the regulations needed to ensure that TSPs do not resort to market distorting practices which go against the principles of Net Neutrality. Given the varying definitions of Net Neutrality worldwide, we would therefore like to first present our concept of Net Neutrality specifically tailored to the Indian context and then come to the measures needed to ensure that this framework is created and preserved.

Net Neutrality in our view should be characterized by the following attributes

- 1** User to have the unfettered right of making an informed choice in deciding content / services to access
 - 2** No discretion to TSPs to censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet
 - 3** No right of TSPs to throttle lawful internet traffic on the basis of content, applications, services or non-harmful devices. In fact, opening of the content of transmissions other than when required under laid down legal processes, is illegal.
 - 4** No right of TSPs to speed-up / favour lawful internet traffic over other lawful traffic in exchange for consideration of any kind.
 - 5** Critical that there be a level playing field for all Internet platforms and services including particularly entrepreneurial start-ups so that they are not squeezed out by either TSPs or large/global Internet Platforms and Service providers through anti-competitive tie-ups or practices
 - 6** Prioritization of Emergency or any other services as prescribed by the regulator accompanied by public declaration and without price discrimination
 - 7** Clear and declared definition of acceptable technical practices by TSPs for management of network traffic in conformity with above principles
 - 8** No double dipping by Telecom Service Providers. Charges would be levied only from end customers based on data consumption and not from Internet Platforms and Applications
 - 9** Security restrictions as required for ensuring reliable services and lawful demand of security agencies.
-

The regulatory framework should incorporate suitable provisions to ensure the above and appropriate enforcement mechanisms to deal with any complaints or reported breach of the principles. As consumers increasingly rely on the Internet and Mobile networks for not only their communication needs but other needs like Banking, transportation, Health etc. we believe that the above principles of open and fair access should be upheld and any violation of these principles should be critically examined and actioned against.

With Digital India poised to transform the country, this is all the more imperative. Our detailed responses to each of the Questions posed by TRAI are aligned to the above principles. We believe that consumer and national interests should be paramount.

We welcome the consultative approach being adopted to allow stakeholders to share their views on this extremely significant issue that is likely to have long term impact on the usage and proliferation of ICT technologies in the country.

(Detailed responses to each of the 20 Questions follows)

Responses to Questions posed by TRAI

Q1. Is it too early to establish a regulatory framework for OTT services, since internet penetration is still evolving, access speeds are generally low and there is limited coverage of high-speed broadband in the country? Or, should some beginning be made now with a regulatory framework that could be adapted to changes in the future? Please comment with justifications.

The term "OTT" does not acknowledge the innovation in Internet platforms and services at the application layer, their variety of services and product offering. Instead the term and its usage seems to imply that they are simply methods of serving. This is limiting and we would request that in India, we should acknowledge and therefore appropriately refer OTTs as Internet Platforms and Services in line with the terminology and understanding of Computer Technologists.

Further the belief that it is Internet platforms and apps that ride over the top of telecom networks is misplaced. It is consumers who use telecom networks to access apps and internet platforms. These consumers have contracts with telecom companies and they are using bandwidth that they have paid for at a price that generates profit for telecom companies. In fact, it is these Internet platforms and apps that make it worthwhile for consumers to use the Internet and therefore pay telecom companies for data packs.

Regulatory framework for Internet Platforms and Services exists

The Information Technology Act is the current applicable regulation to "...provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as "electronic commerce", which involve the use of alternatives to paper-based methods of communication and storage of information....."

As products and services evolve in the extremely dynamic technology environment, there is a need to recognize the developments and safeguard fundamental citizen rights. The Information Technology Act is mandated to ensure this. We believe there is no need for any additional regulations for content and services on the Internet.

(Details are in response to Q 5, 6 and 7)

This current regulatory system has enabled Internet adoption and growth of Internet platforms and services (OTT as per the current consultation paper terminology).in India. In 2013 ~10% of the Indian population were Internet users⁴ and the number of internet users in rural areas will touch 210 million by 2018, aiding India's internet user base to cross 500 million by 2018⁵.

There are certain basic principles that need to be recognized and followed that are not related to the maturity of a business. We believe that the Users *Right to Choose* is one such right that proposed regulations in many ways may restrict. Therefore, regulations for Internet Platforms and Services should not be linked to the state of Internet penetration in the country.

Universal principles of net neutrality, access for all and leveraging Internet for development, growth should be upheld within the regulatory framework of Telecom Service Providers. There should be no roadblocks to rapid adoption of ICT enabled models expected to drive the Digital revolution in the country

Specifically to the point on it being 'too early', there is no doubt that Internet Penetration in India is low. Also innovation and IP led products and services are a recent trend in India, and we are relatively new in the global scenario. With over 3000 technology start-ups today there is a need to nurture the ecosystem and support these enterprises.

⁴ *Online and upcoming: The Internet's impact on India*, report from McKinsey's technology, media, and telecommunications practice and the McKinsey Global Institute.

⁵ IAMAI & The Boston Consulting Group (BCG) report India@Digital.Bharat, Jan 2015

There is absolutely no need from a logical point of view, no competence from a legal point of view and no practicability from a technology point of view of bringing in the type of regulations/ controls on Internet platforms and Applications (referred to as OTT services in the TRAI paper) envisaged in the consultation paper.

Any stifling regulations applicable to Internet Platforms and Services may

Create significant difficulty for business

Seriously hamper the growth and success of the start-up and SME companies

Limit the scope and potential of the ecosystem that needs to rapidly develop and adopt Innovative ICT technologies, products and services to meet India's needs and the lofty vision of Digital India

Q2. Should the OTT players offering communication services (voice, messaging and video call services) through applications (resident either in the country or outside) be brought under the licensing regime? Please comment with justifications.

It shall be detrimental to have licensing for communication apps and Internet platforms. There are an estimated 1.5 million apps worldwide and several times more Internet platforms.

There is no basis for differentiating between communications services and internet platforms offering communication services and other services. Very many apps incorporate communication as a part of their offering. For example, a classified site or app may offer the buyer a feature of sending a message to the seller and even though communication is not the primary purpose of the app it is an integral part.

Internet Platforms and Services communications do not require licensing. There are user led evaluation reports that helps consumers make an informed choice as they adopt Internet platforms and services*

**OTT as per the current consultation paper*

Q3. Is the growth of OTT impacting the traditional revenue stream of TSPs? If so, is the increase in data revenues of the TSPs sufficient to compensate for this impact? Please comment with reasons.

The apps created have made Internet more useful, and opened up avenues for not just service providers, but increase convenience, transparency and enabled newer services for consumers. This is driving data revenues for Telecom Companies. Loss of revenue arguments from TSPs are not evident in some of the recent quarterly results announced (excerpts enclosed below) and some recent quotes from Telco Industry leaders

Gopal Vittal, Joint MD and CEO (India & South Asia), Bharti Airtel in Feb 2015⁶ in earnings call	Vittorio Colao, Vodafone's group chief executive has stated that⁷
<p>....There is still no evidence that suggests that there is cannibalization," when inquired as to whether any data is cannibalizing their voice business. This has been confirmed by a two-fold jump in consolidated net profit at Rs 1,436.5 crore in the third quarter of 2014-15 on the back of continued growth in mobile data revenue.....</p>	<p>"Growth in India has accelerated again (October-December), driven by data". "Vodafone's Indian unit outpaced its group counterparts to report 15% organic growth in revenue in the quarter through December (2014), as subscribers used more of its premium data services, even as the basic voice telecom service remained under pressure, like its top rivals".</p>

It is also important to note the preferences of the user and the reason for migration to Internet Platforms and Services. It is unlikely that people prefer to use Internet Platforms and Services because they are on the Internet. Instead, the preference arises out of convenience, lower cost and comparable if not better experience.

Further increase usage of data also translates into revenue stream for Telecom Companies although not under the traditional revenue stream. With an expanding revenue stream from data usage, the overall impact is seen to be positive, and does not require any correction.

The main issue in the TRAI consultation paper in this context is that with TSPs moving from a voice-dominated to a data dominated era there are associated pressures

⁶ <http://www.airtel.in/wps/wcm/connect/6fee748a-91e1-48aa-84a4-320aef0db668/Transcript+of+Bharti+Airtel+Limited+Third+Quarter+Ended+December+31+2014+Earnings+Conference+Call.pdf?MOD=AJPERES>

⁷ http://articles.economictimes.indiatimes.com/2015-02-06/news/58878696_1_organic-service-revenue-vittorio-colao-vodafone-india

arising from the current business model which has dominant revenues from voice, which is relatively low in terms of data intensity⁸. Over time, as mobile penetration reaches saturation levels voice traffic will plateau and data traffic will constitute the bulk of growth in demand and therefore source of revenue for telecom infrastructure. With data traffic likely to become the driver of demand it is evident that the existing misalignment between sources of revenue and drivers of demand for telecommunication services is unsustainable. The sooner it is removed and the demand driver and revenue streams are synergized, the faster will be the migration to a more sustainable and future-proof telecommunications eco-system in the country.

Therefore, addressing the misalignment between sources of revenue and drivers of demand will resolve apparent difficulties of achieving rapid proliferation of telecom infrastructure without creating barriers for rapid adoption of ICT-enabled and/or innovative models thereby potentially nullifying possible gains from migration to a digital, connected India.

In the long run, therefore migration to a revenue stream calibrated to the demand/consumption of data is the only solution, where Internet Platforms and Applications spur demand for data that in turn generates additional revenues for TSPs, leading to a synergistic ecosystem.

Based on the current Telecom Industry results, growth trends etc. (refer to excerpts from recent results announcements of leading telecom companies below) this migration is neither needed instantly, nor is an imperative. Migration of revenue stream to the demand/consumption of data can happen over a period of time and it is for the TSPs and the regulator to evolve the most appropriate path and timelines for such migration.

NASSCOM is of the firm view that the Internet Platforms and Applications need not be dragged into this equation.

⁸ 2.37 and 2.38 in the TRAI consultation paper

Further, Telecom Service Providers offer bandwidth to users. The Government has promised minimum government and digital access to all. If evolving Internet Platforms and Services are curbed at this juncture it will be tantamount to working against the public interest.

Excerpts from recent news

With reference to response to Q. 3

A surge in [mobile data revenues](#) helped Bharti Airtel, the country's largest telecom service provider, to more than double its consolidated [net profit](#) to Rs 1,436 crore in the financial year's third quarter ended December 2014.

Higher operational efficiency and lower finance costs helped the jump to its highest quarterly profit since September 2010. Data contributed 16.2 per cent of India mobile revenue this quarter, up from 14.5 per cent in the September one and 10.6 per cent a year before.

It had a net profit of Rs 610 crore in the quarter ended December 2013, and Rs 1,383 crore in the September 2014 quarter.

The consolidated revenue was Rs 23,217 crore for the December quarter, 5.8 per cent more from the same period a year before.

http://www.business-standard.com/article/companies/bharti-airtel-q3-net-up-over-two-fold-at-rs-1-436-cr-115020400867_1.html

Vodafone India, the wholly-owned subsidiary of British telecom major Vodafone Plc, on Tuesday, reported an 11.7 per cent rise in service revenue at Rs 20,641.9 crore for the first half of the current financial year ended September 30, on the back of 65.5 per cent jump in data (browsing) revenue to Rs 2,552 crore during the period.

The company had reported a total service revenue of Rs 18,480.9 crore in the same period last financial year. At the end of July-September quarter, data accounts for 13.5 per cent to its total service revenue in India. It does not disclose profit figures in India.

"We have delivered a healthy double-digit revenue growth driven by strong customer additions and robust growth in data. With reducing inflationary pressure and improving sentiment after the new government came, we expect the telecoms sector to grow above the GDP rate," said Vodafone India managing director and chief executive officer Marten Pieters.

http://www.business-standard.com/article/companies/vodafone-india-service-revenue-up-11-7-in-first-half-of-fy15-114111101083_1.html

Reliance Communications, India's fourth largest mobile phone operator, reported an 85% jump in profit for the fiscal third quarter, boosted by lower cost of financing debt and as more of its subscribers used the pricier data services.

The Anil Dhirubhai Ambani-owned company reported net profit at Rs 201 crore for the October-December period. Revenue rose 1.2% on year to Rs 4,799 crore.

http://articles.economictimes.indiatimes.com/2015-02-14/news/59142312_1_data-revenue-finance-cost-total-data-traffic

Telecom service provider Idea Cellular had a 64 per cent jump in consolidated net profit to Rs 767 crore for the quarter ended December 2014, third in this financial year, due to growth in data volume and voice minutes.

It had reported a net profit of Rs 468 crore in the same quarter of the previous financial year.

Consolidated revenue grew 21.2 per cent to Rs 8,017 crore for the quarter over a year before. Revenue was 0.7 per cent more than Bloomberg estimate and adjusted net profit was 2.8 per cent lower. Sequentially the revenue was up six per cent and net profit by 1.5 per cent.

"During the quarter, Idea carried 170.7 billion minutes on its network, registering 5.1 per cent sequential quarterly growth and 46.1 billion megabytes of mobile data on its 2G+3Gplatform, with both lines of business delivering strong performance," the company said.

Healthy turnover growth, scale benefit and cost rationalisations also helped Idea report significant improvement in Ebitda (earnings before interest, taxes, depreciation and amortisation) margins. These rose 143 basis points over the earlier quarter (and 330 bps over a year before) to 34.3 per cent.

http://www.business-standard.com/article/companies/idea-net-jumps-64-to-rs-767-cr-in-q3-115012701454_1.html

Tata Teleservices Maharashtra Ltd (TTML) continues to report losses: Rs 169.08 crore loss for the quarter ended December 31, 2014, up from Rs 159.38 crore loss in the previous quarter and Rs 156.36 crore loss in the same quarter last year. Note this is the telco's 18th straight loss making quarter.

The net income from telecom services however grew to Rs 720.85 crore for the quarter, up from 682.42 crore in the previous quarter and Rs 662.26 crore the same quarter last year. The EBITDA was at Rs 156.28 crore for this quarter. Overall for the nine months ended Dec 31, 2014, the company reported a loss of Rs 451.36 crore, up from Rs 448.49 crore the same period last year.

The total income from overall operations was at 738.56 crore for the quarter, however the telco did not mention its total revenues and it had previously stopped providing any information on the contribution of VAS and data revenues to its total wireless revenues

<http://www.medianama.com/2015/02/223-tata-teleservices-maharashtra-q3-fy15-loss-at-rs-159-38-cr/>

Q4. Should the OTT players pay for use of the TSPs network over and above data charges paid by consumers? If yes, what pricing options can be adopted? Could such options include prices based on bandwidth consumption? Can prices be used as a means of product/service differentiation? Please comment with justifications

Internet platforms and services are innovations arising from available technologies and platforms. The Telecom Companies have had no role in this. Telecom Companies on the other hand, acquired licenses and developed networks based on a business plan factoring revenues from customers.

Charging from Internet Platforms and Service providers for having their content delivered to users in addition to data charges paid by user would amount to 'double dipping', since users already pay for Internet access.

We would like to point out that Internet Platforms and Services are available and it is in fact the *consumer who initiates traffic* to be able to access and use the Internet platforms and Services. This data being accessed is already paid for by the consumer, and they have a legitimate right to download and use the data as they deem fit.

The increased popularity of Internet Platforms and Services has also incentivized TSPs to invest in the development of their own Internet Platforms and Services. Introduction of pricing for Internet Platforms and Services -originated traffic opens up the possibility of **price-based discrimination**, and an opportunity to foreclose entry to other than the TSPs own Internet Platforms and Services, if they are seen to be competing with the TSPs.

Contrary to the proposition in the question that '**prices be used as a means of product/service differentiation**', we recommend that specific steps are required to prevent use of pricing as a form of barrier.

In India, the telecom service provider market is dominated by a few big players. This gives them market power to engage in monopolistic and predatory behavior in the absence of regulatory control.

As prevalent in India and globally, capacity based access charges (based on data consumption by consumers) fulfill best practice that ensure Net Neutrality:

- Internet Platforms and Services are not blocked granting users right to unrestricted access to legal content and service and make an informed choice
- Compensates network operators for their investments
- It gives no discretion to TSP to
 - Censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet
 - throttle/speed-up lawful internet traffic on the basis of content, applications, services or non-harmful devices
- Neutral between Internet Platforms and Services since the services are not directly charged
- Offers a level playing field for all Internet platforms and services including entrepreneurial start-ups so that they are not squeezed out by either TSPs or large/global Internet Platforms and Service providers through anti-competitive tie-ups or practices.
- Network operators do not double dip since only end users pay for their traffic.
- Clear and declared definition of acceptable technical practices by TSPs for management of network traffic in conformity with above principles

The capacity based access charges has the potential to make Internet Platforms and Services providers and network operators drive each other's business - additional traffic generated by Internet Platforms and Services translated into increase revenues from data usage and good quality access offered by TSPs increase outreach of Internet Platforms and Services.

The current problem as outlined by TRAI⁹ is arising from TSPs current revenue models which are dominated by voice that have low data intensity. However with time, as mobile penetration increases and Indians are digitally empowered, data traffic will drive revenues and growth and also be the primary driver for increased and better infrastructure. Therefore, over time revenue stream will require adjustments to the demand and consumption of data enabling a virtuous cycle of growth for both TSPs and Internet platforms and service providers.

⁹ Para 2.3.7 and 2.3.8

Q5. Do you agree that imbalances exist in the regulatory environment in the operation of OTT players? If so, what should be the framework to address these issues? How can the prevailing laws and regulations be applied to OTT players (who operate in the virtual world) and compliance enforced? What could be the impact on the economy? Please comment with justifications.

There's no need for further regulation or licensing of Internet Platforms and Services.

Contrary to common perception that no such provision exists for Internet Platforms and Services*, Code of Criminal Procedure and the Information Technology Act and its different rules pertaining to intermediaries and interception are applicable to Internet Platforms and Services. These different regulations allow the Indian government and law enforcement agencies to access the data stored by internet platforms when deemed necessary.

*More details in response to Q6, 7.

Economic impact of Internet is cross-sectoral, and 75 percent of the value added created by the Internet is in traditional industries¹⁰ As per the recent report in 2015 by the Boston Consulting Group and the IAMAI¹¹, Internet applications and services actually contributed 3.2% to the national GDP in 2013. It is therefore one of the largest sector of the Indian economy surpassing healthcare (2.5%). The Internet economy is expected to grow to over 4% of GDP by 2020, comparable to developed countries like US, Japan.

The growth projections are based on the current regulatory environment that is applicable to Internet platforms and services. Efforts to introduce additional compliance requirements will throttle this growth journey, and could impact the

¹⁰ McKinsey Global Institute - Essays in Digital Transformation, 2012

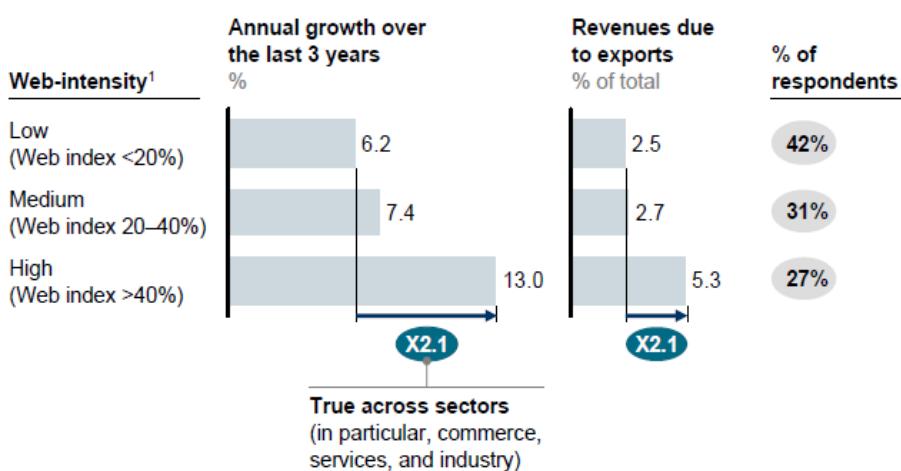
¹¹ <http://www.bcgindia.com/documents/file180687.pdf>

competitiveness of related sectors who leverage Internet platforms and services, given that adequate provisions exist in the current legal framework.

Internet platforms and service providers are Technology and innovation driven, opening up numerous opportunities for entrepreneurs, young educated Indians and also for other sectors through its wide ranging impact. For SMEs, the Internet brings accelerated growth and greater access to domestic and global markets. In this context it is important to note the following data on how SMEs using web technologies extensively are growing more quickly¹².

Small and medium-sized enterprises using Web technologies extensively are growing more quickly and exporting more widely

Growth and exports of SMEs analyzed by cluster of maturity of Internet
Analysis includes 12 countries and more than 4,800 SMEs



1 McKinsey Web index defined according to the number of technologies possessed by companies and the penetration of those technologies (i.e., the number of employees/ customers or suppliers having access to those technologies).

SOURCE: McKinsey SME Survey

¹² McKinsey Global Institute - Essays in Digital Transformation, 2012

Q6. How should the security concerns be addressed with regard to OTT players providing communication services? What security conditions such as maintaining data records, logs etc. need to be mandated for such OTT players? And, how can compliance with these conditions be ensured if the applications of such OTT players reside outside the country? Please comment with justifications.

Government has a sovereign right to intercept communications for the purpose of maintenance of law and order and national security. Therefore, TSPs are obligated to grant law enforcement agencies access to their networks and services.

It is a misconception that no regulations exist for Internet Platforms and Services. Code of Criminal Procedure and the Information Technology Act and its different rules pertaining to intermediaries and interception are applicable to Internet Platforms and Services. These different regulations allow the Indian government and law enforcement agencies to access the data stored by internet platforms when deemed necessary.

E.g. Rule 3(7) of the Information Technology (Intermediaries Guidelines), 2011 lays down a positive obligation on part of intermediaries like Internet Platforms and Services to comply with all lawful orders and render assistance to government agencies that are lawfully authorized.

S. 69-B of the Information Technology Act confers power on the Central Government to monitor and collect traffic data and obligates the intermediaries to provide all requisite technical assistance. Non-compliance is punishable with fine and imprisonment of up to 3 years.

These regulations are evolving as is the security concerns, but they should remain technology agnostic in their approach.

As per the Parliamentary Standing Committee report¹³ on CYBER CRIME, CYBER SECURITY AND RIGHT TO PRIVACY submitted in Feb 2014

1.89 - On being enquired about the details of all the Acts/legislations/regulatory framework that are currently in vogue to deal with cyber-crime and cyber-attacks, the Department, in their written reply, stated that Sections 43A, 66 A, 67, 69 B, 70 (1), 70 (4), 70-B, 72 A, 79 and 84 A, in the Information Technology Act, 2000 (IT Act) deal with cyber-crime and cyber-attacks.

1.90 Asked as to how far the various sections of IT Act, 2000 as amended in 2008 have been successful in tackling the issues of cyber-crime/cyber security, the Department in their written reply, stated that the various provisions in the IT Act that make the actions effective.

¹³ http://164.100.47.134/lsscommittee/Information%20Technology/15_Information_Technology_52.pdf

- *Breach of privacy – Section 72 A provides for adequate punishment for disclosure of information in breach of lawful contract.*
- *Liability of intermediaries – Section 79 covers instances of liabilities of intermediaries and requirement for due diligence on the part of intermediaries.*
- *Modes of encryption – Section 84 A allows for prescription of suitable modes or methods of encryption for promotion of e-commerce and egovernance in the country.*

1.91 *On the issue of adequacy of the existing legal framework for dealing with the cyber-crimes, the Department, in their written reply, stated that IT Act, 2000 addresses all aspects related to cyber-crimes in a comprehensive manner with adequate deterrent provisions. In addition, the National Cyber Security Policy-2013 has provisions to enable development of a dynamic legal framework and its periodic review to address the cyber security challenges arising out of technological developments in cyber space.*

1.92 *Asked as to whether there is a need for amending Information Technology Act, 2008 in the emerging scenario, the Department in their written reply stated as under:- "At present, the IT Act 2000 addresses all aspects related to cyber space in a comprehensive manner with adequate compliance and deterrent provisions. In addition, the National Cyber Security Policy 2013 has provisions to enable development of a dynamic legal framework and its periodic review to address the cyber security challenges arising out of technological developments in cyber space."*

1.93 *Even with respect to the National Cyber Security Policy, the Department stated that at present no need is felt to amend the Information Technology Act to address National Cyber Security Policy. However, they also stated that since it is a dynamic area, as and when needed, IT Act will be amended.*

Therefore is no need for additional Act and regulations for security for the purpose of Internet Platforms and Services only.

Further in terms of traceability and transparency of data, the nature of Internet ensures, a lot of the usage data is collected, tracked and mined by Internet Platforms and Services / Internet players that can be made available in response to requests from authorized Government agencies.

Q.7 How should the OTT players offering app services ensure security, safety and privacy of the consumer? How should they ensure protection of consumer interest?

Please comment with justifications

As mentioned above, Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information), 2011 requires every service provider to outline a detailed privacy policy that is applicable to all users, that articulates nature of data collected, type of data that is collected and for what purpose including retention and further use. Additionally, India has consumer protection laws, financial regulations, competition law that ensures different aspects of user interest is protected.

For example, as per section 43A of IT (Amendment) Act, 2008, only "Sensitive Personal Data or Information (SPDI)" is to be protected using "Reasonable Security Practices" by "Body Corporates".

There also exist a patchwork of legislations governing privacy aspects in India. Much of the work related to development of privacy framework has already been accomplished by Justice AP Shah Committee. Similarly, the government is working on an encryption policy under section 84A of the IT (Amendment) Act, 2008 to "for secure use of the electronic medium and for promotion of e-governance and e-commerce." Increasing the encryption standards in the country will enhance security, safety and privacy of consumers.

Such efforts need to be expedited, but does not give a basis for TRAI to propose new security and privacy regulations.

Currently, Internet Platforms and Services have a privacy policy and systems in place to ensure safety, security and privacy of the user, and this is made known to the use through the terms and conditions. Internet platforms and services, have a global outreach. For any Internet Platforms and Services to even survive and compete, they have to abide by global standards and expectations. There is a strong user led review mechanism that help users rate and choose the Internet Platforms and Services. Further content rating systems are relied on by stores such as Apple, Google and Microsoft, which further ensure best practices and minimum standards where users champion apps in a democratic fashion.

There is a continuous effort on the part of start-ups and businesses to plug holes, and develop better protection mechanisms like App stores for kids, parental control, anti-virus / phishing tools that contribute towards enhancing safety and privacy of users on the internet.

Therefore, security requirements should be brought in only as needed for ensuring quality and reliability and for lawful demands of the security agency. It is the duty of the Government to ensure, that any stipulations made, should be enforceable for all players, including those operating outside the territory of India. Else it will skew the domestic innovation ecosystem and provide reasons for companies to migrate outside India.

Q8. In what manner can the proposals for a regulatory framework for OTTs in India draw from those of ETNO, referred to in para 4.23 or the best practices summarised in para 4.29? And, what practices should be proscribed by regulatory fiat? Please comment with justifications.

Learning from global experience and best practices is essential as globally Government and Regulators grapple with new emerging technologies. However, we must recognize that basic principles of Net Neutrality are maintained, as legislations and proposals are evaluated.

Preliminary analysis of the ETNO proposal indicate suggestions that could lead to

- Double dipping by Telecom Companies for a service - charging from both the user and the Internet Platforms and Services_provider for access to Internet.
- Speeding up and throttling - Proposal to agree on end to end QoS for a premium could lead to creating fast lanes and throttling Internet Platforms and Services, linked to their agreement and fees paid.

We have emphasized that the above principles are unacceptable and dangerous as they violate the essence of Net Neutrality. Therefore, TRAI should not emulate the proposals put forth by ETNO.

Q9. What are your views on net-neutrality in the Indian context? How should the various principles discussed in para 5.47 be dealt with? Please comment with justifications.

Net Neutrality is a universal concept where TSPs, as access providers, have no power to select services, applications, content that a consumer accesses. The consumers retain their Right to select, and make informed decision on how to use their Internet access offered by the TSPs.

Net Neutrality therefore should ensure unrestrained access to content and services once the user has subscribed to data services, subject to National regulations related to security and privacy.

Therefore, any approach towards net neutrality will govern the relationship between TSPs, ISP and the users. We believe that net neutrality in any context should therefore stand for

1. User to have the unfettered right of making an informed choice in deciding content / services to access
2. No discretion to TSPs to censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet
3. No right of TSPs to throttle lawful internet traffic on the basis of content, applications, services or non-harmful devices. In fact, opening of the content of transmissions other than when required under laid down legal processes, is illegal.
4. No right of TSPs to speed-up / favour lawful internet traffic over other lawful traffic in exchange for consideration of any kind.
5. Critical that there be a level playing field for all Internet platforms and services including particularly entrepreneurial start-ups so that they are not squeezed out by either TSPs or large/global Internet Platforms and Service providers through anti-competitive tie-ups or practices
6. Prioritization of Emergency or any other services as prescribed by the regulator accompanied by public declaration and without price discrimination
7. Clear and declared definition of acceptable technical practices by TSPs for management of network traffic in conformity with above principles
8. No double dipping by Telecom Service Providers. Charges would be levied only from end customers based on data consumption and not from Internet Platforms and Applications

9. Security restrictions as required for ensuring reliable services and lawful demand of security agencies.
-

We believe that the conditions of the Unified license of the DoT grants Telecom operators a license to offer Internet services that are already governed by the basic principle of net neutrality

'...the subscriber shall have unrestricted access to all the content available on Internet except for such content which is restricted by the Licenser/designated authority under Law.'¹⁴

The Indian scenario wrt Internet access is indeed different from other developed nations. While USA and most European nations offer access through both - fixed line telephone and mobile, India has leapt to mobile, with fixed line infrastructure lagging behind.

Wireless spectrum, an invisible infrastructure is a finite resource, and they do not have the same data capacity as the wired networks¹⁵ Therefore broadband wireless connections as alternatives to fixed lines to meet the majority of broadband demands is likely to pose technical challenges as India embarks on its digital journey including the GoI's flagship Digital India program. The Government in its priorities has therefore identified the NOFN programs for expediting implementation.

We strongly recommend that from a legislation point of view, there should not be any preference for one network technology over another, since it may lead to market distortions¹⁶.

While recognizing the differences in the Indian context, we believe and recommend that basic principles of network neutrality as listed above should be ensured.

This is essential for a sustainable and healthy growth of a knowledge based economy, where there is a level playing field for new emerging companies, as they develop innovation led technology driven products and services. Anti-Net neutrality practices are thus fundamentally anti-competitive and harm consumers as well as economic growth. They discourage innovation and result in rent-seeking behaviors from established players

¹⁴ http://dot.gov.in/sites/default/files/Unified%20Licence_0.pdf; Chapter IX, p 64

¹⁵ <http://www.bmi-t.co.za/?q=content/spectrum-not-enough>

¹⁶ <http://mobileopportunity.blogspot.in/2011/06/how-to-shape-mobile-data-market.html>

Q10. What forms of discrimination or traffic management practices are reasonable and consistent with a pragmatic approach? What should or can be permitted? Please comment with justifications

Principle of Net neutrality does not prevent traffic management practices that are consistent and have an enforceable framework to make sure such practices are reasonable, i.e. situations under which they are warranted and mechanism adopted e.g.

- **Unforeseeable transitory congestion - maybe due to equipment failure or other reasons, may require traffic optimization measures. However, operators must be able to prove that such congestion of its network was not foreseeable and that it took necessary steps to correct it**
 - **Security threat from a sudden attack, malicious actions aiming at altering the global operation of the network, whether intentional or accidental.**
 - **Prioritization for stipulated emergency services only, that have been declared publicly in the larger public interest, ensuring no discrimination among Internet Platform and service providers of the same category**
-

Net neutrality in any context should stand for

1. Unfettered user right of making an informed choice in deciding legal content / services to access
2. No discretion to TSPs to censor or block access to any legal content, applications, services, or non-harmful devices or determine how users use internet
3. No right of TSPs to throttle lawful internet traffic on the basis of content, applications, services or non-harmful devices. In fact, opening of the content of transmissions other than when required under laid down legal processes, is illegal.
4. No right of TSPs to speed-up / favour lawful internet traffic over other lawful traffic in exchange for consideration of any kind.
5. Critical that there be a level playing field for all Internet platforms and services including particularly entrepreneurial start-ups so that they are not squeezed

out by either TSPs or large/global Internet Platforms and Service providers through anti-competitive tie-ups or practices

6. Prioritization of Emergency or any other services as prescribed by the regulator accompanied by public declaration and without price discrimination
7. Clear and declared definition of acceptable technical practices by TSPs for management of network traffic in conformity with above principles
8. No double dipping by Telecom Service Providers- Charges levied only on end customers based on data consumption and not on Internet Platforms and Applications
9. Security restrictions as required for ensuring reliable services and lawful demand of security agencies.

Therefore, beyond the needs of optimizing the network and addressing traffic hazards through temporary measures, either manually or automatically, no discrimination should be permitted. They should not directly and indirectly bring in any discrimination – price based/ non –price based.

Q11. Should the TSPs be mandated to publish various traffic management techniques used for different OTT applications? Is this a sufficient condition to ensure transparency and a fair regulatory regime?

As mentioned above, Traffic management practices that are reasonable and consistent should be implemented in a transparent manner.

This will require audits and scrutiny as well as safeguards and penalties to prevent misuse. Therefore full disclosure to the regulator would be essential. Making available traffic management policies and sharing information on how telecom services are affected by traffic management with the users is important and necessary

Q12. How should the conducive and balanced environment be created such that TSPs are able to invest in network infrastructure and CAPs are able to innovate and grow? Who should bear the network up-gradation costs? Please comment with justifications.

As per financial analyst Deepak Shenoy¹⁷, Telecom companies should be seen as utilities and their Return of Equity should be a measure of their performance rather than Return on Capital Employed. For leading Telecom companies, RoE ~ 20% is higher than the 15% RoE that utilities are expected to have. Globally, telecom companies may have lower ROCE, but have a much higher RoE. Indian Telecom Companies are growing and have healthy balance sheets from their Indian business.

Bharti Airtel Limited Third Quarter and Year Ended December 31, 2014 Earnings Call¹⁸

In response to question "....And how far given that your average data consumption is 600 MB plus which means your 3G would be roughly above 1.2 GB so how far you would be from data cannibalizing voice and any guidance on the CapEx for next year?"

Mr. Gopal Vithal Joint Managing Director and Chief Executive Officer - India - Bharti Airtel Limited responded

"...Finally the last question is on the cannibalization, there is still no evidence that suggests that there is cannibalization. Yes we have seen cannibalization coming on our SMS, the cannibalization that we see right at the top end, if at all there is some, is really not material so I would not like to say that there is cannibalization"

The Government and the Telecom Industry have to work together to create a balanced environment for TSPs to invest in network infrastructure rather than targeting the fledgling Internet based product and service providers.

¹⁷ <http://capitalmind.in/2015/04/telecom-companies-are-not-losing-money-to-data-services-the-net-neutrality-debate/>

¹⁸ <http://www.airtel.in/wps/wcm/connect/6fee748a-91e1-48aa-84a4-320aef0db668/Transcript+of+Bharti+Airtel+Limited+Third+Quarter+Ended+December+31+2014+Earnings+Conference+Call.pdf?MOD=AJPERES>

A lot needs to be done towards improving infrastructure and stalled or slow moving projects like NOFN need to be expedited. Proposals that maybe considered are as follows:

- Sharing of Passive Infrastructure: Such as conduits and towers, policy should allow providers to collaborate and share initial costs of deployment with others who wish to utilize it
- Government incentives to private operators for providing last-mile services from the NOFN, especially in rural and remote areas.

Network operators should receive fair compensation for the cost of investing in and maintaining their infrastructure. This fair compensation will have a basis in the actual cost for maintaining and operating the infrastructure. As explained above in responses to Q 3 and 4, over time as data drives demand for more telecom infrastructure migration to a revenue stream calibrated to the demand/consumption of data is a way forward.

In such a scenario, Internet Platforms and Applications spur demand for data that in turn generates additional revenues for TSPs leading to a synergistic eco-system.

A sustainable pricing plan in this context should abide by the following:

- **Data plans offered by telecom companies to the consumer has to be neutral between competing Internet Platforms and Services**
 - **Pricing Internet Platforms and Services for access to their Internet Platforms and Services should not be allowed**
 - **Pricing should not be used as an entry barrier/ enabler against competing Internet Platforms and Services, by ISPs that provide substitute services.**
 - **Network operators should not be able to “double dip” – that is, collect payments for the same traffic from content provider and consumer.**
-

Q13. Should TSPs be allowed to implement non-price based discrimination of services? If so, under what circumstances are such practices acceptable? What restrictions, if any, need to be placed so that such measures are not abused? What measures should be adopted to ensure transparency to consumers? Please comment with justifications.

In principle, barring steps taken for traffic and network optimization and management under special circumstances (as elaborated in response to Q10) there should be no discrimination either based on price or otherwise.

Need to prioritise packets arises due network optimization and is also linked to nature of services that is decided by the nature of services and already built into the protocols of the services, and is not left to the TSPs.

We recognize the importance of such purely technical prioritization. Based on the universal concept of net neutrality as elaborated in our **response to Q. 4, 8, 9 and 12**, technical measures for network optimization maybe considered.

However, these practices should not amount to non-price based discrimination and user right to make an informed choice on unfettered access to legal content/services / apps is upheld.

Q14. Is there a justification for allowing differential pricing for data access and OTT communication services? If so, what changes need to be brought about in the present tariff and regulatory framework for telecommunication services in the country? Please comment with justifications.

There is no justification for allowing differential pricing for data access and apps based communications services.

Any proposal to introduce differential pricing for data access for traffic originating from Internet Platforms and Services_to protect 'traditional revenue streams' of TSPs is not in the interest of the consumer. The TSPs offer access to the Network which is being duly compensated by the end user through the data plans.

There is no doubt that Internet Platforms and Services signify a market opportunity that most TSPs are tapping into today through their own apps and Internet Platforms and Services. Therefore, discrimination models based on where or who originates traffic could lead to unfair practices. It would most certainly throttle the start-up and innovation ecosystem that the Web has enabled. It could discourage users to adopt more efficient Internet Platforms and Services.

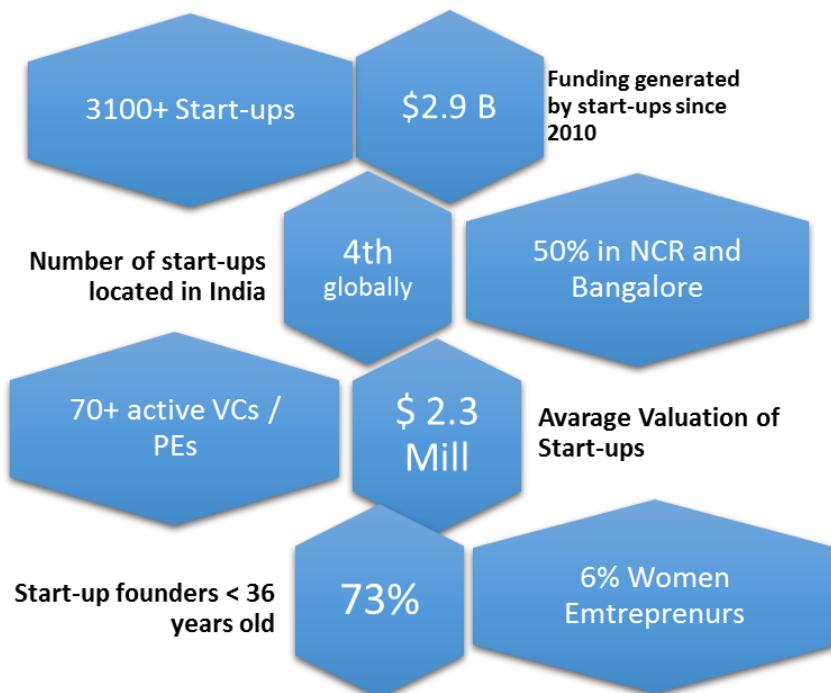
The concept of “innovation without a permit”, where new entrants compete fairly with the incumbent giants is the very essence and ethos of the Internet and evolving business models therein.

As already brought there is no justification for differential pricing.

Beyond the well-known examples of Flipkart, Snapdeal, Naukri in India there are thousands of smaller companies globally. India today has over 3000 tech start-ups and the country is on the path of innovating and developing products and services for India and the world. The start-ups and small companies form an important part of the value chain.

Any discriminatory practices as proposed will have a detrimental impact on the growth and potential of such companies and should therefore not be considered

The following exhibit gives a glimpse of the vibrant start-up ecosystem in India.



Q15. Should OTT communication service players be treated as Bulk User of Telecom Services (BuTS)? How should the framework be structured to prevent any discrimination and protect stakeholder interest? Please comment with justification.

It is important to repeat and emphasize that these Internet platforms and services (OTT) have increased the utility of the Internet. The apps created have made Internet more useful, and opened up avenues for not just service providers, but increased convenience, transparency and enabled newer services for consumers.

We would like to point out that Internet Platforms and Services are available and it is in fact the consumer who initiates traffic to be able to access and use the Internet platforms and Services. This data being accessed is already paid for by the consumer, and they have a legitimate right to download and use the data as they deem fit.

Therefore there is no basis to introduce an additional relationship with TSPs that will need formalization. It is also not evident how this formal status will add value to the consumer.

Apps should be allowed to maintain their current model of a direct relationship with their user.

Learning from the past, the of Mobile VAS, any new frameworks should be completely avoided as the Internet Platforms and Services promise to enhance user experience on the Internet and offer most cost effective and better service models.

Q16. What framework should be adopted to encourage India specific OTT apps? Please comment with justifications.

There are several initiatives being developed across Government Departments that encourage Internet driven products and services, both for domestic and global markets. Enabling environment that offer incentives for setting up and operating from India, world class infrastructure and push for technology adoption are key.

NASSCOM is working with several Departments in the Government on this, and we believe TRAI has a critical role as a regulator to ensure no artificial and market distorting regulations are introduced in India by ensuring Net remains Neutral, open, preventing any price or non-price based discrimination.

A level playing field must be ensured to give the new and emerging companies a fair opportunity to compete and succeed. A lot of innovation is happening in the country today. As per the recent NASSCOM report¹⁹, Indian start-ups with their unique solutions are witnessing increased traction in global whitespace opportunities such as Internet of Things, augmented reality, smart hardware, BI and many more.

With technology spreading its wings into different domains, 'Domain+Tech' solutions are taking over other trends. The emerging niche technology solutions are primarily focused on Ad-tech, Edu-tech, Health-tech, Agri-tech and many more.

There are several trends that signal increasing maturity in the ecosystem, - Multiple and accessible platform like VC/PE, angel investors, incubators, financial institutes and even banks, are the driving force for the same. In fact, during 2010-2014 timeframe close to USD 3 billion is expected to be invested in Indian start-ups.

Q17. If the OTT communication service players are to be licensed, should they be categorised as ASP or CSP? If so, what should be the framework? Please comment with justifications.

There is absolutely no need for introducing licensing for Internet Platforms and Services. Our response to Q 2 maybe referred to in this context. Further, differentiating between ASP and CSPs is artificial and extremely difficult as newer and better Internet platforms and services emerge.

There is absolutely no need from a logical point of view and no practicability from a technology point of view of bringing in the type of regulations/ controls on Internet platforms and Applications* and limit the scope and potential of the eco-system.

¹⁹ Tech Start-ups in India: A Bright Future, NASSCOM-Zinnov report, 2014.

* referred to as OTT services in the TRAI paper

Q18. Is there a need to regulate subscription charges for OTT communication services? Please comment with justifications.

In our response to Q 4, 13, 14.we have already established that there is no need to impose any subscription charges, or discriminatory practices like pricing etc.

Therefore need for regulations do not arise.

Q19. What steps should be taken by the Government for regulation of non-communication OTT players? Please comment with justifications.

Internet content and services companies are regulated by law. Our responses to Q 5, 6 and 7 detail the applicable laws and regulations and the responsibilities of both communication and non-communication Internet Platforms and Services providers

In light of the above, we believe that bringing in more regulations would be counterproductive and will impact the development and deployment of internet enabled innovative products and services.

Innovation and licensing will kill it.

Q20. Are there any other issues that have a bearing on the subject discussed?

The portfolio and capabilities of Indian IT industry has expanded, and India is perhaps the only country other than the USA, with the capability of providing end to end services in IT/BPM, Software Products and Engineering, Research & Development and now Internet and e-Commerce.

The start-up ecosystem is often described as young, innovative, aspirant and futuristic. India, home to a new breed of young start-ups, has evolved to become the fourth largest base of technology start-ups in the world. While start-ups are betting high on the ecosystem, there is constant need to nurture this ecosystem. Demand for supportive government policies (ease of doing business, tax incentives, availability of risk capital etc.) continue to exist.

We would like to draw the attention to the Gaming Industry in India today which is getting impacted by the current practices of the ISP and absence of clear principles and guidelines on Net Neutrality would further deteriorate their operating environment. ISPs can impact gamers in ways that aren't obvious to the non-gaming community.

- Data caps on per month basis today have no relation to network congestion or real time traffic conditions. This adversely impact larger-sized game downloads offered through the new consoles' digital stores. While ISPs clarify that the cap impact the highest users, there are no details available on how data caps are set.
- Latency can decide a winner or a loser in critical action adventure game. As the next generation of consoles explore cloud gaming through online game streaming, there is a need to reduce latency, and encourage ISPs to improve their services. Net Neutrality is critical in such cases, to avoid ISPs from creating prohibitive cost structures for low latency access.

Therefore, there is a need to introduce transparency in the system to minimize damage to gaming community. (Suggestion aligned to responses to Q10 and Q11)

Finally, we welcome the consultative approach adopted by TRAI and recommend that for a nurturing environment in which the benefits of the Internet can be better understood and the Internet ecosystem can grow, inputs from all stakeholders and a fact-based approach is essential for the development of the Internet ecosystem within the country, as well as internationally.

2.2.4 ASSOCHAM

ASSOCHAM Suggestions

TRAI Consultation Paper on Differential Pricing for Data Services

Executive Summary

The Indian consumer is highly price sensitive. The availability of affordable and innovative data services will be key to driving the take up and growth of data and help deliver on the Digital India vision.

Competition and choice is now also possible with respect to the content that is available on the Internet and consumers can equally benefit from innovative and customized data offerings that can be offered by its service providers either independently or through various innovative new services and business models based on mutual commercial arrangements with the content providers.

Such arrangements will be a win-win for the customers, the telecom operators and content/app developers as it will help defray the costs of infrastructure build-out, ensure affordable services and high quality experience to end users, which in turn will fuel development and growth of the market.

As long as such arrangements are not anti-competitive and transparency is ensured for informed consumer choice, they will encourage consumers to explore and experience the internet as much as possible and promote Internet growth.

The competitive intensity in the telecom industry in India is one of the highest in the world and has led to offering of services to the customers at very reasonable tariffs. The increasing adoption of data services is now encouraging the operators to compete with each other and innovate with their data product offerings, as per their consumers' usage pattern to create more value for their money for them.

Recognising the existence of adequate competition in the Indian Telecom industry, TRAI, initiated its 33rd amendment to telecommunication Tariff Order, dated 8th December, 2004, thus,

“...Evidence on trends in retail tariff published by the Authority suggests that there is intense competition in the mobile service segment. Further, with the unified access regime already in place and with unified licensing regime on the anvil and the Authority having borne the retail tariff in general, the concerns relating to inadequate competition have substantially abated....”

We believe that given the intense competition in the market and the presence of strong regulatory and legal safeguards in the form of the Authority and the Competition Commission of India, there should not be any concerns around discriminatory or anti-competitive behaviour.

The faith that TRAI has reposed in the Indian Telecom Industry by allowing differential pricing for telecom services has been proven to be in the best interest of

the consumers as the industry has lived up to its responsibility of pricing its services as per the principles of being reasonable, transparent, non-discriminatory, non-ambiguous, not anti-competition, not predatory and not misleading, defined by TRAI. Persevering with its earlier decision, TRAI should continue permitting differential pricing in data services and not take the regressive step of regulating the tariff for the data services.

We therefore submit that differential data pricing should be permitted and the existing regime of forbearance should continue. The regulatory principles of non-discrimination and transparency should be equally applicable to voice, data and content.

Following are the key points to be considered:

- A. Data tariffs to be kept under forbearance permitting the TSPs to price their data services as per the market dynamics.
- B. The Authority to allow the offering of differential pricing within the scope of the existing regulations itself.
- C. Imposition of any further regulations on data services will only distort the market and could be to the detriment of the end users.
- D. It is imperative that TRAI takes a balanced approach towards differential pricing regime and ensures that the TSPs' innovations for serving the multifarious needs of consumers are not ignored.
- E. At no point is a TSP in a position to impose its will on the consumer and hence, the contention that the TSPs will indulge in selective dis-incentivized access is unfounded.
- F. Pay for use principle actually leads to more value for money for the consumer, whereas in the absence of discounted rates all subscribers pay at standard rate despite accessing only a limited set of websites / applications.
- G. 'Differential Pricing' cannot be construed as 'Gate Keeping'; these two are totally different and the apprehension about TSPs employing differential pricing as a 'gatekeeping tool' is incorrect and unfounded and the same should not be considered even as 'Theoretical'.
- H. TRAI is empowered to examine the reported tariffs and take suitable action if the tariffs are against the principles of non-discrimination, transparency, predatory, vertical squeeze etc.
- I. TRAI therefore may persevere with its existing policy of forbearance which affords the flexibility of introducing innovative methods of aiding proliferation of data services.
- J. There are already available mechanisms in the existing regulations of the Authority by which the principles of transparency, non-discrimination etc. can be

taken care of. Imposing further regulations will not only hamper the growth of the data services but also put the subscribers in loss. Hence, we request the Authority to allow the TSPs to continue with their data tariff offerings based on the market dynamics and innovations.

A small subset of members believe that some stakeholders may get help from differential pricing, however given the regulatory set-up of Government, DOT, CCI and the hyper-competition, will ensure checks and balances on any anti-competitive behaviour.

Questions

- 1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?**

Response:

Yes. The TSPs should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.

- (a) **Operators should be able to offer consumers the services which best meet their needs, including the services for selfcare and updates etc.** Allowing differentiated prices will be in consumer interest and is commonplace in the wider economy.
- (b) **Differentiated pricing also has societal benefits, ensuring that communications and internet services are accessible, affordable and available.** Differentiated pricing for data expands participation in online content and applications to the under-served, while also increasing mobile wireless penetration. Increasing internet access has been shown to increase productivity, support enterprise and innovation, increase employment and economic growth.
- (c) **Operators have the incentive to maintain a diverse landscape of content and offers and with transparency.**
- (d) **Differential pricing will also benefit smaller content providers and encourage innovation** as it gives them the opportunity to compete and there is no harm to them. There are many examples of challengers in the market, such as MetroPCS, Sprint and T-Mobile in the US, all of which have used differential pricing in order to compete with larger competitors.

2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response:

Existing regulatory framework along with the reporting requirement of tariffs is considered to be adequate for ensuring adherence to the principles of non-discrimination, transparency, affordable internet access, competition and innovation in the market.

The existing regulatory principles enunciated for various voice components, should govern data and content as well. The principles of tariff forbearance and flexibility for operators are the basic principle of a tariff policy and there is no necessity for a change in the regulation.

Differential prices are not anti-competitive and would ensure all the principles of non-discrimination, affordability and innovativeness along with encouraging investments.

3. Are there alternative methods/technologies/business models, other than differentiated data tariff plans, available to achieve the objective of providing free internet access to consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.
4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response to Q3 & Q4

The local ecosystem including hosted services that allow the lower local cost of delivery to consumers should be encouraged.

Also, it is submitted that there are already available mechanisms in the existing regulations of the Authority by which the principles of transparency, non-discrimination etc. can be taken care of.

Imposing further regulations will not only hamper the growth of the data services but also put the subscribers in loss. Hence, we request the Authority to allow the

TSPs to continue with their data tariff offerings based on the market dynamics and innovations.

2.2.5 Broadband India Forum

BIF RESPONSE TO TRAI CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA TARIFF

Q1. Should TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

BIF Response:

- We believe that the framework of the consultation paper is limited to differential charging for Data Services (data content) and exclude VoIP/M2M etc. and hence our comments are limited to this aspect only.
- We firmly believe that telecom companies should be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.
- Indian telecom companies operate in one of the most competitive markets in the world. The intense competition among telecom companies with low switching cost for MNP has ensured that consumers are able to enjoy the most affordable voice and data tariffs in the world.
- In a market economy wherein telecom companies are buying resources from the government through auction, it would be inappropriate if telecom operators are not given enough freedom to operate in the market and to fix their tariffs for internet and broadband services. Due to the tariff forbearance regime, telecom companies are able to bring many tariff innovations in the market, which has only widened the customer base and increased the affordability of telecom services. Some of such tariff innovations are life-time validity plan, on-net and off-net plans, family and friends plans, toll free voice service plans, special tariff vouchers, corporate plans, one paisa per-second plan, etc.). Similarly, in the data segment, innovations such as different Special Tariff Vouchers (STVs)/Bonus packs for a specific platform such as social networking apps and music apps have only enhanced the delight of the customers and helped the Industry to grow the internet customer base. This shows that market is working efficiently and no intervention or changes are required in the current tariff regime of forbearance.
- We note that globally, telecom operators are offering various packs with differential tariffs. TSPs exclude or include any particular feature/service within a pack related to one platform.
- Price differentiation facilitates access to at least part of the internet to those segments that are currently unconnected or poorly connected. It is a common business practice that has allowed many industries to grow by reducing the consumer surplus. Today, many E-commerce companies are offering exclusive products/services with tie-ups with other service providers or the price of one particular product is found to be different on different e-commerce platforms. These prices vary from one e-commerce platform to another. However, such exclusivity or the differential price for same product/service has not been found anti-competitive or discriminatory between one e-commerce Company to another.
- As stated above, since the inception of the data revolution, TRAI has permitted free play of market forces to determine the data tariffs. However, it has regularly kept an eye on the market to ensure that the tariffs are reasonable, transparent, non-discriminatory and

are not anti-competitive. The Telecom Service Providers (TSPs) have been given the flexibility to determine the core principles of their tariff framework and decide the various tariff components for different service areas of their operation, which are in turn based on input costs, competition, commercial considerations & individual business cases, subject to transparency and prevention of discriminatory tariffs. We support the continuity of such a regime.

- The Authority itself has very rightly noted that “The criteria for determining a valid classification for the purpose of differential tariff, has undergone change from time to time depending upon the sector’s growth, technological advancement and the emerging and changing regulatory concerns, which the Authority needed to address. Thus, for example, differential tariff for ‘on-net’ terminated calls was viewed as discriminatory tariff in the initial stages of tariff regulations. However, as the competition in the sector increased, such differential pricing was permitted, treating ‘on-network terminated calls’ as a distinct and valid class for price differentiation.”
- Therefore, we request the Hon’ble Authority that in view of the above, TSPs should be allowed **to have differential pricing for data usage for accessing different websites, applications or platforms** subject to adherence to the existing regulatory principles framed by TRAI.

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that principles of non-discrimination, transparency, affordable Internet access, competition & market entry and innovation are addressed

BIF Response:

While permitting differential pricing, the Regulator (TRAI) must keep in mind that ensuring wider access to the Internet and the manner in which this wider access is allowed, it does not violate the fundamental regulatory principles of non-discrimination and transparency and also should not create any entry barriers for any stakeholder. Therefore, we support the principle of FRAND(Fair, Reasonable and Non-Discriminatory) and TRAI may test the business practices of TSPs against FRAND principles.

The current regulatory regime of forbearance of data tariffs provides enough room to ensure that the tariffs are reasonable, transparent, non-discriminatory and are not anti-competitive. The Telecom Service Providers (TSPs) are required to file tariff plans with the regulator within 7 days of launching the plan. While TSPs have been given the flexibility to determine the tariffs, the regulator has the right to intervene in case principles of transparency and non-discrimination are not followed. We support examination of tariff plans on the ex - post basis by TRAI on a case by case basis after giving reasonable opportunity to the operators of being able to justify their position.

Q3: Are there Alternative Methods, Technologies, Business Models, other than differentiated tariff plans available to achieve objective of free Internet access to the consumers. If yes, please suggest/describe these methods, technologies or business models.

Also describe potential benefits & disadvantages associated with such methods/technologies or business models.

BIF Response:

We believe that any regulatory regime should promote all types of business models to support the growth of internet eco-system rather than allowing or disallowing any particular business model. TRAI may review such business models from time to time to address any concern related to fair competition, level playing field and consumer interest. As stated earlier, the current regulatory regime of forbearance of data tariffs provides enough room to ensure that the tariffs are reasonable, transparent, non-discriminatory and are not anti-competitive.

Q4: Is there any other issue that should be considered in the present consultation on differential pricing for data services

BIF Response:

1. India today is in the nascent stage of Broadband or Internet development with India ranking the lowest in the Internet adoption rate as compared to other BRIC nations. Further, as per the State of the Broadband Report - 2014 by Broadband Commission, ITU, India is ranked 142nd in terms of broadband penetration, way below some of its neighboring countries like even Bhutan and Sri Lanka. India needs to drastically increase its broadband penetration and that too rapidly.
2. One of the ways of "increasing the base of the pyramid" is to provide affordable Internet access to those who are unconnected or poorly connected. -
3. To provide internet access to a wider audience, differential tariff must be permitted (as stated in our response to the above questions) which allows the digital have-nots and the rural poor to have Internet access (partial) either free of cost or at highly discounted rates. This shall enable an increase in the overall number of data users in near future.
4. Exposure to some Internet content/websites/applications and services is a gateway to increased data consumption. It is better than blocking Internet usage completely.
5. Differential Tariff Regime can be enhanced using public policy and regulatory mechanisms based on FRAND principle so that the core principles are not violated viz.
 - a. Non-discrimination
 - b. Affordability
 - c. Transparency
 - d. Non-exclusivity
 - e. Local Content
 - f. Competition & Innovation

CONCLUSION:

BIF believes that differential pricing for data services should be recognized as an essential element in meeting the needs of vastly different consumer sections/groups, for provision of Basic Internet access in a completely non-discriminatory and transparent manner.

2.2.6 IAMAI

IAMAI Submission on the TRAI Consultation Paper on ‘Differential Pricing for Data Services’



December 2015

I. Introduction

At the outset we would like to mention that the Consultation Paper (“CP”) is based on a very positive note – the need to connect nearly one billion Indians who are not connected today. To address this important need, the Authority has considered forfeiting its policy of price forbearance. The paper also makes it clear that its intervention on pricing is based on certain infallible principles and finally, the paper clearly articulates specific situations of “differential pricing” that are up for consideration. Important from IAMAI’s perspective is the fact that the CP clearly identifies the principles that forms the basis of Authority’s intervention in pricing. These principles are laid down as *non discriminatory, transparency, non anti-competitive, non predatory, non ambiguous and not misleading*.

The CP also clearly identifies the models of pricing that it seeks to intervene in the context of providing universal access to Internet. These models are:

- a) *When the service provider selects the content, which is offered free or bundled together at reduced rates.*
- b) *In another form, one content provider creates a platform where other content providers can apply, and be selected. The platform creator then partners with service provider(s) to provide free internet access to participating content providers, for the subscribers of those service providers.*
- c) *Charge differently for certain types of internet apps over others [On-Network terminated calls]*

While TRAI’s vision of universal connectivity is laudable, we have serious issues with the models that are proposed by TRAI to do so. Foremost is our contention that the models raised by the Authority do not pass the muster of its own principles of price intervention. Here is how:

Table 1: Matrix showing how differential pricing violates the principles of TRAI’s Pricing Regulation

Principles	Model A	Model B	Model C
Non discriminatory	TSPs get the leeway to disincentivize access to other websites/applications/platforms by either putting higher tariffs or through illicit network management.	Those who want to access non-participating content will be charged more than those who want to access participating content. – This violates the non discriminatory principle.	The very idea of differentiating the internet on the basis of anything will break its inherent neutrality. Such practice will violate the principle of non-discriminatory pricing and will prompt the beginning of such fragmentation.
Transparency	Transparency in pricing is threatened if the service providers become the de facto gatekeepers of the internet. This leads to pricing content differently to advantage certain content providers	There has been no transparency in such models so far, there is no disclosure by ISPs/TSPs of payments made for such deals for selecting discounted content/apps.	The internet should have equal access to all the content/apps at an equal rate to consumers. Free internet should be on the basis of free data not free specific content.
Non anti-competitive	This model is anti-competitive for other websites/applications/platforms, especially the small	Such form of differential pricing will lead to paid prioritisation by the TSPs that will in turn lead to anti-	Charging differently for different internet apps will be anti-competitive, it will break the internet and stifle

Principles	Model A	Model B	Model C
	content providers and the start-ups. Such models will potentially create elite or dominant web services, also known as oligopoly.	competitiveness____amongst the website/application /platform providers.	innovation
Non predatory	Such pricing models are followed to eliminate the rivals from the market.	Any such arrangements viz., cross-vertical collusion, intra-vertical collusion etc clearly fall under predatory pricing. <i>[This is why in the US predatory pricing is allowed]</i>	The customers, who use <i>On-Network terminated calls</i> which are essentially just data or bandwidth, pay access charges and data charges to the service providers which are determined by market dynamics and competition. The proposal to price such calls differentially from other data apps will hurt consumers and developers of such applications who have successfully created low-cost, data-efficient tools.
Non ambiguous and Not misleading	Discounted pricing in the name of providing wider access and connectivity is fallacious, misleading and ambiguous as the net result will negate all the positive impact.	Such models come at a cost of lowering consumer choice and giving rise to oligopolistic competition. Under privileged and non internet-savvy users will never know the whole of internet under such limitations.	Differential pricing in the name of providing wider access and connectivity is fallacious, misleading and ambiguous as there is no quantified data on increased mobile data subscription due to such discounted or zero-rated programmes. ¹

The differential pricing models in addition to violating TRAI's own principles also break the internet as we have shown in our previous submissions to TRAI and to the DoT. Internet is one and data needs to be priced in the same way. Harmful forms of price discrimination will eat away the neutrality of the internet. Wider internet access is a noble goal, but we will not achieve it by betraying the goal of an innovative, fair transparent and vibrant Internet. Hence, there is an imperative need for the regulator to uphold the core principles of tariff framework to protect the consumers' interest preserve the internet and allow level playing field for small content providers.

II. Responses to Issues for Consideration

(QUESTIONS NUMBERED AS PER CONSULTATION PAPER)

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No, the TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms. The different pricing models mentioned in the TRAI 'CP' are not only violating the core principles of TRAI's pricing regulation but also the Principles of Net Neutrality.

¹ <http://www.internetsociety.org/2014/09/zero-rating-enabling-or-restricting-internet-access>

The differential pricing models will empower the TSPs to select certain content providers and offer discounted access plans to certain websites/applications/platforms which will be anti-competitive for other websites/applications/platforms, especially the small content providers and the start-ups. The TSPs get the scope to disincentivize access to other websites/applications/platforms by either putting higher tariffs or through illegitimate network management.

Thus, differential tariffs will result in:

- Differential tariffs will disadvantage the small players and the start-ups.
- Giving absolute powers to the TSPs will lead to classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). This violates the principle of non-discriminatory tariff.
- Differential pricing will lead to paid and unpaid prioritisation by the TSPs that will lead to anti-competitiveness amongst the website/application/platform providers.
- Charge differently for certain types of internet apps [*On-Network terminated calls, as stated in the paper*] over others will break the internet and stifle innovation.
- Differential pricing in the name of providing wider access and connectivity is fallacious, misleading and ambiguous. Such models come at a cost of lowering consumer choice and giving rise to oligopolistic competition. Poor and non internet savvy users will never know the advantages of the internet in its entirety under such limitations. [PIs refer to the Table]

As per research² it was reported that harmful forms of price discrimination are eroding the neutrality of the internet. Close to 92 vertically price discriminated zero rated mobile services in OECD countries as of November 2014. Also reported, in OECD 36 mobile operators were zero-rating their own data-hungry mobile video services while 10 operators were zero-rating their own mobile cloud storage services. A German court blocked Deutsche Telekom's similar plans on the basis of consumer protection law.³ A number of countries—including Japan, Canada, Chile, Norway, Germany, the Netherlands, Finland and Slovenia—have banned these practices.

Hence, IAMAI submits that any pricing mechanism that allows paid or unpaid prioritisation or other discriminatory practices will seriously limit competition, throttle innovation and fundamentally lead to fragmentation of the Internet. Such measures should not be allowed in any case.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Data services cannot be charged with differential pricing [as stated in the answer to Q1], as the positive effects of expanding and accelerating internet access to the unconnected masses will be negated by the various contravening effects that would ensue as a result of this practice.

Question3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models.

² The Digital Fuel Monitor 2014-15,
http://www.dfmonitor.eu/downloads/Neelie_Kroes_Specialized_Services_are_a_giant_net_neutrality_loophole_HIGHLIGHTS.pdf

³ <http://webfoundation.org/2015/02>

Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, there are various basic models that can provide free/discounted and wider access to the 1 billion unconnected people in India. In India, even though the Mobile adoption landscape is evolving rapidly, the absolute internet penetration is the lowest among the BRIC nations. Besides, India ranks below Sri Lanka and Bhutan, as also acknowledged by TRAI Chairman few months ago.⁴ On such grounds, ensuring transparency and preventing differentiated tariff offers in the market is very important for addressing net neutrality concerns. Instead of allowing differential pricing for certain data services over others to provide free and wide access, legitimate and transparent business models can be adopted without breaking the internet or skewing competition. Some examples are given below.

Legitimate Business Models to provide Connectivity without Breaking the Internet or violating principles of net neutrality:

For Large Public Access

- **Customer Subsidy Mechanisms:** Subsidy schemes as adopted under the flagship Government schemes such as MGNREGA could be adopted to provide free data to the customers. Free internet coupons can be given to consumers who will have their own choice to select which apps/websites to use.
- **Wholesale Model:** TSP/ISP forming partnerships with venue owners so they could propose Wi-Fi networks with a discounted or free model to the end customers. In this model the operator shares the investment costs and revenue with the venue partners.
- **Time Based Model:** The operator offers hourly and daily passes for access to its Wi-Fi network
- **Freemium Models:** Under this model the service providers can offer managed service for public locations (e.g., coffee shops, hotels, airports, stadiums, railway stations) that want to provide free access to their customers and employees.
- **Community Hotspots:** This is highly used model in the western countries where the Wi-Fi connections at home hubs enable users to share their Wi-Fi signals with others.
- **In Transit Model:** There is a demand for Wi-Fi roaming among a broad base of consumers, including those who don't use data at all while roaming for fear of bill shock. Public transport such as Bus, Train and Cabs can be Wi-Fi enabled.
- **Bundling Model:** Delhi Wi-Fi has adopted the bundling model approach where the government will pay for the actual usage of up to 1GB per month per SIM⁵ on actual usage basis or on OPEX. Such free internet usage will be provided in various hot zones, private and government colleges. In transit Wi-Fi in DTC buses and other Public Transport are also planned.

Free Internet as a part of CSR

Lastly, IAMAI suggests that to induce various internet companies to provide free internet packs to the users; the government can introduce this as a part of Corporate Social Responsibility [CSR] activity. The Company Act can be revised to include such services as CSR activities.

⁴ <http://timesofindia.indiatimes.com/tech/tech-news/Broadband-penetration-India-ranks-behind-Sri-Lanka-Bhutan/articleshow/46959549.cms>

⁵ <http://indianexpress.com/article/cities/delhi/very-soon-1-gb-wifi-free-for-each-sim-a-month/>

2.2.7 ACTO

No.: 87/TRAI/2015-16/ACTO
Dated: 7th January, 2016

Shri Vinod Kotwal
Advisor (F&EA)
Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan,
Jawahar Lal Nehru Marg,
New Delhi-110002

**Subject: Consultation Paper (CP)No. 08/2015 dated 8th December 2015 on
“Differential Pricing for Data Services”**

Dear Sir,

Association of Competitive Telecom Operators (ACTO), would like to submit its comments(enclosed as Annexure - I) to Consultation paper No. 08/2015 dated 9th December 2015 on **Differential Pricing for Data Services**.

We hope that our comments will merit consideration of the Hon'ble Authority.

Thanking you,
Respectfully submitted

Yours sincerely,
for **Association of Competitive Telecom Operators**

Tapan K. Patra
Director

Encl: As above

Annexure-I

ACTO's comments on TRAI's Consultation Paper (CP) on Differential Pricing for Data Services

The Association of Competitive Telecommunications Operators (ACTO) is pleased to submit the following comments to the Telecom Regulatory Authority of India (TRAI) in response to its consultation paper on Differential pricing for Data Services vide consultation paper No. 08/2015 dated 9th December, 2015.

Background:

As per the Telecom Regulatory Authority of India Act (TRAI Act) 1997 as amended from time to time, TRAI is empowered to notify tariff for various Telecommunication Services under the Act. Hence TRAI while exercising its power, under the Act notified the, Telecommunication Tariff Order, 1999(TTO,1999) which was amended from time to time to reflect the changes in the tariff framework .

We note that the Authority has initiated this consultation in exercise of its authority to regulate tariffs of Telecommunications Service Providers (which includes ISPs and data service providers) under the TTO-1999. The Authority has also noted that it has largely forborne tariffs of majority of services and has accordingly not intervened in the market due to sufficient competition. Although it maintains oversight to ensure that tariff offers are reasonable, transparent, non-discriminatory and are not anti-competitive.

We also understand that the current Consultation Paper is aimed at dealing with differential pricing for data services as it relates to individual internet users, rather than large, businesses, corporate and organization consumption of internet services / data which have specific demands from telecom service providers, in many cases, at sharp variance with the needs of an individual internet user. We trust that under the present review of tariff framework i.e. TTO-1999, the distinction between B2C (Business-to-Consumer) and B2B (Business-to-Business) or B2G (Business-to-Government) consumption of data services and their respective pricing approach, will be taken into adequate consideration.

It is important to highlight that the specialized data and Enterprise Service users (corporate, governments and large organizations) demand services and data packages which are driven by their specific &unique needs, therefore, the pricing of these enterprise services are tailor made to suit their requirements.

The specificities of enterprise service providers ***and retail mass customers*** (e.g., differing contract provisions and business needs) in the Internet and communications space means that a one size fit regulatory approach is likely to create the substantial risk of disproportionately impacting innovation and investment if applied to business service providers.

Enterprise services are typically sold to enterprise/business customers and are often widely negotiated / contracted for on an individual case basis; consumer services are not individualized (other than through common differentiated service offerings) and are not offered through customized or individually negotiated agreements.

Keeping such distinction in mind and within the framework of TTO-1999, we are pleased to submit the following broad principles. We request the Hon'ble Authority to consider the same while formulating its decision in this matter.

1. There should be no "**One size fits all**" approach and the same should be discouraged.

The paper aims to discuss possible impact of differential pricing on the consumer interest. This is not about enterprise / large businesses users whose requirements and business drivers are different.

We note that the Regulators and Policy makers worldwide have continued to exempt Specialized / Enterprise Services from any prescriptive regulation.

2. What may be relevant for individual internet users may not even apply or be a concern to large enterprise consumers of internet and data, for whom the prime drivers are speed, quality, connectivity and uptime and the need to meet special requirements rather than price or mere affordability.
3. So it will be wrong to subject such large enterprise services users / organisations / businesses to regulations aimed at individual internet users.
4. Keeping in mind the Digital India vision ushered in by Hon'ble Prime Minister, there is also a need to adopt right policy and Regulatory framework aimed at fostering innovation, affordability, user empowerment and investments aimed at bridging the digital divide.
5. As best regulatory practices, there should not be any prescriptive regulations unless there is an absence and demonstrable failure of market forces and competition.

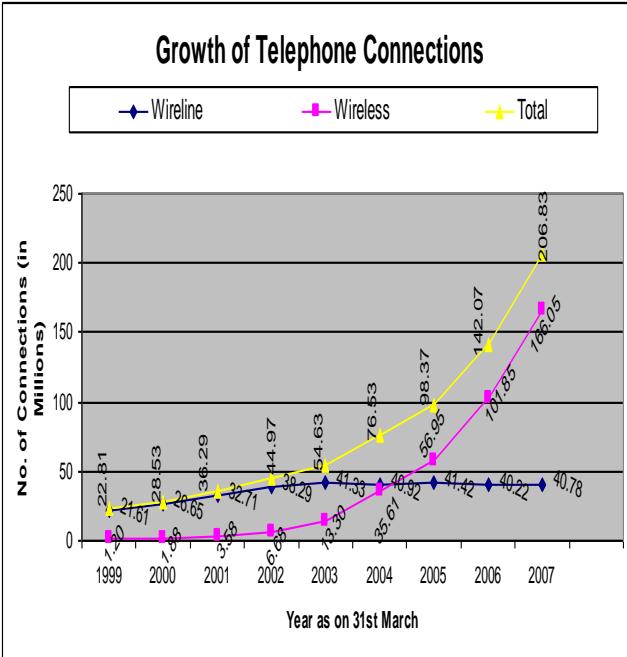
ACTO believes that there is adequate competition in the internet and data services space and therefore any kind of prescriptive regulations is not needed.

6. The existing framework of regulatory oversight in the form of tariff reporting by the TSP's has worked well and should continue.
7. Any incidence of non-discrimination and transparency which is against public interest should be taken note of and suitable measures be taken to correct the aberration.
8. Tariffs are clear indicator of competition and maturity level in the market. Forbearance of tariffs has in fact enhanced the competition level as against caused harm. There is ample evidence to show that the actual growth in the telecom sector happened when tariffs forbearance was introduced. Please see the table below which clearly shows this linkage. Therefore TRAI should continue to implement same policy of forbearance.

Further, TRAI had implemented tariff forbearance for wireless services in the year 2002 and for wireline subscriber in the year 2003 and historical data (in the table below) shows exponential growth in the wireless services in India after year 2002-2003 i.e post tariff forbearance period.

Telecom Subscriber data (in millions) in India for the period 1997-2007:

FY	Fixed line	Mobile	Total	Tele density
1997	14.54	0.34	14.8	1.57
2000	26.65	1.9	28.55	2.81
2001	32.71	3.58	36.29	3.52
2002	38.33	6.54	44.87	4.28
2003	41.48	13	54.48	5.1
2004	42.84	33.69	76.53	7.04
2005	46.19	52.22	98.41	9.11
2006	50.18	90.14	140.32	12.8
2007	48.87	157.96	206.83	18.46



Comments:

Tariffs are generally determined or offered by the TSPs taking into account several factors including input costs, level of competition, commercial considerations and individual business case for each service providers as well as keeping the requirements of different customer groups. What may be important for a customer may not be relevant for another. We note that specifically data tariffs are left on market forces to determine under the present regulatory framework i.e. Tariff are reasonable, transparent, non-discriminatory and are not anti-competitive. We also note that presently differential tariffs are allowed subject to compliance of relevant clauses of the TTO, 1999. The provisions of TTO(33rd amendment) inter alia provides that whenever differential tariffs are offered, it shall be the responsibility of the operators to define in a transparent and unambiguous manner, the eligibility criteria for availing such differential tariffs.

The Authority has very rightly noted that "The criteria for determining a valid classification for the purpose of differential tariff, has undergone change from time to time depending upon the sector's growth, technological advancement and the emerging and changing regulatory concerns, which the Authority needed to address. Thus, for example, differential tariff or 'on-net' terminated calls were viewed as discriminatory tariff in the initial stages of tariff regulations. However, as the competition in the sector increased, such differential pricing was permitted, treating 'on-network terminated calls' as a distinct and valid class for price differentiation."

We note that differential pricing is a well-established and generally accepted business practice across the globe and across the sectors/ services. Therefore, we believe that TSPs should be permitted to offer differential tariffs, for example services provided to the enterprise users having highly specialized and customized requirements to meet their business interests.

In view of above broad principles, ACTO supports the differential pricing for data services, subject to generally accepted best regulatory practices and above stated principles. We expect TRAI to continue to have data services under forbearance following the policy of light touch of regulation and leave it to TSPs to design the tariffs according to the prevailing market conditions as long as there is no demonstrable failure of market and competition.

2.2.8 GSMA



GSM Association

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30 December 2015

Ms. Vinod Kotwal,
Advisor (F&EA), Telecom regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg,
New Delhi: 110 002

Consultation Paper on Differential Pricing for Data Services

Dear Ms Kotwal,

The GSMA welcomes the opportunity to submit its views on the consultation paper on differential pricing for data services. Price differentiation is a widely used commercial practice that benefits consumers and competition and therefore operators should have continued tariff flexibility. Differential pricing facilitates greater market participation by consumers and content providers supporting competition, innovation and consumer choice and there is no need to restrict these beneficial outcomes.

The following paragraphs outline our views in relation to the Authority's questions on (1) flexibility to offer differential pricing for data usage, (2) associated policy measures and (3) alternative policy levers to encourage broadband adoption.

1. Operators (TSPs) should have continued flexibility to offer differential pricing as such practices benefit consumers and competition

Operators should be permitted continued tariff flexibility for the following reasons:

• Widely adopted commercial practice

Differential pricing is a commercial pricing strategy widely used in many industries. Discounted tickets for senior citizens at leisure venues and higher fares for last-minute business travellers are everyday examples of differential pricing. Economic literature suggests that differential pricing in competitive markets can benefit consumers and businesses by allowing firms to tailor their products and services to the preferences of consumers and thereby increase the total welfare.

The Internet ecosystem is a dynamic, complex and multi-sided system with complicated pricing dynamics. Multi-sided markets support broader forms of differential prices matched to the heterogeneity of consumers and content providers on the different sides of the market. Accordingly, firms participating in the Internet ecosystem deploy a variety of business models and



pricing strategies, including freemium models, free-of-monetary charge services in return for collection of consumer behavioural data, ad-funded services, etc., to attract the optimal mix of customers and suppliers. Multi-sided commercial models, including differential pricing, are also widely used in other industries. For example, some television services are advertising-funded, some are subscription-funded and other services are public-funded. The mobile industry should not be an exception to this widely accepted commercial practice.

- **Benefits consumers**

Differential pricing practices increase consumer choice, incentivise consumer and supplier participation widening the size of the market and support investment in broadband networks. This is important as mobile broadband is a key pillar of the *Digital India* initiative and in building digital economies. The availability of a variety of service packages – that combine different prices, attributes and bundled content – increases the choices available to consumers and allows them to choose the package that best suits them. Pricing flexibility allows operators to reflect the willingness to pay for consumers who will otherwise be priced out of the market if the firm was constrained to charge a uniform price.

- **Encourages investment and innovation**

Differential pricing supports investment and innovation in networks and content services by widening the subscriber base for content services and for the network operator. Industries, such as mobile, with large fixed costs and low marginal costs require differential pricing to make it economically viable to invest and innovate in new technologies and services. In two-sided markets, each side can be expected to contribute to the recovery of costs and the provider (e.g. the operator) should have the flexibility to determine the appropriate balance between the sides. Where content providers contribute financially to support discounted mobile tariffs through sponsored data models, they do so in recognition of the increased value of reaching more consumers. Operators should continue to have this freedom to agree commercial arrangements with content and application providers to develop innovative services and sustainable business models.

- **Supports competitive markets**

Mobile operators compete along many dimensions such as pricing of service tariffs, minutes and data allowance, bundled content and applications, network quality and coverage. Operators take into account a number of cost, competition and commercial considerations in determining their product mix and prices to compete against other operators. Differential pricing should be viewed as another axis of competition rather than as hindering competition.

- **No proven harm to consumers or small content providers**

In the consultation paper, TRAI raises (at paragraph 14 of the paper) the possibility of discrimination between consumers and impact on small content providers. Differential pricing, for example application-specific tariff plans, are available to all consumers and the choice of tariff is



left to the consumer according to his service demands and willingness to pay. This is in the interest of all consumers and economically efficient over uniform pricing models. Differential pricing plans which allow content providers to subsidise the consumers' cost of accessing specific sites, supports competition in the content and application domain by offering new entrants with the opportunity to compete with established content providers by using the marketing, distribution and billing platform of the network operators. This could benefit smaller providers to compete with established players and therefore support competition and innovation in the broader ecosystem.

Concerns on potential harm to consumers or smaller content providers seems highly speculative and not substantiated by any market evidence. Moreover, data growth is the new revenue opportunity for operators. As a proportion of recurring revenues, average data service revenues in India are slightly below 15% of total revenues, compared to more than 30% in advanced markets. There is no incentive for operators to either restrict or favour consumer access to specific sites or content in the competitive mobile market in India as they invest for data growth. In competitive markets, the offer of differentiated products and associated differential tariffs does not result in prohibitive prices for products with enhanced feature sets. Any potential anti-competitive conduct, if any in the future, can be dealt under existing competition law framework.

2. No additional measures are necessary in relation to policy on differential pricing

We hope that policy makers recognise the level of competition that has been achieved in India in the mobile services market, and thus avoid regulating commercial offers on the basis of presumed future harm to consumers. The TRAI currently follows a policy of forbearance of tariff regulation for telecommunication services in competitive markets and this principle should also continue to be applied to data tariffs including the offer of differentially priced products (e.g., application specific packs).

The current practice of operators reporting their tariff plans to the TRAI without seeking prior approval supports dynamic competition and tariff innovation and should be preferred over ex-ante determination of tariff plans. Ex-post case-by-case assessment under general competition law is a sufficient safeguard against any anti-competitive conduct and the GSMA believes there is no need for any ex-ante regulatory assessment of such plans in the presence of ex-post safeguards.

The GSMA is supportive of the general objective of enhancing meaningful transparency of products and services offered to consumers. This objective should be applied equally across the Internet ecosystem. There should be consideration of the types of information that would actually empower consumers to make informed choices without adding complexity and confusion to their decision making. The TRAI may wish to set, in consultation with industry, general transparency objectives without mandating particular requirements.

3. Other policy levers to encourage broadband investment and adoption

There is broad consensus among operators, government, policymakers and other stakeholders that expanding broadband connectivity is a top priority for India. The proportion of broadband subscribers are significantly less than the proportion of consumers that have access to broadband coverage illustrating the need for demand-side measures to increase broadband adoption.



One policy approach is for governments to intervene directly by providing subsidies to either consumers or businesses. Direct subsidies have been used by governments in different sectors with mixed success. This may not be an appropriate model for mobile services. A more effective and efficient indirect approach is to allow operators to have the flexibility to recover the total costs of service provision through both product and pricing differentiation. This commercial flexibility has allowed mobile operators to rapidly expand mobile coverage and mobile voice services to Indian consumers making it a success story. Such product and pricing flexibility should continue to be permitted for data services.

Of course, differential pricing is only one lever to promote broadband growth. The government can also help by facilitating right of way and planning process for rolling out network infrastructure, providing the right policy environment for operators to invest and innovate, stimulating demand for local content services (e.g., mGovernment services) and raising consumer awareness of broadband.

In summary, as the consultation paper states, tariff forbearance and flexibility for operators are core principles of the tariff framework and there is no reason to change this policy. There can be no presumptive assumption that differential prices are anti-competitive or harm consumers, when the several examples from mobile and other industries point to the beneficial outcomes of such practices. Competitive markets and competition law provide sufficient safeguards to prevent any anti-competitive behaviour and therefore a case-by-case ex post approach should be preferred over regulatory intervention. The policy focus should be on efficient competitive markets and transparency instead of unnecessary restrictions that may hinder the benefits of differential pricing.

The GSMA looks forward to continued dialogue with the government and the regulator on this topic. Please do not hesitate to contact us if you have any questions on the above issues.

For further information, please contact:

Dr Mani Manimohan, Director, Global Public Policy, GSMA
Sandeep Karanwal, Director, GSMA India

Yours Sincerely,

A handwritten signature in blue ink, appearing to read "Sandeep".

Sandeep Karanwal,
Director, GSMA India
skaranwal@gsmaindia.org

2.3 Organizations

2.3.1 Free Software Mancha West Bengal

FREE SOFTWARE MANCHA, WEST BENGAL

162 - B, A. J. C. Bose Road
4th Floor, Flat 401,402,Kolkata – 700014
Phone No. 91 33 22865657
email: freesoftwaremanchawb@gmail.com

To,

RS Sharma,

Chairman, TRAI

CC: Vinod Kotwal, Advisor (F&EA), TRAI

Dear Sir,

The internet for millions of Indians has been a great force for freedom. Today, however, this medium of liberation is under threat. The principle of net neutrality, the cornerstone of an open and free (as in freedom of internet) is under attack. TRAI must intervene to ensure that a public utility does not become a Balkanized collection of private internets.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No. Service providers must not be allowed to put in place differential pricing for data usage based on the content being accessed / platform being used

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

The use of differential pricing is a grave threat to the principles of non-discrimination, transparency, affordable access, competition , market entry and innovation. If service providers become the gatekeepers of the internet, these principles will vanish one by one. Many other models have been proposed by various stakeholders for the same.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

The simplest solution would be to provide free internet and limit it not by content but by volume of download/upload or time. We also recommend the use of the Universal Service Obligation Fund for promoting such activity and building infrastructure.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

It has been learnt that a few weeks ago, TRAI directed Reliance Communications to put Free Basics on hold. In the aftermath of this, Facebook launched a massive campaign. to generate support for Free Basics tapping its user base in India, and for a while even in the U.S. It would seem that many users of Facebook have ended up supporting the Free Basics scheme without understanding the full import of the consultation process. We request TRAI to make a note of these methods used for influencing this public campaign.

- 1) Abhijit Roy, School of Media, Communication & Culture, Jadavpur University
- 2) Ashoke R. Thakur President, FSWM WB,
- 3) Binoy Das IIT Kharagpur
- 4) Debdesh Das Jadavpur University
- 5) Malini Bhattacharya Former Professor of English, Jadavpur University
- 6) Samantak Das Dept. of Comparative Literature, J.U.
- 7) Kubaly Banerjee [Journalist - Ei Samay]
- 8) Sankanta Chaudhuri M.L.I.I. Dept. of English, J.U.
- 9) Partha Pratim Ray, Dept. of Physics, J.U.
- 10) Kaustav Chatterjee WBFSM
- 11) Sudip Sengupta WBFSM
- 12) Subhrajit Sen. Physics Dept., J.U.
- 13) Rajat Ghosh
- 14) Sudip Paul. Film Studies, J.U.
- 15) Ritaj Gupta I.R.P.G.I, J.U.
- 16) Lubhendra Das FS PG II JV
- 17) SOURAV MUKHERJEE film studies (PG-II) J.U
18. DR INDRAJIT DE ASSOC. PROF. MCKVIE
- 19) Chintan Kumar Mandal Jadavpur University
- 20) Tanmoy Maitra Research Scholar, JU
- 21) Sayoy Misra Jadavpur University

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Akshayendra Ghosh - 7/1/16

Sawar Mondal

Jadavpur University

Basudeba Mondal

J.V

Sushmita Pandit 7/1/16

Jadavpur University

Zeenat Reena
7.01.16

Aliah University

Joy Dutta
07/01/16

J.V

Chandreyee Chowdhury
07/01/16

JV

Sarbani Roy 07/01/16 JU

2.3.2 Centre for Media Studies

Ms Vinod Kotwal
Advisor
TRAI, New Delhi

Dear Madam,

Seasons' Greetings and best wishes for the new year !

I am glad to share with you that 2016 also marks completion of 25 years of CMS (Centre for Media Studies). At CMS, we have been studying media (print, radio, television, and internet) trends, including ownership, content, regulation and consumption patterns. Our agenda is to make media more accountable and relevant to the needs and development challenges faced by our nation. Towards this, we use our research for various advocacy and capacity strengthening initiatives with various stakeholders (including media, industry, government, academia and civil society).

As a renowned think tank, we are glad to respond to your Consultation Paper on Differential Pricing for Data Services issues on December 9, 2015. On behalf of CMS, I like to submit the following responses to the questions raised in the same.

TRAI Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

CMS Response:

No.

Differential pricing for data should not be allowed if it is based solely on the number/type/selection of websites and applications users can access. If allowed, this will be a dangerous trend as it opens up people to a new technology application but in a way decided by a commercial entity. It will not only be discriminatory and non-transparent but goes against the principle of unhindered access to knowledge and information. If we take the analogy of a water utility like Delhi Jal Board, it would amount to dictating users that some people can use water only for bathing and not for cooking. It will be like giving membership of a library to someone but telling the person that he or she can only read specific reference books and just a couple of newspapers. Ideally, if we want the library membership to add to the person's knowledge but have limited seats in the library, you can tell him or her that you will get access to the library for a certain number of hours in a week or a month, use it the way you want.

TRAI Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

CMS Response:

It will be impossible to implement differential data pricing even if ground rules are set, unless the sole criteria is quantum of data used and not content. Just consider this. There is a list of website that users will be allowed to access if they opt for a free or cheap internet access pack from a TSP. The package will list websites or apps covered under it. What happens if the content of these websites is tailored, tweaked or is paid for by someone. As it is mobile versions of websites are different from normal ones. It will be impossible for TRAI to police such packages under differential pricing if it is allowed. It will be like DJB telling consumers that you can only make tea from the water it supplies. Will it also tell if one can add ginger, extra or no sugar, drink it without milk or serve it in a steel or bone china mug?

TRAI Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

CMS Response:

Free wifi access provided by the state, along with a ‘fair usage policy’, can help enhance access to the internet if reaching all citizens is the goal as is being suggested. Essential citizen services can be designed and included in a captive portal, access to which should be made free, either via TSPs or free public access. The captive portal should be localized region-wise or state-wise. The content of captive portal should be decided through a transparent process under the aegis of TRAI and should be kept apolitical. This can be implemented in public-private partnership mode. Such a model will introduce the internet and its benefits to a vast majority of mobile phone users and may make them to seek more. That’s when TSPs can offer commercial packages.

We request you to kindly consider these responses and will be glad to further participate in any debate or discussion on the same.

Wishing your team and you the very best in your endeavours

Sincerely

Vasanti

—
P N Vasanti
DG, CMS
www.cmsindia.org

2.3.3 Telxess Consulting Services Pvt Ltd

T ELXESS
Consulting Services Pvt. Ltd

Ms. Vinod
Kotwal, Advisor (F&EA),
Telecom Regulatory Authority of India
New Delhi.

7th January, 2016

Resp Sir/s,

Sub: Response to TRAI CP No: 8/2015 on Differential Pricing for Data Services

The undersigned has been associated with India's internet history from the year 1995 and had helped steer the privatisation process of Internet services, help draft the ISP license conditions in 1998 (the most open and pro competition license in the Telecom arena till then), involved with helping frame all the Internet policies and regulations actively till 2006, apart from having conceptualised and helped set up and run NIXI as well during its crucial formative years.

Therefore, having spent nearly a couple of decades, with all the experience at hand, we believe that outcome of this CP will potentially have a profound impact on the Oneness and Openness of the Internet, especially since several other developing countries will be looking up to India, as to the course we adopt and then follow suit. Will we keep Internet intact as one global interconnected network of networks or we give way to commercial and business interests and allow it to become a fragmented Internet divided into different silos manned by commercial gatekeepers. Our responses are as under:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer: No, TSPs/ISPs should definitely not be allowed to enter into business or commercial agreements with Content Providers, where the former can (willingly or under some coercion) charge a fee of varying degrees to the content providers, for delivering the later's packets (contents) to it's own

subscriber base. Vice versa, Content providers should not induce or coerce ISPs to enter into any additional fee, toll or rent-seeking regime. There clearly has to be a Zero Price Access Regime (explained later).

If allowed, the likely effect can be illustrated thus:

Differential Pricing will translate into a practice where eg. an Airtel will charge Whatsapp and Whatsapp will agree to pay Airtel a certain amount of financial consideration (a termination fee) or some other mutually agreed commercial consideration in kind say prioritized access/better QoS to voice calls on Whatsapp used by certain segments of Airtel Internet subscribers and in turn Airtel can apply a discriminatory double/triple dipping charge for those voice calls on Whatsapp which otherwise, as of now, is free from a customers perspective – though the customer has paid Airtel for access and likewise Whatsapp has also paid an access fee to its TSP/ISP) and ISPs at both ends exchange traffic at IP transit points for a fee they pay and receive. Conversely, where TSP/ISPs if allowed to charge a differential fee based on status and type of content provider, then he will also be at liberty to not charge or enter some non financial arrangements with some content providers (such as exclusive access to each other's customer base which will become captive to this cartel for exploitation at some stage) which will then lead to discriminatory fee regime where some content provider are charged and some are not, thus empowering TSP/ISPs as Internet Gatekeepers where they decide which content to charge and which not to charge and how much. Predatory pricing and denial of access against the interests of certain groups of content on the Internet may happen eventually.

The situation above runs completely contrary to the foundational principles of Internet, which has been an open, neutral and transparent platform, free of settlement fee regime, irrespective of the number and status of TSP/ISP, users and content providers.

The openness of the Internet platform itself is responsible for the fact that nearly 60% and increasing number of the users are also the content providers. All of the billion sites and the content providers therein are users of the Internet first and foremost and they all pay a differentiated (based on speed and quantity of data consumed) access charge to their respective TSP/ISP to get online and use the Internet. TSPs/ISPs further get to share this access revenue by way of IP transit charges that they pay to each other.

Hence, Facebook, Google, Skype, etc. are also users. ISPs have never been

allowed to obstruct one user from accessing the other user/s. An individual user has every opportunity and right to communicate with the other user whoever or wherever he/she may be, on the Internet. However, it is a known fact that TSPs/ ISPs have tried to protect own business self interests but have been historically, time and again debarred by evolved regulators, from blocking, slowing or degrading access of one user content by another user (exception being legitimate legal barriers/local laws prohibiting certain content/services altogether).

Internet, therefore, has to be equated with a public highway where, irrespective of the size, speed and type (motorcycle, car or truck), all users have equal non discriminatory right of way and right of use, and the toll collector can only charge a differentiated access fee once, based on the type of vehicle. In terms of analogy, TSP/ISPs already charge this differentiated access fee to the Internet from various users (including content providers), based on consumption of bandwidth capacity and speed and also share revenues with other TSPs/ISPs via transit fee, etc. This differentiated Internet access fee is already accepted universally.

However, over and above this accepted form of access fee, any approval to charge any other type of additional toll in the name of differential pricing would amount to distorting the guiding principle of the open and transparent Internet, where, TSP/ISP will use every opportunity to monopolize users and deliver content as an exclusive fragmented part of the Internet that they claim as their own exclusive property, based on market power (as is the case with Zero rating and Freebasics). In regulatory terms it is well established that players with SMP or significant market power can and do tend to abuse their positions, to indulge in unfair rent seeking and anti competitive behaviour and if faced with competition can resort to predatory pricing tactics in order to disadvantage emerging competition.

In the case of Internet globally, as well as in India, TRAI must recognize that while on paper there seems sufficient competition in the Internet business,it is really a very disproportionate market and the facts bear this out as under:

1. Despite 500 plus ISP licensees existing at any point of time, top 10 ISPs control 98% of the Internet subscriber base in India, which means they have control over approx. 312 million subscribers as of now.
2. Top 5 of these ISPs control nearly 80% of the Internet subscriber base in India ie. 255 million subscribers are captive to just 5 service

providers as of now.

3. These top 10/5 ISPs are also Telecom Service Providers and hence present a picture of a skewed market dominated by a few providers. They are also owners of telecom and Internet infrastructure, which needs to be used by competing ISPs and in some cases they have in house content and applications businesses, which they have to promote.
4. 10 websites which are most accessed in India, as per current Alexa ranking (for India) are Google – holds the top 2 positions, Facebook, Youtube, Amazon, Yahoo, Flipcart, Wikipedia, Twitter, Twitter and Indiatimes.

Currently, there are unclear or non-existent regulatory barriers, which may act as anti competitive safeguards against TSP/ISPs who are owners of infrastructure, access service providers as well as have Content and application services and simultaneously they are providers to the same set of businesses that they also compete with.

Differential tariffs, if allowed will damage the fragile openly competitive nature of the Internet business, which is still evolving and result in a wider game of favourable inclusion or retaliatory exclusion of content and therefore undue toll extraction attempts by ISPs from content providers.

In the Indian context, it is not difficult to imagine a scenario, where the top dominant Service Providers will enter into favorable or sweetheart deals and agreements with any or all of these top 10/20 or even 50/100 top sites/content providers (using their traffic rankings as a base to negotiate) to deliver their specific packets to their respective last mile customers with more favorable QoS, speeds and prices compared to less paying or nil paying sites. Hence, if Airtel has an agreement with Google, Facebook has an agreement to deliver through Reliance and so on, obviously based on commercial and business considerations, some grave repercussions in the future would be where: (names used only for illustration purposes here)

- a) Airtel customers may be deprived of Facebook, since it's rival Reliance has a pact with FB, or Reliance will deliver without Google. Other ISPs will enter into similar contracts with other popular sites and use that as their USP to attract and retain customers but in any case end up giving a fragmented version of the Internet and not the entire Internet as we know it today.
- b) Airtel will have no incentive but every reason to slow down, downgrade

or worse block Facebook since this content has an agreement with rival Reliance and competes with Google/or its own inhouse Messenger app for the hits of vast number of users. There could even be a situation where say Airtel and Reliance will set higher charges for their respective users to access rivals content if they insisted on it.

- c) Airtel and Reliance will have all the reason to block applications such as Internet Telephony based voice and chat services, which they consider as a threat to their own larger, and lucrative telecom business. If they do it will set back such historical developments, where voice was converted to Internet data packets and enabled people to communicate cheaply, only because innovation over the Internet was not allowed to be restricted by vested interests.
- d) The dominant operators will acquire the ability to pick and choose content that will get access to the Internet, and ignored if there commercial demands are not met or fulfilled. Eventual vitiation would be where ISPs will block or deny any user if opinions expressed do not meet with the ISPs approval, in effect giving them power of censorship rights over the Internet.
- e) Dominant ISPs and Content Providers will create packages of specific content, which they 'like' with different pricing schemes and force customers to choose packages in model very similar to how cable TV business is operated. Even worse, there may be replication of the Mobile Value Added Services business model where smaller emerging content and applications will be forced by ISPs to part with 60-80% of their own customer revenues as share of the ISP.
- f) Currently, the Internet as we know it, with the World Wide Web, is one whole Internet, accessible in its entirety to each and user universally without any discrimination (exception being legal blocking). There is no basic Internet or Premium Internet/Web. It is completely neutral, but recent controversy over Freebasics (which promotes access to basic internet) has bared open the intent to divide the Internet into segments and restricting access to certain parts of Internet depending on customer segment and profile.
- g) With Internet of Things shaping up in the near future and in situations where common household goods will become connected to the Internet as well, ISPs as gatekeepers will likely apply their market power to even limit the customer's choice to brands of appliances & devices that have agreements with the TSP/ISPs. This will become possible if we, by regulatory dictat set a precedent now in the present to allow ISPs to

apply Negative or Positive pricing regime.

Hence, differential pricing can have damaging implications even under the garb of 'public service or in the interest of poor or unconnected people or masked as charity'. It will allow the dominant ISPs and popular content providers to gain abilities to subvert the entirely open nature of Internet as opposed to the current situation where there is permission less environment and no user irrespective of technology platforms used, needs ISPs clearance to access the entire Internet and all legally available content and also is not at mercy of ISPs to express and share opinions or innovate and develop services and applications for others to use.

Internet model has been historically different from telecom model where in the telecom model 'carriage fee and termination fee' is a matter of right for the Telco's. It has been even different from cable TV model where some content providers may provide a channel for free but most popular content providers usually levy a fee on the carrier which in turn charges the end user accordingly.

The Internet has always followed the 'Zero price access Rule' (a term used by C. Scott Hemphill in his 2008 paper for Columbia University School of Law) where access providers are prohibited from charging any content provider to reach his customer. While Hemphill himself has not favoured it from an economic argument point of view, he does state that the justification for Net Neutrality centres around the Zero Price rule and that his paper has not gone into the details of access providers blocking, denying or degrading services to those who do not pay and also that in the US, there exist very strong anti-trust laws which act as restrained to extraction and exclusion types of activities – and India unfortunately lacks in such appropriate speedy justiciable mechanisms).

Hence, in summary, differential pricing is bad in concept, with have hugely damaging repercussions and potentially destruct the Open Internet.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

Answer: As explained above in Answer 1, there is no reason to consider permitting Differential pricing in any form. As mentioned, the Internet today by virtue of its design and architecture is still evolving and is endowed with the characteristics of being a neutral, non-discriminating, open access platform and is technically impervious by itself to distinguish and discriminate between one or the user, irrespective of location, size and type, except where network management comes into practice to manage QoS with regards to bandwidth needs, consumption, latency and jitter, etc. Instead of considering permitting TSPs/ISPs any leeway in introducing artificial economic and technical barriers to access and use of Internet, regulator can take the following steps:

1. Forbear and refrain from introducing any differential pricing mechanisms, which allows or enables ISPs to directly or indirectly to charge, extract additional fee or toll from any user/content provider or enter into any agreement with any user/content provider, other than a standard format access service contract that ISPs have with their users. All users whether it is the proverbial Ganesh from a village or a Facebook, must be treated as equal Internet access seekers and users, adhering to QoS norms established by the regulator. In practice, though larger entities/users have distinctive needs to maintain a larger dedicated, reliable and more predictable access network, which are provided tailored solutions with their own inherent costs and price points.
2. Importantly, while forbearing, a limited Ex-Ante Regulatory declaration would be useful in declaring a Zero Price Access Rule where no additional charges can be demanded from a content provider potentially earning revenues nor paid to the ISPs by any content provider for the privilege of accessing, interacting or addressing the ISPs customers. Care needs to be taken that any non-financial, indirect benefits may also not be accorded by ISP to a Content provider or vice versa which may result in distorting competition or limit access of users to the entire Internet. ISPs should be obligated to share their agreements with corporate entities on a regular basis with the regulator.
3. In effect, therefore, practices such as Zero rating where Content Provider and ISP collude to subsidize users and lure them to accept limited versions of Internet and particular sites/apps only, should be categorically debarred. Several research papers mention the Internet as

a Two sided market phenomenon comprising of users on one side and content providers on the other, with ISPs as neutral intermediaries. As number of users rise, it becomes an incentive for providers to develop content that users will use incrementally and as number of content providers rise, they act as magnates for new users to use and experience the Internet. Therefore, it is vitally important that no artificial restrictions are imposed to hamper the neutrality of this naturally occurring evolution of the Internet.

4. It should be kept in mind that allowing any collusion between large, popular and dominant content providers and the dominant ISPs will only lead to debilitating market entry conditions for new entrants, who seek to vie for user hits. It's the neutral, open, free to access Internet platform, which has lead to mushrooming of nearly a billion sites on the Internet. If they had to pay a gatekeepers toll, the Web would be not be as we see it today. Hence, to maintain the openness, competitiveness, innovations and still fast evolving nature of the Internet, it is essential that a few ISPs and Content providers are not allowed to hold Internet hostage to their business ambitions.
5. We definitely do not believe that there are any applications or services, which should be picked up and specified as critical or in public interest where limited application of differential pricing can be justified. On the Internet, all content by default receives similar treatment (based on the packet headers) and the eventual categorization is the choice of the user using the content, for example Ganesh's personal email goes as fast or slow as any Zuckerberg's email and Internet in that sense is inherently non-discriminatory, exception being the capacity and speed of bandwidth which we subscribe too (which is the discriminatory pricing rule which is already universally allowed to ISPs).

Question 3. Are there alternative methods, technologies, business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods, technologies, and business models?

Answer: With a near universal consensus that access to Internet is a human right, denial of which leads to continued deprivation of those without Internet access from the social and economic gains, the objective has to be to provide

access to the complete Internet and not provide a distorted, conditional or limited access to specific types of sites masquerading and marketed as Internet.

Top down approach to the policy of providing Universal Access to Internet has yielded limited results. Most of the large USO funds are being directed towards attempts to build and expand the network in areas where other networks have not yet been built. However, as is well known, due to delays and other reasons it will be several years before the networks actually reach the areas. There is absolute uncertainty with regards to addressing the last mile access network and even if that is somehow achieved, the challenges of getting people online and to use the Internet will remain.

So, there are two aspects to the divide; one where networks are available, but a large number of people still do not use the Internet and second where the networks have still to be built and efforts under the USO are being made.

For the purpose of this paper, we will concern ourselves with the challenge of enabling unconnected people to become Internet users, where networks are either available or can be accessed from close vicinity.

In most parts of India where, networks have reached and mobile penetration has been sufficiently achieved, Internet access has been going up albeit slower than expectations.

This can be largely attributed to reasons such as:

- a) low or nil awareness of the usefulness and ease of use of the Internet
- b) low use of smart phones capable of accessing internet for beneficial usage
- c) high cost (perceived or real) of ownership of devices and Internet access
- d) lack of training and skill building opportunities to use computers and Internet

We strongly believe and advocate that instead of the top down approach (as attempted through USOF), we need to shift towards a bottom up approach.

This approach relies upon the following characteristics to enhance connectivity and digital opportunities:

- a) Engaging with the local communities hitherto underserved deprived of or not adopting Internet for different reasons.
- b) Engaging consortium of local stakeholders viz. administrative machinery (in urban settings) and panchayat/block level (in village

setting), civil society, NGOs, development agencies, willing service providers and funding agencies willing to engage with identified local communities.

- c) Addressing and sensitizing the community, making them aware of locally relevant content, applications, services to develop a buy in and acceptance is crucial. Instead of pushing services to them, model is to recognize and provide according to their needs.
- d) Setting up community based wi-fi projects and Internet training centers and running initial pilots offering free access to Internet, certified trainings and other services for a period of time say 1 -2 years.
- e) The projects are budgeted and cost of creating the local Wi-Fi network, Telco/ISPs provisioning costs, computers, trainings, etc. are paid for through funds earmarked for the purpose. For this we suggest driving towards Municipal/Panchayat level USO Policy mechanism (covering their respective communities as per point 'b' above) to generate adequate local funding.
- f) At (e) above, one can explore possibility and willingness of Telco's/ISPs to use the extent of their CSR funding obligation to underwrite cost of bandwidth capacities to the particular community.
- g) The business model has to be self sustaining one where Free access services is limited by reasonable time tenure that is sufficient for the target community to 'experience the benefits' through sustained trainings, provision of quality and relevant services. Once given access, need and demand builds up over time. ROI on Capex/Opex will be staggered over time (say 5 years) and hence mostly viable in the long run.
- h) In our unique pilot, which we successfully run, we have observed very favorable outcomes, in terms of social acceptance, enthusiasm to learn and use computers and Internet, exponential jump in registered user base, use of mobiles for Wi-fi access, purchase of computers and smartphones and eventual willingness to pay reasonable fee for Internet access overtime.
- i) Additional methods of enticing adoption and usage amongst unconnected people could include provision of direct subsidy of access charges on mobile internet for a certain level of population (such as those registered under MNREGA) using part of the USO Funds can also be explored .

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer: Some issues that TRAI must bear in mind and address appropriately in the context of the present CP are those where:

- a) The ISP License condition in defining the Scope of Services is very clear and specific wherein it is incumbent upon the ISPs to provide all subscribers' access to the entire Internet. Further, all Licensees cannot discriminate between different subscribers and have to provide services to all on the same commercial principles. It is, therefore, inexplicable as to how, certain ISPs can distinguish a set of existing and potential subscribers and provide them access to only specific and limited sites on the Internet. The model used by Freebasics or similar ones and delivered by licensed ISP/s is a breach of the License conditions and hence cannot be allowed. And since, differential access itself is illegal under the present license conditions, differential pricing itself will not be legally tenable.
- b) TRAI has not yet closed the earlier CP on OTT services, which also raised issues similar to the present case, regarding some Telco's attempt at distorting the market conditions by segregating certain types of Internet traffic (voice, video, chat, etc. which are mainstays of the growing Internet) and extract additional price from the users. While, it is common knowledge that that CP was poorly drafted and without much merit, people deserve to know from TRAI the fate of the same.
- c) Net Neutrality defined by Tim Wu originally states thus, "...is the principle that Internet service providers and governments should treat all data on the Internet the same, not discriminating or charging differentially by user, content, site, platform, application, type of attached equipment, or mode of communication.
- d) If TRAI has to uphold the above global principle, it must use this opportunity to also reverse known violations of the tenet, specifically where TSPs/ISPs do not provide access to Indian users the benefit of Internet Telephony in the domestic network, therefore denying more affordable communication facilities to the users.
- e) Free and Open Internet allow and empower people universally to freely communicate, express, mobilize, inform, conduct business irrespective of geographic, economic or political boundaries that divide them. Services like Feebasics not only encourage violation of Indian License

conditions, they will have the effect of obstructing the vast number of 'poor Indians' from accessing the complete global Internet, offering them limited filtered content which they 'like' and therefore end up being able to eventually manipulate their Internet usage and potentially influence and monopolize their economic behavior by subterfuge. This needs to be discouraged at any cost.

We hope the above inputs will be useful and helpful towards determining issues at hand, appropriately.

Some of the References used:

- 1) White House paper on Net Neutrality
- 2) Research papers by Robin S Lee & Tim Wu, C. Scott Hemphill, Babette Boliek, Weiseman & Kulick , etc.

For Telxess Consulting Services Private Ltd.

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Director**

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Governing Council Member – Digital Empowerment Foundation

Founder & Former President – ISP Association of India

Founder, Former CEO & Board Member – National Internet Exchange of India

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2.3.4 National Law University Delhi



NATIONAL LAW UNIVERSITY, DELHI

Prof. (Dr.) Ranbir Singh
Vice-Chancellor

January 7, 2016

Shri R.S. Sharma
Chairman,
The Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg,
New Delhi-110002

Subject: Submission of Comments on TRAI's Consultation Paper on Differential Pricing for Data Services

Dear *Sh. R.S. Sharma* :

The National Law University, Delhi (NLU Delhi) instituted by Act No. 1 of 2008 of National Capital Territory of Delhi is a public funded university established by the Government of NCT of Delhi on the initiative of the High Court of Delhi. The University has established the Centre for Communication Governance (CCG) on its campus, in an effort to ensure that Indian legal education establishment engages more meaningfully with communication and information law and policy, and offer academic contribution to information and communication policy making. The Centre's efforts are directed at generating research that traces out citizens' rights in context of media, telecommunications and the Internet.

CCG has a strong track record in engaging with human rights issues across the media, and in applying the human rights lens to current debates involving the Internet. We engage regularly with government ministries such as the Ministry of Law & Justice, and the Ministry of Communications & IT and work actively to provide the executive and judiciary with useful research in the course of their decision-making on issues relating to civil liberties and technology.

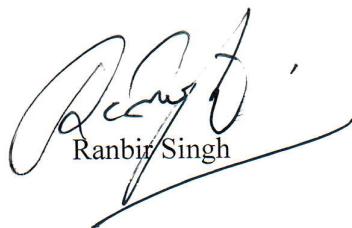
As part of our work, and given how critical it is to provide policy makers with well researched and useful material, we are submitting our response to TRAI's Consultation Paper on Differential Pricing for Data Services which is enclosed herewith. In essence, our inputs consist of a review of how constitutional principles of freedom of expression and access to information might be interpreted in the context of this issue. Net neutrality and differential pricing policies

that focus on market regulation and ignore other critical elements like the impact of information policy on fundamental rights are problematic.

We hope that the response is of assistance to TRAI. My colleagues Ms. Chinmayi Arun and Mr. Sarvjeet Singh who have drafted our response can provide any additional material required and we are happy to offer any support to TRAI. We shall also be submitting our counter comments by the 14th of January 2016 and look forward to the subsequent open house discussion in this regard.

With warm regards, best wishes & seasons' greetings,

Yours sincerely,


Ranbir Singh

Encls: Comments on the Telecom Regulatory Authority of India's Consultation Paper on Differential Pricing for Data Services



CENTRE FOR COMMUNICATION GOVERNANCE AT NATIONAL LAW UNIVERSITY, DELHI

COMMENTS ON THE CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA SERVICES

Authors: Sarveet Singh and Siddharth Manohar

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No, TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.

The principle of non-discrimination has governed the Internet since its inception¹ and any deviation from it educes the Internet's ability to generate innovation².

¹ Brief Amicus Curiae of Professors Jack M. Balkin, Jim Chen, Lawrence Lessig, Barbara van Schewick, & Timothy Wu Urging that the FCC's Order Be Affirmed at pp. 13-14, Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291), available at <http://cyberlaw.stanford.edu/files/publication/files/vanschewick-2009-amicus-brief.pdf>.

² Timothy Wu and Lawrence Lessig, Ex Parte Letter at p. 8, Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities, CS Docket No. 02-52 (Aug. 22, 2003), available at <http://apps.fcc.gov/ecfs/document/view?id=6514683885>; Brief Amicus Curiae of Professors Jack M. Balkin, Jim Chen, Lawrence Lessig, Barbara van Schewick, & Timothy Wu Urging that the FCC's Order Be Affirmed at pp. 13-14, Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291), available at <http://cyberlaw.stanford.edu/files/publication/files/vanschewick-2009-amicus-brief.pdf>.

Differential pricing schemes can take many forms. It includes the TSP discriminating between what content is accessed through the data connection, and charging different rates for each application or source of content or “zero-rating”, which is the practice of not counting the usage of certain websites or applications against a users’ monthly bandwidth³.

The main problem in these models is the role of private profit making entities in deciding which online services are offered at differential price rates. This allows the TSP or the platform provider to create a ‘walled garden’ of services that are available at reduced prices, thus creating unfairly beneficial market circumstances for the providers of these specific services and creating a “synthetic online experience for users that isn’t the Internet”⁴.

The discriminatory measures tilt the balance away from fair competition between different websites and content providers⁵ as any discriminatory behavior distorts competition amongst the applications or different classes of applications⁶. Ensuring a free market for these players would require that all content providers have an equal access to the consumers, else it makes it impossible for the content providers to have a level playing field. In absence of a non-discrimination rules, TSPs/ ISPs will decide the “winners and losers online”⁷.

³ Barbara van Schewick, *Network Neutrality and Zero-rating*, p.1 (Feb. 19, 2015), available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>.

⁴ Susan P. Crawford, *Zero for Conduct*, MEDIUM (Jan. 7, 2015), <https://medium.com/backchannel/less-than-zero-199bcb05a868#.lq308jucl>.

⁵ Barbara Van Schewick, *Analysis of Proposed Network Neutrality Rules*, p.3 (Feb. 18, 2015), available at <https://cyberlaw.stanford.edu/downloads/vanSchewick2015AnalysisofProposedNetworkNeutralityRules.pdf>.

⁶ BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 57-81, 277 (2010); Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 65 (2015); Barbara van Schewick and Morgan N. Weiland, *New Republican Bill is Network Neutrality in Name Only*, 67 STAN. L. REV. ONLINE 85, 89 (2015).

⁷ Brief Amicus Curiae of Professors Jack M. Balkin, Jim Chen, Lawrence Lessig, Barbara van Schewick, & Timothy Wu Urging that the FCC’s Order Be Affirmed at p. 18, Comcast Corp. v.

“Zero-price rule” has been one of the principles that have enabled innovation in the field Internet and technology services.⁸ It has helped to foster competition and innovation in applications for economic growth and to use Internet to create value in the “social, cultural, and political domains”⁹ and to distinguish it from other networks¹⁰.

According to *Professor Tim Wu* who coined the term “net neutrality”¹¹, on the Internet, content providers or new entrepreneurs did not have to reach agreements with every carrier to maximize the number of users and this helped the Internet reach its current “level of creativity and social usefulness”¹². If content providers had to pay fees before made more easily available, many business models would not have been successful and many content providers may not have entered the market.¹³ Any attempt to charge access fee will perpetuate the cable TV model in the open Internet context, which will be counter productive and harmful.¹⁴

FCC, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291), available at <http://cyberlaw.stanford.edu/files/publication/files/vanschewick-2009-amicus-brief.pdf>; Barbara van Schewick and Morgan N. Weiland, *New Republican Bill is Network Neutrality in Name Only*, 67 STAN. L. REV. ONLINE 85, 89 (2015).

⁸ Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23(3) J. ECON. PERSP. 61, 62 (2009); Tim Wu, *Closing Time for the Open Internet*, THE NEW YORKER (Jan. 15, 2014), <http://www.newyorker.com/tech/elements/closing-time-for-the-open-internet>.

⁹ Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 17-18 (2015).

¹⁰ Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23(3) J. ECON. PERSP. 61, 62 (2009).

¹¹ Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141, 145 (2003).

¹² Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23(3) J. ECON. PERSP. 61, 62 (2009).

¹³ Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23(3) J. ECON. PERSP. 61, 69 (2009).

¹⁴ Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23(3) J. ECON. PERSP. 61, 69 (2009); Susan P. Crawford, *The Looming Cable Monopoly*, YALE L. & POL'Y REV. INTER ALIA (June 1, 2010), http://ylpr.yale.edu/inter_alia/looming-cable-monopoly; Susan P. Crawford, *Zero for Conduct*,

In the India context there has been a constant debate on the issue of zero-rating. However, we believe that zero-rating selected applications will allow the ISPs to make certain content more attractive and “pick winners and losers” on the Internet and such harm such must be prevented.¹⁵ If TSPs are allowed to charge content providers to be zero-rate, it will incentivize the TSPs to “lower monthly bandwidth caps or increase the per-byte price for unrestricted Internet use in order to make it more attractive for application providers to pay for zero-rating”¹⁶, thereby harming users and the excluded applications. It is also not likely to result in free Internet for the users and will end up being added revenue for the corporations¹⁷.

Differential pricing also causes harm to users. Users suffer in the choice of applications and services available to them through the Internet¹⁸. Their choice will be dictated by what applications are available for free or at

MEDIUM (Jan. 7, 2015), <https://medium.com/backchannel/less-than-zero-199bcb05a868#.lq308juc>; Vanita Kohli-Khandekar, *Net neutrality - Lessons from cable TV*, BUSINESS STANDARD (April 14, 2015), http://www.business-standard.com/article/opinion/vanita-kohli-khandekar-net-neutrality-lessons-from-cable-tv-115041401043_1.html; Raghav Bahl, *After My Cable Massacre, I Punch For Net Neutrality*, QUINT (April 16, 2015), <http://www.thequint.com/opinion/2015/04/15/after-my-cable-massacre-i-punch-for-net-neutrality>.

¹⁵ Barbara van Schewick and Morgan N. Weiland, *New Republican Bill is Network Neutrality in Name Only*, 67 STAN. L. REV. ONLINE 85, 89-90 (2015); Barbara van Schewick, *Network Neutrality and Zero-rating*, p.8 (Feb. 19, 2015), available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>.

¹⁶ Barbara van Schewick, *Network Neutrality and Zero-rating*, pp. 3-4 (Feb. 19, 2015), available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>.

¹⁷ Jonathan Zittrain, *Did Net Neutrality Just Kill the Possibility of a Free Internet, or Pave the Way for It?*, BIGTHINK, <http://bigthink.com/videos/jonathan-zittrain-on-net-neutrality>.

¹⁸ Barbara Van Schewick, *Analysis of Proposed Network Neutrality Rules*, p. 14 (Feb. 18, 2015), available at <https://cyberlaw.stanford.edu/downloads/vanSchewick2015AnalysisofProposedNetworkNeutralityRules.pdf>.

lower rates, as determined by the TSP¹⁹ and the consumers will not choose to use certain applications they value²⁰.

In this way the TSP becomes the arbiter of the choice of applications available to the end user. However, for the Internet to “realize its full economic, social, cultural, and political potential”, users and not TSPs should continue to decide how they want to use the Internet²¹.

Protection of users’ freedom of choice would necessitate measures to ensure that they have non-discriminatory access to all applications. This requires countering of the influence of other actors, such as that of the TSP.²²

As scholars have demonstrated, “the individual’s ability to speak and be heard, to be a producer and not just a customer, and to have a wide variety of diverse sources that are not selected or controlled by a central gatekeeper who has its own motivations, are central to the Internet’s political and cultural potential.”²³

¹⁹ Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 66 (2015).

²⁰ Timothy Wu and Lawrence Lessig, Ex Parte Letter at pp. 2, 7, Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities, CS Docket No. 02-52 (Aug. 22, 2003), available at <http://apps.fcc.gov/ecfs/document/view?id=6514683885>; BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 57-81, 277 (2010).

²¹ Brief Amicus Curiae of Professors Jack M. Balkin, Jim Chen, Lawrence Lessig, Barbara van Schewick, & Timothy Wu Urging that the FCC’s Order Be Affirmed at p. 18, Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291), available at <http://cyberlaw.stanford.edu/files/publication/files/vanschewick-2009-amicus-brief.pdf>; BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 57-81, 277 (2010); Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 5 (2015).

²² Barbara Van Schewick, *Analysis of Proposed Network Neutrality Rules*, pp. 11-12 (Feb. 18, 2015), available at <https://cyberlaw.stanford.edu/downloads/vanSchewick2015AnalysisofProposedNetworkNeutralityRules.pdf>.

²³ BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 57-81, 364 (2010) citing Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (2006); Jack M. Balkin, *Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society*, 79(1) NYU L. REV. 1-58 (2004); Jack M. Balkin, *Media Access: A Question of Design*, 76(4) GEO. WASH. L. REV. 101-118 (2008);

The United States Open Internet Rules of 2015²⁴ provide direction on these issues as well. The Open Internet Rules expressly prohibits the favouring of any particular kind of data over other data, in lieu of any consideration.²⁵ It also prohibits treating data differently based on any business considerations of partnerships or affiliations.²⁶ It states as its objective the preservation of a free and open Internet where application developers can innovate in a competitive market without having to make arrangements with the service providers²⁷. It also mentions protection of users' choice to access content as per their wish without interference of blocking or preferential access to certain products²⁸.

The Open Internet Rules states that a "person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not engage in paid prioritization."²⁹ The term 'paid prioritization' here refers to preferential treatment of certain traffic (i.e, transfer of data) over other traffic³⁰. It further states that there shall be no discrimination in transmitting any lawful content over the service, apart from exceptions for ensuring security of the network and end user preferences.³¹

Remarks of Jack M. Balkin at FCC Workshop on Speech, Democratic Engagement, and the Open Internet at p. 1, (December 15, 2009), Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 22, 2009), available at <http://apps.fcc.gov/ecfs/document/view?id=7020355385>.

²⁴ United States Federal Communications Commission (FCC) Open Internet Rules: The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, available at http://www.ecfr.gov/cgi-bin/text-idx?SID=0e632ddf7e60307aa0ea941c1d84ae79&mc=true&tpl=/ecfrbrowse/Title47/47cfr8_main_02.tpl; A detailed explanation of these rules by the FCC (March 12, 2015), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1_Rcd.pdf.

²⁵ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.9.

²⁶ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.9.

²⁷ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.1.

²⁸ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.11.

²⁹ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.9.

³⁰ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.9.

³¹ The Code of Federal Regulations, Title 47, Chapter 1, Subchapter A, Part 8, § 8.11.

We propose that for a network neutrality regime to be effective and a meaningful, it requires bright-line rules prohibiting all forms of access fees³², not just fees paid in return for prioritization and application-specific discrimination. It needs to include a non-discrimination rule that applies to all forms of differential treatment and bans discrimination based on identity or type of the content or application accessed by the user³³. There should be an explicit ban on any type of zero-rating in exchange for edge-provider payment, and on zero-rating of selected applications within a class of similar applications, as well as zero-rating of all applications in a class without charging edge providers.

TRAI should come out with these rules at the earliest³⁴ and as has been stated by “these rules are necessary because network providers’ decisions about whether, when, and how to engage in discrimination will not necessarily result in socially desired outcomes. Network providers are not beneficial stewards of the Internet platform. They are private actors that pursue their private interests. Network providers’ private interests are often in conflict with users’ interests, and even if they are not, network providers do not know exactly what users want. Network providers’ private interests and the public’s interests with respect to the evolution of the Internet diverge as well.”³⁵

Any actions contrary to bringing out these bright line rules will undermine the “public’s right to know - the market place of ideas - which the Internet provides to persons.”³⁶

³² Barbara van Schewick and Morgan N. Weiland, *New Republican Bill is Network Neutrality in Name Only*, 67 STAN. L. REV. ONLINE 85, 86 (2015).

³³ Barbara van Schewick and Morgan N. Weiland, *New Republican Bill is Network Neutrality in Name Only*, 67 STAN. L. REV. ONLINE 85, 90 (2015).

³⁴ Apar Gupta, *Net Ambiguity*, INDIAN EXPRESS (Jan. 6, 2016), <http://indianexpress.com/article/opinion/columns/net-ambiguity/>.

³⁵ Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 132 (2015).

³⁶ *Shreya Singhal v. Union of India*, (2015) 5 SCC 1, ¶ 21.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

Differential pricing for data usage should not be permitted and there should be no compromise³⁷ on this issue. The regulatory framework should contain a bright-line rule against differential pricing.

As Professor Schewick puts it:

“ [...] while lower profits may to some degree reduce network providers’ incentives to deploy more and better broadband networks, letting network providers block, discriminate, or charge access fees removes the very features that were at the core of the Internet’s success. Given that there are other ways to foster broadband deployment that are not similarly harmful, sacrificing the very aspects that drive the Internet’s value seems too high a price to pay. As Tim Wu put it³⁸, it is like selling the painting to get a better frame.”³⁹

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models.

³⁷ Professor Susan Crawford of the Harvard Law School persuasively puts this point: “Compromise is great, but no democratic country should sacrifice the ideal of the global, interoperable Internet — and the speech and innovation it facilitates — in the name of pragmatism [...] when it comes to fundamentals— including the earth-shaking idea of the Internet, which has made possible for the first time an open, global, interoperable platform for communications— there can be no compromise. Because then we would be surrendering, not compromising.”: Susan P. Crawford, *Zero for Conduct*, MEDIUM (JAN. 7 2015), <https://medium.com/backchannel/less-than-zero-199bcb05a868#.lq308jucl>.

³⁸ Tim Wu, *Why You Should Care About Network Neutrality*, SLATE (May 1, 2006), <http://www.slate.com/id/2140850>.

³⁹ Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 19 (2015).

Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

The premise of this question needs to be addressed in terms of what approaches are considered for providing free Internet access, and to which consumers. TSPs incur costs for providing access to Internet and data services, and this cost needs to be covered by the charge levied on consumers. Consumers pay for the data they use in terms of the amount and/or duration of usage. This is the existing system and by and large considered a fair one.

It is fathomable that TSPs may develop new business models to cover the costs of providing the service that they do. However, it is not permissible to do this by differentiating how the service is provided based on the particular content accessed. This constitutes interference with the functioning of the market and a restriction of users' freedom of choice, which is a direct violation of the Telecommunication Tariff Order⁴⁰. Concerns of providing Internet access to a wider population must take into account the basic principle that a TSP cannot play the role of an arbiter regarding how different data services are offered and accessed. This is a function that should only be carried out by state authority with legislative backing.

In the Geneva Declaration of Principles from World Summit on the Information Society (WSIS) 2003⁴¹, India committed to providing access to the full Internet to all people. The relevant paragraphs state:

“14. We are resolute to empower the poor, particularly those living in remote, rural and marginalized urban areas, to access information and to use ICTs as a tool to support their efforts to lift themselves out of poverty.

⁴⁰ Clause 10, The Telecommunication Tariff Order, 1999, available at <http://tinyurl.com/tto1999>.

⁴¹ WSIS, Declaration of Principles- Building the Information Society: A Global Challenge in the New Millennium ¶¶ 14, 23, Doc. No. WSIS-03/GENEVA/DOC/4-E (Dec. 12, 2003), available at http://www.itu.int/dms_pub/itu-s/md/03/wsisis/doc/S03-WSIS-DOC-0004!PDF-E.pdf.

[...]

23. Policies that create a favourable climate for stability, predictability and fair competition at all levels should be developed and implemented in a manner that not only attracts more private investment for ICT infrastructure development but also enables universal service obligations to be met in areas where traditional market conditions fail to work. In disadvantaged areas, the establishment of ICT public access points in places such as post offices, schools, libraries and archives, can provide effective means for ensuring universal access to the infrastructure and services of the Information Society.”

This was reaffirmed by all United Nations member states, including India, in the recently concluded review of the implementation of the Outcomes of the World Summit on the Information Society⁴² (WSIS+10).

It is recommended that these commitments are fulfilled and that special emphasis is placed on providing full and equal Internet connectivity to weaker and marginalized sections of society. This implies that there must be no difference in the Internet accessible to the use group who are already regular users of the conventional Internet, and those who are the subject of policy measures to increase access to Internet for a larger share of the population. Such an objective dictates that telecom or online content companies cannot be permitted to play a role in deciding the nature of the Internet that anyone is able to access.

A commitment towards providing a basic utility like connectivity to the Internet cannot be diluted, or characterized as a halfway promise. The commitment made is to provide access to all people to the full extent of the

⁴² UNGA, Outcome document of the high-level meeting of the General Assembly on the overall review of the implementation of the outcomes of the World Summit on the Information Society ¶ 2, U.N. Doc. A/C.2/59/3 (Dec. 13, 2015), available at http://www.un.org/ga/search/view_doc.asp?symbol=A/70/L.33&referer=https://t.co/QauJe5c1Wn&Lang=E.

Internet. TRAI has also stated that providing access to video content is the most crucial aspect of this mandate, as this medium can cut across literacy barriers. A restricted set of Internet services would disable access to video content for those who are most crucially in need of the same.

There is a misplaced focus placed by the consultation paper on giving telecom companies economic advantages for providing Internet access to remote areas and communities. This approach ignores the main objective of TRAI and the state, to provide Internet connectivity to people irrespective of who provides the service or how it is done. If telecom companies are unable to make a profit by providing further access and infrastructure, and choose not to do so, it is not within the mandate of state agencies to assist companies to reach their profit margins or expansion goals. The State agencies cannot remedy the lack of business alternatives by giving companies decision-making power over people's access to resources.

The models of differential pricing and a limited set of online applications are precisely aimed at helping existing telecom and internet market leaders to find a way to expand by compromising on the rights of citizens to access information. The discourse has created an artificial binary between providing limited Internet access to all, and providing full Internet access to a limited set of users. This presupposes the possibility of a compromise in the commitment made to provide full access to all citizens. However, the mandate needs to be respected by aiming for full access to the Internet for all, and the models explored should have with this objective in mind.

There are studies carried out to show the division in consumer choice regarding data plans with a restricted set of applications.⁴³ According to a

⁴³ "Evidence suggests that zero-rating has a powerful effect. For example, in a study commissioned by CTIA, "[n]early three-quarters of respondents (74%) report that they would be more likely to watch videos offered by a new provider if the content did not count against their monthly limit." When Slate experimented with zero-rating and "told some would-be listeners that the podcast wouldn't count against the data plans on their smartphones [...] users were 61% more likely to press play.": Barbara van Schewick, *Network Neutrality and Zero-rating*, p.2 (Feb. 19, 2015), available at

study of Indian consumers, certain highly used applications like messaging services are sought after in these kinds of plans (which are not zero rated), but with others the response is fairly lukewarm.⁴⁴ This helps demonstrate the importance of having access to the full extent of the Internet as a crucial aspect of any data connection. It is also important to think about this beyond mere consumer choices -- as the constitutional right of consumers (as Indian citizens) to be informed by a plural media creates an obligation on the State⁴⁵ to form a policy which creates a versatile and diverse media, or at the very least does not operate against it. This obligation would have to be taken into account in a hypothetical scenario where there actually was a significant demand for zero-rated data plans with limited content.

Professor Schewick eloquently sums up the issues of marginalized communities and Internet access⁴⁶:

“Some commenters argue that at least one type of zero-rating in this class – giving users access to [...]” a limited part of the Internet “even if they haven’t bought a mobile Internet plan – is beneficial for underserved communities. Having “free” access to [...]” a part of the Internet, “they argue, is better than not having no access to the Internet at all.

This argument does not apply to the zero-rating of ISPs own

<http://apps.fcc.gov/ecfs/document/view?id=60001031582>; Amba Kak, *The Internet Unbundled- Locating the user’s voice in the debate on zero-rating*, ch. 5, ch. 6, at 49 (August, 2015) (MSc Dissertation, Oxford Internet Institute), available at <http://www.savetheinternet.in/files/amba-kak-thesis.pdf>; Amba Kak, *Is Free Basics the access that users want*, BUSINESS STANDARD (Dec. 30, 2015), http://www.business-standard.com/article/opinion/free-basics-vs-net-neutrality-is-free-basics-the-access-that-users-want-115123000131_1.html.

⁴⁴ Amba Kak, *The Internet Unbundled- Locating the user’s voice in the debate on zero-rating*, ch. 5 (August, 2015) (MSc Dissertation, Oxford Internet Institute), available at <http://www.savetheinternet.in/files/amba-kak-thesis.pdf>.

⁴⁵ See *infra* pp. 17-21.

⁴⁶ Barbara van Schewick, *Network Neutrality and Zero-rating*, pp. 6-7 (Feb. 19, 2015), available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>.

applications, so it shouldn't prevent the [...]” regulator “from adopting a ban on these practices. But even for plans that give users “free” access to” a limited part of the Internet “the argument that these plans benefit minorities is wrong for two reasons:

[...]

And second, the argument suggests a false choice. The choice is not between granting low-income communities free access to [...]” a limited part of the Internet “or no Internet access at all. Instead of allowing free access to [...]” a limited part of the Internet, “ISPs could offer low-cost, limited options that give users free, but limited access to the entire Internet.

Zero-rating [...]” a limited part of the Internet “doesn't meet the needs of underserved communities. Now more than ever, Internet access is necessary to secure full participation in [...] economy and democracy. However, access to [...]” a limited part of the Internet “is not the same as access to the Internet. Low-income families need access to the Internet to do homework, communicate with teachers, search for jobs, sign up for health insurance, and register to vote. Minority communities, who have historically been left out of broader social and political discourse, need the Internet to organize, create, educate and innovate online.” A few applications “[...] alone do not allow them to do this [...]

[...] allowing ISPs to zero-rate certain applications as a tool to help spread the digital divide sets a dangerous precedent [...]

[...] Low-income families, both on their computers and on their phones, will be restricted to sites that providers choose for them. It will shuttle already marginalized communities into “walled gardens” – cutting them off from free information and full participation.”

The alternatives for expanding Internet access through state owned enterprises such as BSNL, BBNL etc. can be explored in areas where private companies fail to meet market requirements, or choose not to expand. Further, the resources available through the Universal Service Obligation Fund (USOF) which is currently in excess of ₹ 40 thousand crores⁴⁷, can be used for the requisite investment in the absence of private investment in providing access to remote areas. The said fund has been set up with the specific objective of providing equitable access to the Internet by connecting those groups and areas that have not been serviced by conventional expansion of the telecom industry. It is thus a perfect alternative to provide the economic backing for projects with these objectives.

India has already committed to pursue the objective of developing Information and Communications Technology (ICT) infrastructure to improve connectivity through USOF and other public funds, as stated in the 2015 WSIS+10 outcome document⁴⁸.

“36. We commit to efficient public resource allocation to deployment and development of information and communications technology, recognizing the need for budgeting for information and communications technology across all sectors, especially education. [...] We recognize the potential to improve connectivity, especially in remote and rural areas, through universal service funds and publicly funded network infrastructure, among other tools, particularly in areas where market conditions make investment difficult.”

An important premise to be kept in mind is that it is not necessary to allow TSPs to modify the nature of data services to provide greater Internet

⁴⁷ Universal Service Obligation Fund Status (December 29, 2015), available at <http://www.usof.gov.in/usof-cms/usof-fund-status-table.jsp>.

⁴⁸ UNGA, Outcome document of the high-level meeting of the General Assembly on the overall review of the implementation of the outcomes of the World Summit on the Information Society ¶ 36, U.N. Doc. A/C.2/59/3 (Dec. 13, 2015), available at http://www.un.org/ga/search/view_doc.asp?symbol=A/70/L.33&referer=https://t.co/QauJe5c1Wn&Lang=E.

access to the wider population. The questions in the Consultation Paper seem to assume that without this measure it is not possible to provide Internet connection to a greater share of citizens. This is patently untrue, and there are other approaches to increase the penetration of last-mile Internet connectivity. Further investment in conventional infrastructure for telecommunication and data services is the first and most obvious method to go about achieving this. If telecom companies find that it is not profitable to expand connectivity any further, such expansion can either be incentivized as part of the terms of licensing agreement between the Central Government and the TSPs.

There are however other models to fulfill this objective as well. Community radio has proved to demonstrate a successful model for increasing access to media for newer and more diverse sections of the population.⁴⁹ The presence of a substantive regulatory framework ensures that the players who opt to feed into this market have objectives that are in line with the mandate of the state as mentioned in the Consultation Paper to provide internet access to all citizens. This model also presents a system where the services provided to the citizens are those, which are most meaningful and relevant to their priorities and livelihood.

It is the duty of the State and various agencies including TRAI to protect the right to freedom of speech and expression of citizens⁵⁰, and not business models. The public interest demands that we secure the benefits of an open and participatory Internet for this century and frame strong network neutrality framework.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

⁴⁹ See Chinmayi Arun and Siddharth Manohar, *Empowering the Marginalized: Tales of the Digital Good Life* in THE GOOD LIFE IN ASIA'S DIGITAL 21ST CENTURY pp. 2-7 (Digital Asia Hub, 2016).

⁵⁰ See *infra* pp. 17-21.

The crux of the arguments being put forth in the debate on net neutrality and differential pricing consists of the harm to competition caused by differentially priced platforms, along with the related concern of monopolization of a section of the country's user base. This is pitched against need to increase the accessibility of the Internet. Missing completely from this discussion is the right of users to access a diverse information set from multiple sources of media content, and the principles to which usage and allocation of spectrum is subject as per Article 19(1)(a) of the Constitution of India.

TRAI must take into account constitutional principles as well as the Supreme Court's jurisprudence on Article 19 before finalizing its view on the issue of differential pricing.

Telecommunications companies may be private, market-driven entities but they operate in a sector in which they perform a public function by offering information services to citizens. They are, and have always been, regulated with the object of citizens deriving as much benefit as possible from their services. The growth of the Internet has meant that these companies now perform a critical gatekeeping function in providing citizens with access to online information, which is increasingly being recognized as an important human right. TRAI must ensure that these companies do not abuse their gatekeeping function and their control over an important national resource such that citizens are deprived of access to a plurality of information.

The part below is a summary of relevant Indian constitutional principles and how they might apply to the regulatory clearance of differential pricing of different kinds of online content.

CONSTITUTIONAL PRINCIPLES

There are three key principles that the committee must consider in the context of the Internet. The first is the public's right to receive information under Article 19(1)(a) of the Constitution of India, the second is that the

government is required to regulate limited public resources such that they are used in the best interest of society, and the third is that even private parties will be required to respect constitutional rights when they perform a public function.

The right to freedom of speech and expression in the Indian Constitution⁵¹ contains within it the right to receive information. This has been articulated repeatedly in a series of Supreme Court judgments ranging from Justice Mathew's dissent in *Bennett Coleman*⁵², the *Indian Express Newspapers v. Union of India*⁵³ case, *Secretary, Ministry of Information & Broadcasting, Govt. of India v. Cricket Association of Bengal*⁵⁴, and *Sahara India Real Estate Corporation Ltd. & Ors. v. SEBI & Anr*⁵⁵. 'The public's right to know' has most recently been acknowledged in the context of the Internet by the Supreme Court in *Shreya Singhal v. Union of India*⁵⁶.

Added to this is the fact that airwaves are a limited public resource. The Supreme Court of India held in *Cricket Association of Bengal*⁵⁷ that since airwaves are a scarce resource, they have to be used in the best interest of the society, and that the government may regulate the grant of licenses accordingly. The public authority must control and regulate airwaves or frequencies **in the interests of the public** and to prevent the invasion of their rights. Justice Jeevan Reddy's concurring judgment adds that public good lies in ensuring plurality of opinions, views, and ideas.

Telecommunications infrastructure has already been recognized by the Indian judiciary as a public resource. In *Delhi Science Forum & Ors. v. Union*

⁵¹ Article 19(1)(a), Constitution of India, 1950.

⁵² *Bennett Coleman & Co. & Ors. v. Union of India & Ors.*, (1972) 2 SCC 788.

⁵³ (1985) 1 SCC 641.

⁵⁴ (1995) 2 SCC 161.

⁵⁵ (2012) 10 SCC 603.

⁵⁶ (2015) 5 SCC 1.

⁵⁷ *Secretary, Ministry of Information & Broadcasting, Govt. of India v. Cricket Association of Bengal*, (1995) 2 SCC 161.

*of India & Anr*⁵⁸, the Supreme Court acknowledged that telecommunications is an internationally recognized public utility of strategic importance. Further, in the case of *Centre for Public Interest Litigation and others v. Union of India & Ors.*⁵⁹ (the 2G case) the Supreme Court recognized spectrum as a scarce natural resource, and applied the public trust doctrine to explain that the state must protect such resources for the enjoyment of the general public rather than to permit their use for private ownership or commercial purposes. In *Association of Unified Tele Services Providers & Ors. v. Union of India & Ors.*⁶⁰, the Supreme Court has reemphasized that the State is bound to protect spectrum resources for the enjoyment of general public rather than permit their use for purely commercial purposes. It has pointed out that the public trust doctrine “puts an implicit embargo on the right of the State to transfer public properties to private party if such transfer affects public interest”, and that it “mandates affirmative State action for effective management of natural resources and empowers the citizens to question ineffective management.”

The mechanism for distributing the resource must therefore follow the doctrine of equality, which requires among other things, that the people be granted equitable access to natural resources. This means that the Department of Telecommunication is under an obligation to ensure that the telecommunication infrastructure is used by its operators in a manner by which people are granted equal access to both, a wide range of information as well as platforms on which they may express themselves. This is an obligation that is taken seriously in India, as is reflected by the National Telecom Policy, 1999 through its requirement that BSNL provide affordable services to remote areas, and by the Universal Service Obligation Fund directed at financing the introduction of telecommunications services in

⁵⁸ (1996) 2 SCC 405, ¶ 2.

⁵⁹ (2012) 3 SCC 104.

⁶⁰ (2014) 6 SCC 110, ¶ 4.

rural and remote areas.⁶¹ In the context of spectrum, this obligation is also reflected in the licensing agreements issued under Section 4 of the Indian Telegraph Act, 1885. It highlights the fact that the Central Government enjoys an “exclusive privilege” so far as “spectrum” is concerned, which is a scarce, finite, and renewable natural resource which has got intrinsic utility to mankind.⁶² In this context, the Supreme Court has emphasized in *Association of Unified Tele Services Providers & Ors.*⁶³ that spectrum “is a natural resource which belongs to the people, and the State, its instrumentalities or the licensee, as the case may be, who deal with the same, hold it on behalf of the people and are accountable to the people.”

Finally, the question of whether Internet Service Providers perform a public function must be considered in the context of *Jayta Pal Singh v. Union of India*⁶⁴. In this case, the Supreme Court’s standard to check if a body is performing a public function is to “prove that the body seeks to achieve some collective benefit for the public or a section of public and accepted by the public as having authority to do so”. The court then found that telecommunication operators do not meet this standard (in the context of the rights available to their employees) on the basis that they provide commercial services for commercial considerations – which was viewed as different in essence from the function performed by private institutions imparting education to children (acknowledged as a sovereign function by the judiciary). This principle recognizing that private bodies may perform public functions was also highlighted in *Binny Ltd. & Anr. v. V. Sadasivan & Ors.*⁶⁵, in which the Supreme Court, in the context of the writ jurisdiction under Article 226 of

⁶¹ In addition to the primary documents, see Sagnik Datta, *Skewed Plan*, FRONTLINE (June 14, 2013), <http://www.frontline.in/economy/skewed-plan/article4746549.ece>.

⁶² *Association of Unified Tele Services Providers & Ors. v. Union of India & Ors.*, (2014) 6 SCC 110, ¶ 23.

⁶³ *Association of Unified Tele Services Providers & Ors. v. Union of India & Ors.*, (2014) 6 SCC 110, ¶ 23.

⁶⁴ (2013) 6 SCC 452.

⁶⁵ (2005) 6 SCC 657.

the Indian Constitution, explained that when a “private body is discharging a public function and the denial of any right is in connection with the public duty imposed on such body, the public law remedy can be enforced”.

Authoritative sources on human rights, including the Indian Supreme Court⁶⁶ and the UN Special Rapporteur on human rights⁶⁷ have highlighted the critical role played by Internet for the exercise of freedom of expression rights of citizens. It is our submission that any consideration of the role of Internet service providers in the context of freedom of expression online is likely to satisfy the public function test since access to information is in fact not just a collective benefit but a fundamental right of the public.

Further, differential access and pricing of online content by Internet Service Providers could have the effect both of thwarting the market and causing serious losses to Indian content-based start-ups, as well as affecting people’s access to information. We would also caution that regulation of information markets must always take into account diversity of content and the access rights of citizens, and must be regulated from the point of view of providing the maximum possible information, and a plurality of information to citizens.

MEDIA PLURALISM

The Supreme Court of India has read Article 19 of the Constitution to mean that citizens have a right to a plurality of information. In the words of the Apex Court:

“The right of free speech and expression includes the right to receive and impart information. For ensuring the free speech right of the citizens of this country, it is necessary that the citizens have the benefit of plurality of views and a range of opinions on all public

⁶⁶ *Shreya Singhal v. Union of India*, (2015) 5 SCC 1.

⁶⁷ UNGA, Sixty-sixth session Report by Special Rapporteur Frank La Rue on the Promotion and Protection of the Right to Freedom of Opinion and Expression, (Sept. 7, 2012) UN Doc A/67/357.

issues. A successful democracy posits an ‘aware’ citizenry. Diversity of opinions, views, ideas and ideologies is essential to enable the citizens to arrive at informed judgment on all issues touching them. This cannot be provided by a medium controlled by a monopoly — whether the monopoly is of the State or any other individual, group or organisation...⁶⁸

This reading of the right to freedom of expression suggests that zero-rating may be problematic since it will create monopoly control (whether by the state or private parties) over the information available to a large number of citizens. Especially in view of the government’s ‘Digital India’ program, such control may be unnecessary since the government is already working on ways to ensure that there is universal access to the Internet.

In addition to being recognized in India, the necessity of plurality of information, especially in the context of the media is a well-established norm in Europe. It has been explicitly recognized in the European Charter of Fundamental Rights⁶⁹, which states that ‘the freedom and pluralism of the media shall be respected’. Plurality has also been recognized as being a priority in the context of Article 19 of the International Covenant on Civil and Political Rights⁷⁰, and General Comment 34⁷¹ to the covenant urges states to prevent monopoly control of the media and promote plurality of the media.

It must therefore be kept in mind that while market-priorities and access to information are important, it is an equally important principle embedded in Article 19 of the Indian constitution that no entity, not even the government, can control the nature of information that citizens are able to access. In view

⁶⁸ *Secretary, Ministry of Information & Broadcasting, Govt. of India v. Cricket Association of Bengal*, (1995) 2 SCC 161, ¶¶ 201(3)(a) and (b).

⁶⁹ Charter of Fundamental Rights of the European Union, [2010] OJ C 83/02, art. 11(b).

⁷⁰ International Covenant on Civil and Political Rights, art. 19 (Dec. 16, 1966), 999 U.N.T.S. 171.

⁷¹ International Covenant on Civil and Political Rights General Comment 34, Article 19: Freedom of Opinion and Expression, U.N. Doc. CCPR/C/21/Rev.1/Add.11, ¶ 7 (Aug. 31, 2001).

of this, it is difficult to see how zero-rating can be implemented in the absence of a completely independent and legitimate regulator that is accountable to the people in a manner such that it will not attempt to exercise an adverse influence on the plurality of information that they are owed.

Finally, regulation focusing on net neutrality and on the issue of differential pricing can take a variety of forms and it will be critical to choose a model that will be effective within our regulatory environment. We are attaching an article⁷² written by *Professor Barbara van Schewick*⁷³ of *Stanford University* that offers an insight into the same issues that TRAI is currently looking into, and the different kinds of models that can be adopted in this regard. We are also attaching a recent note by *Professor Schewick* on the specific issue of “Network Neutrality and Zero-rating”⁷⁴ and hope that it is useful to the regulator⁷⁵.

⁷² Barbara van Schewick, *Network Neutrality and Quality of Service: What a Nondiscrimination Rule Should Look Like*, 67 STAN. L. REV. 1, 65 (2015), available at http://www.stanfordlawreview.org/sites/default/files/67_Stan_L_Rev_1_van_Schewick.pdf.

⁷³ Barbara van Schewick is a leading net neutrality expert, a Professor at Stanford Law School, the Director of the Stanford Center for Internet and Society, Professor (by Courtesy) of Electrical Engineering at Stanford University and the author of *Internet Architecture and Innovation* (MIT Press 2010). Her writings on network neutrality have influenced regulatory debates in the United States, Canada, Europe and Latin America and have been cited by academics, stakeholders, regulatory agencies and other public entities worldwide. The FCC’s Open Internet Orders in 2010 and 2015 relied heavily on Professor Schewick’s work: http://www.slate.com/blogs/future_tense/2015/09/22/barbara_van_schewick_susan_crawford_and_other_women_who_won_net_neutrality.html.

⁷⁴ Barbara van Schewick, *Network Neutrality and Zero-rating*, Submission to the US Federal Communications Commission (Feb. 19, 2015), available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>. The document contains a typographical error with respect to the date of the document and the correct date is available at <http://apps.fcc.gov/ecfs/comment/view?id=60001018565>.

⁷⁵ In her third recommendation *Professor Schewick* states that zero-rating of all applications in a class that does not involve edge-provider payments should be reviewed under the general conduct rule. Given *Professor Schewick*’s position on this, it appears her recommendation is best suited for countries which have existing regulatory safeguards. Due to the absence of such a framework in India we are of the opinion that this will not be applicable to the Indian scenario.

ARTICLES

NETWORK NEUTRALITY AND QUALITY OF SERVICE: WHAT A NONDISCRIMINATION RULE SHOULD LOOK LIKE

Barbara van Schewick*

* Professor of Law, Helen L. Crocker Faculty Scholar, Stanford Law School; Director, Center for Internet and Society, Stanford Law School; Professor (by Courtesy) of Electrical Engineering, Stanford University. This Article is a revised version of a paper that was published as a white paper by Stanford Law School's Center for Internet and Society in June 2012. See BARBARA VAN SCHEWICK, NETWORK NEUTRALITY AND QUALITY OF SERVICE: WHAT A NON-DISCRIMINATION RULE SHOULD LOOK LIKE (2012), available at http://cyberlaw.stanford.edu/files/publication/files/20120611-NetworkNeutrality_0.pdf. Earlier versions of this Article were filed with the FCC in August 2010, see Barbara van Schewick, Network Neutrality: What a Non-Discrimination Rule Should Look Like, Attachment to Notice of Ex Parte Conversation, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Aug. 2, 2010), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020652518>, presented at the 38th Research Conference on Communication, Information and Internet Policy (TPRC 2010), see Barbara van Schewick, *Network Neutrality: What a Non-Discrimination Rule Should Look Like* (Stanford Law Sch. Pub. Law & Legal Theory Research Paper Series, Research Paper No. 1684677, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1684677, and filed with the FCC in December 2010, see Barbara van Schewick, Network Neutrality: What a Non-Discrimination Rule Should Look Like, Attachment to Ex Parte Letter, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52, Framework for Broadband Internet Service, GN Docket No. 10-127 (Dec. 14, 2010), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020923837>.

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Over the past ten years, the debate over “network neutrality” has remained one of the central debates in Internet policy. Governments all over the world have been investigating whether legislative or regulatory action is needed to limit the ability of providers of Internet access service to interfere with the applications, content, and services on their networks.

In addition to rules that forbid network providers from blocking applications, content, and services, rules that forbid discrimination are a key component of any network neutrality regime. Nondiscrimination rules apply to any form of differential treatment that falls short of blocking. Policymakers who consider adopting network neutrality rules need to decide which, if any, forms of differential treatment should be banned.

This Article makes five contributions: First, it proposes a substantive framework that policymakers can use to evaluate alternative proposals for network neutrality rules and assess specific forms of discriminatory conduct. Second, the Article evaluates eight existing proposals for nondiscrimination rules and the Open Internet Order’s nondiscrimination rule against this framework and proposes a nondiscrimination rule—ban application-specific discrimination, allow application-agnostic discrimination—that policymakers should adopt around the world—a rule that the FCC’s Open Internet Order adopted in part. Third, the Article highlights the differences between an antitrust framework and the broader theoretical framework on which most calls for network neutrality regulation are based and explains why an antitrust framework does not capture all instances of blocking or discrimination that concern network neutrality proponents. Fourth, the Article offers the first in-depth analysis of the relationship between network neutrality and new network-level services called Quality of Service. Finally, the Article provides the first detailed analysis of the Open Internet Order’s nondiscrimination rule for fixed broadband Internet access.

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The questions this Article addresses are global, and not limited to American law and policy: In Europe, the European Commission, the European Parliament, and the member states are currently considering which approach to network neutrality they should take. In Brazil, policymakers are discussing the best way to implement the recently adopted network neutrality law. In all of these debates, nondiscrimination rules are a key point of contention. And no matter which network neutrality regime a country adopts, the question of which, if any, network discriminations require a legal response will remain relevant for years to come.

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INTRODUCTION

Who should decide how we can use the Internet? Internet service providers like AT&T, Comcast, Deutsche Telekom, or Telefónica that provide the on-ramps to the Internet? Or should Internet users decide? This question is at the core of the debate over network neutrality. Network neutrality rules limit the ability of Internet service providers to interfere with the applications, content, and services on their networks; they allow users to decide how they want to use the Internet without interference from Internet service providers.¹

The network neutrality debate was triggered by a change in technology. Initially, the network was application-blind: it could not distinguish between the applications, content, and services that were running over the network.² As a

1. Throughout this Article, I use the terms “providers of Internet access service,” “Internet service providers,” and “network providers” interchangeably, and the term “applications” as a shorthand for “applications, content, services, and uses.”

2. Throughout this Article, the term “original architecture of the Internet” refers to the network architecture that was specified in the Defense Advanced Research Projects Agency (DARPA) Internet Program Protocol Specifications for the Internet Protocol, INFO. SCIS. INST., UNIV. OF S. CAL., RFC 791, INTERNET PROTOCOL: DARPA INTERNET PROGRAM PROTOCOL SPECIFICATION (Jon Postel ed., 1981), and Transmission Control Protocol, INFO. SCIS. INST., UNIV. OF S. CAL., RFC 793, TRANSMISSION CONTROL PROTOCOL: DARPA INTERNET PROGRAM PROTOCOL SPECIFICATION (Jon Postel ed., 1981). David Clark described this architecture in an important article on the design philosophy of the DARPA Internet protocols. See David D. Clark, *The Design Philosophy of the DARPA Internet Protocols*, COMPUTER COMM. REV., Aug. 1988, at 106. The original architecture of the Internet was based on the layering principle and on the broad version of the end-to-end arguments. The Internet’s application-blindness was a consequence of this architectural design. There are two versions of the end-to-end arguments—a narrow version and a broad version—which are often confused in policy debates. BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 57-81, 377-79 (2010) [hereinafter VAN SCHEWICK, ARCHITECTURE AND INNOVATION]; Barbara van Schewick, Architecture and Innovation: The Role of the End-to-End Arguments in the Original Internet 87-109, 123-29 (Sept. 15, 2004) (unpublished Ph.D. dissertation, Technical University Berlin) (on file with author) [hereinafter van Schewick, Dissertation]. Both versions shaped the original architecture of the Internet. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra*, at 90-103, 110-12, 379-81; van Schewick, Dissertation, *supra*, at 116-29. However, only the broad version, together with the layering principle,

result, Internet service providers could not control the applications and content on their networks. This allowed users to decide how they wanted to use the network, without interference from Internet service providers. Over the past two decades, technology has become available that enables Internet service providers to identify the applications and content on their networks and control their execution.³

Proponents of network neutrality argue that Internet service providers have incentives to use this new technology in socially harmful ways.⁴ They contend that the existing laws in many countries do not sufficiently constrain providers' ability to do so and that, therefore, new rules—so-called “network neutrality rules”—are needed that restrict Internet service providers' ability to interfere with the applications, content, and services on their network. According to network neutrality proponents, users, not network providers, must continue to decide how they want to use the Internet if the Internet is to realize its full economic, social, cultural, and political potential.

Over the past ten years, few Internet policy issues have received as much public attention as the debate over network neutrality. The Open Internet proceeding, started by the Federal Communications Commission (FCC) in the fall of 2009 to realize President Obama's campaign promise to enact network neutrality rules, received more than 100,000 comments from interested parties, many of them ordinary citizens, and was covered extensively in the media, from the *Wall Street Journal* to the *Daily Show*. As of October 2014, more than 3.9 million comments had been filed in the FCC's current network neutrality rulemaking.⁵ All over the world, from the United States to Europe to Latin America, policymakers continue to investigate whether they should adopt network neutrality rules and, if so, what the rules should be.

is responsible for the application-blindness of the network. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra*, at 72-75, 217-18; van Schewick, Dissertation, *supra*, at 101-03; see also David P. Reed, *A Response to Barbara van Schewick: Code Needs (Only a Little) Help from the Law*, DPR (Dec. 15, 2010), <http://www.reed.com/blog-dpr/?p=85>. On the layering principle and its relationship to the architecture of the Internet, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra*, at 46-57, 88-90.

3. On deep packet inspection (DPI) in general, see Nate Anderson, *Deep Packet Inspection Meets 'Net Neutrality*, CALEA, ARS TECHNICA (July 25, 2007, 9:10 PM PDT), <http://arstechnica.com/gadgets/2007/07/deep-packet-inspection-meets-net-neutrality>. For a specific example, see *Network-Based Application Recognition and Distributed Network-Based Application Recognition*, CISCO SYS., http://www.cisco.com/c/en/us/td/docs/ios/12_2s/feature/guide/fsnbarad.pdf (last visited Jan. 7, 2015). On the state of DPI deployment, see Comments of Free Press at 141-51, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Free Press Open Internet Comments], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020378751>.

4. This paragraph is adapted from Barbara van Schewick & David Farber, *Point/Counterpoint: Network Neutrality Nuances*, COMM. ACM, Feb. 2009, at 31, 32.

5. Gigi B. Sohn, *FCC Releases Open Internet Reply Comments to the Public*, OFFICIAL FCC BLOG (Oct. 22, 2014, 3:07 PM), <http://www.fcc.gov/blog/fcc-releases-open-internet-reply-comments-public>.

In Europe, the European Commission, the European Parliament, and the member states are currently considering which approach to network neutrality they should take.⁶ In Brazil, policymakers are discussing the best way to implement the recently adopted network neutrality law.⁷ In the United States, a 2014 decision by the Court of Appeals for the D.C. Circuit reignited the debate. In December 2010, the FCC adopted the Open Internet Order,⁸ which enacted binding network neutrality rules for the first time.⁹ The rules went into effect in November 2011.¹⁰ In January 2014, *Verizon v. FCC* struck down the core provisions of that Order—the rules against blocking and discrimination.¹¹ The decision combined two wins for the FCC with one decisive loss. According to the court, the FCC has authority to regulate providers of broadband Internet access service under section 706 of the Telecommunications Act of 1996, and the FCC's justification for the Open Internet Order is “reasonable and supported by substantial evidence.”¹² Both of these points had been heavily contested by Verizon. The court found, however, that the no-blocking and nondiscrimination rules violated the Communications Act’s ban on imposing common carrier obligations on entities like Internet service providers that the FCC has not classified as telecommunications service providers under Title II of the Communications Act.¹³ The Court upheld the Open Internet Order’s disclosure rule, so Internet service providers still have to publicly disclose any blocking or discrimination that occurs.

As a result of this ruling, Internet service providers like Verizon, AT&T, or Time Warner that connect users to the Internet are now free to block any content, service, or application they want. They can slow down selected applications, speed up others, or require application or content providers like Netflix or Spotify to pay fees to reach their users. These practices would fundamentally change how each of us experiences the Internet.

In the wake of the D.C. Circuit’s decision, U.S. policymakers must decide (again) which, if any, network neutrality rules the United States should adopt. They essentially have three options. First, the FCC can preserve the Open Internet Rules by reclassifying Internet service as a telecommunications service

6. See, e.g., James Kanter & Mark Scott, *European Panel Adopts ‘Net Neutrality’ and Mobile Roaming Rules*, N.Y. TIMES (Mar. 18, 2014), <http://www.nytimes.com/2014/03/19/business/international/eu-panel-adopts-net-neutrality-and-mobile-roaming-rules.html>.

7. See, e.g., *Net Neutrality Wins in Brazil’s ‘Internet Constitution,’* AL JAZEERA AM. (Mar. 26, 2014, 9:34 AM ET), <http://america.aljazeera.com/articles/2014/3/26/brazil-internet-constitution.html>.

8. Preserving the Open Internet (*Open Internet Order*), 25 FCC Rcd. 17,905 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

9. *Id.* at 17,908-15.

10. Preserving the Open Internet, 76 Fed. Reg. 59,192 (Sept. 23, 2011) (codified at 47 C.F.R. pts. 0, 8).

11. *Verizon*, 740 F.3d at 659.

12. *Id.* at 628.

13. *Id.* at 655-56.

under Title II of the Communications Act. Second, the FCC can develop a different, narrower network neutrality regime under section 706 of the Telecommunications Act within the boundaries established by the D.C. Circuit's decision. Finally, Congress or the FCC can adopt a new network neutrality regime, but only, in the case of the FCC, after reclassifying Internet service as a telecommunications service.

Whether network neutrality rules should include a nondiscrimination rule—and, if so, what it should be—is a key point of contention in all of these debates. This Article analyzes the available options and proposes a nondiscrimination rule—ban application-specific discrimination, allow application-agnostic discrimination—that policymakers should adopt around the world—a rule that the FCC's Open Internet Order adopted in part.

Nondiscrimination rules apply to any form of differential treatment that falls short of blocking. They determine, for example, whether network providers are allowed to provide low-delay service only to their own streaming video applications, but not to competing video applications; whether network providers can count only traffic from unaffiliated video applications, but not their own Internet video applications, towards users' monthly bandwidth cap; or whether network providers can charge their subscribers different prices for Internet access depending on the application used, independent of the amount of traffic created by the application.¹⁴

The decision for a specific nondiscrimination rule has important implications. In particular, it affects how the core of the network can evolve, how network providers can manage their networks, and whether they can offer new network-level services called Quality of Service (QoS). Different applications have different requirements with respect to reliability, bandwidth, or delay.¹⁵

14. An Internet service provider's pricing practices with respect to application and content providers who are not its Internet service customers are not governed by the nondiscrimination rule. Whether an Internet service provider can charge application providers who are not its subscribers an "access fee" for access or for prioritized or otherwise enhanced access to its subscribers is governed by a network neutrality regime's rules about access fees. For a definition of the term "access fees," see note 62 below. A discussion of access fees is outside the scope of this Article. For a short overview of the debate, see Box 2 and notes 29-30 below.

15. For example, Internet telephony is very sensitive to delay above a certain level, but can tolerate occasional packet loss. Users usually do not notice a one-way, mouth-to-ear delay of less than 150 milliseconds (ms). A delay of more than 400 ms makes voice calls frustrating or unintelligible. *See Int'l Telecomm. Union, RECOMMENDATION G.114, ONE-WAY TRANSMISSION TIME 3* (2003); JAMES F. KUROSE & KEITH W. ROSS, COMPUTER NETWORKING: A TOP-DOWN APPROACH 601 (5th ed. 2010). Depending on the encoding and loss-concealment mechanisms used, Internet telephony applications can tolerate between 1% and 20% of packet loss. *See KUROSE & ROSS, supra*, at 617. By contrast, e-mail is very sensitive to packet loss, but can tolerate some delay. *Id.* at 92, 95 fig.2.4. E-mail applications rely on a transport layer protocol called the Transmission Control Protocol (TCP) to get reliable data delivery. On the needs of applications more generally, see, for example, *id.* at 92-95; and LARRY L. PETERSON & BRUCE S. DAVIE, COMPUTER NETWORKS: A SYSTEMS APPROACH 530-37 (5th ed. 2012).

While the original Internet provides a single, best-effort service for all packets (that is, the network does its best to deliver data packets, but does not provide any guarantees with respect to delay, bandwidth, or losses),¹⁶ a network that provides Quality of Service offers different types of service to different data packets.¹⁷ For example, a particular service may guarantee a minimum bandwidth or maximum delay, or it may give some data packets priority over others without giving absolute guarantees.¹⁸ While many applications function well with best-effort service, some applications may benefit from types of service that are more closely tailored to their needs. Whether network providers are able to offer Quality of Service may therefore have implications for the types of applications that the Internet can support.¹⁹

Thus, policymakers who consider adopting nondiscrimination rules face a serious challenge: how to find a nondiscrimination rule that realizes the goals of network neutrality regulation without overly constraining the evolution and operation of the network and while keeping the cost of regulation low. Overly restrictive rules may impede the evolution of the Internet's network infrastructure in the face of changing requirements, make it more difficult to manage the networks over which we access the Internet, or deprive us of new applications, content, and services that new network-level services may enable. Overly permissive nondiscrimination rules will fail to realize the goals of network neutrality regulation and prevent the Internet from realizing its economic, social, cultural, and political potential.

This Article addresses that challenge. It makes five contributions²⁰:

First, network neutrality proponents generally agree that network neutrality rules should preserve the Internet's ability to serve as an open, general-purpose infrastructure that provides value to society over time in various economic and noneconomic ways. A lot of uncertainty exists, however, on how to move from

16. Thus, the network operates like the default service offered by the U.S. Postal Service, which does not guarantee when a letter will arrive or whether it will arrive at all. In contrast to the Postal Service, which lets users choose services other than the default service, such as two-day shipping, the original Internet provides only best-effort service. PETERSON & DAVIE, *supra* note 15, at 206-07.

17. See, e.g., KUROSE & ROSS, *supra* note 15, at 647-72 (discussing quality of service); PETERSON & DAVIE, *supra* note 15, at 530-57 (same).

18. For example, of the two Quality of Service architectures that were standardized by the Internet Engineering Task Force (IETF), the IntServ architecture provides specific Quality of Service guarantees to particular application sessions, while the DiffServ architecture provides different levels of performance to different classes of traffic without providing specific guarantees. See KUROSE & ROSS, *supra* note 15, at 669-72 (discussing IntServ); *id.* at 660-65 (discussing DiffServ).

19. For a more detailed discussion of Quality of Service and of the conditions under which it is useful, see Part II.B.2 below.

20. The following discussion draws in part on Barbara van Schewick, *Network Non-Discrimination and Quality of Service*, INTERNET ARCHITECTURE & INNOVATION (June 13, 2012, 7:00 AM), <http://netarchitecture.org/2012/06/network-non-discrimination-and-quality-of-service-2>.

a high-level commitment to network neutrality to a concrete set of rules. This Article proposes a framework that policymakers can use to evaluate alternative proposals for network neutrality rules, interpret existing rules, and assess specific forms of discriminatory conduct. In particular, network neutrality rules need to preserve the factors that have allowed the Internet to foster application innovation and economic growth, improve democratic discourse, facilitate political organization and action, and provide a more decentralized environment for social, cultural, and political interaction in which anybody can participate. These factors are user choice, application-agnosticism, innovation without permission, and low costs of application innovation. Network neutrality rules should make it easy to determine which behavior is and is not allowed to provide much-needed certainty for industry participants, should keep the costs of regulation low, and should avoid constraining the evolution of the network more than is necessary to reach these goals.

Second, over the years, the network neutrality debate has evolved into a series of subdebates that are difficult to follow. As a result, even interested parties often lack a complete, accurate picture of the broader debate. This Article provides a comprehensive overview of existing proposals for nondiscrimination rules from a variety of sources, including academics, industry participants, and policymakers in the United States and abroad, and helps policymakers choose among the available options. It evaluates these proposals and the Open Internet Order's nondiscrimination rule against the framework developed in Part I and proposes a nondiscrimination rule that policymakers should adopt around the world—a rule that the Open Internet Order adopted in part.

In over ten years of debate, network neutrality proponents have struggled to come up with a rule that clearly specifies in advance which forms of differential treatment should be allowed. As a result, they have had to fall back on all-or-nothing approaches or standards-based approaches, both of which create considerable social costs. The rule I propose—ban application-specific discrimination, allow application-agnostic discrimination—solves this problem. It accurately distinguishes between socially beneficial and socially harmful conduct (avoiding the problems of the all-or-nothing approaches), but does so *ex ante* (avoiding the social costs of the standards-based approaches).

Substantively, the rule balances the public interest in network neutrality with the legitimate interests of network providers. It prevents network providers from interfering with user choice or distorting competition among applications or classes of applications while giving them broad flexibility to differentiate and price their Internet service offerings and manage their network in application-agnostic ways. The rule allows network providers to offer some forms of user-controlled Quality of Service and provides certainty to market participants. Technically, it reinforces key architectural principles on which the Internet was based without locking in the original architecture of the Internet itself.

This Article also explains why the following proposals for nondiscrimination rules do not adequately protect the values that network neutrality rules are

designed to protect: rules that allow all discrimination; rules that ban all discrimination; rules that ban discrimination that violates an antitrust framework or ban behavior that is anticompetitive; case-by-case approaches that leave the decision over which discriminatory conduct should be banned to future adjudications; rules that ban discriminatory conduct that is not disclosed; and rules that allow discrimination among applications or classes of applications that are not alike as long as the network provider does not discriminate among like applications or classes of applications. All of these proposals are currently under active consideration in the United States or abroad.

Third, this Article exposes the deep disconnect between those, including the FCC in the Open Internet Order, who base calls for network neutrality regulation on a broad theoretical framework that considers a wide range of economic and noneconomic harms and those who evaluate calls for network neutrality regulation based on an antitrust framework. As this Article shows, these two frameworks lead to very different conclusions regarding which forms of differential treatment are problematic. Since these underlying theoretical differences are usually not made explicit, participants in the debate often talk past each other. For example, economists scold the FCC for proposing or adopting rules that are overreaching²¹—which is correct if you view the debate through an antitrust framework. In the context of the broad theoretical framework that the FCC explicitly adopted in its Order, however, the Open Internet Rules make perfect sense. At the same time, network neutrality proponents who are not aware of the implications of the different frameworks do not necessarily realize that antitrust-based approaches or approaches that use terms that have well-defined meanings in antitrust law may reach correct results in the context of an antitrust framework, but do not capture many instances of discrimination that network neutrality proponents are concerned about. Thus, in many cases, adopting such rules would make it impossible to successfully bring complaints against discriminatory conduct that violates the values that network neutrality rules are designed to protect.

Fourth, this Article offers the first in-depth analysis of the relationship between network neutrality and Quality of Service. This relationship is currently uncertain and contentious. Often, it is not immediately apparent how a specific nondiscrimination rule affects network providers' ability to offer Quality of Service.

The network neutrality debate is often framed as a debate for or against Quality of Service.²² As this Article shows, the reality is much more subtle.

21. See, e.g., Thomas W. Hazlett & Joshua D. Wright, *The Law and Economics of Network Neutrality*, 45 IND. L. REV. 767, 771-72, 796-803 (2012).

22. This perception is particularly common in Europe. See, e.g., Martin Cave & Pietro Crocioni, *Does Europe Need Network Neutrality Rules?*, 1 INT'L J. COMM. 669, 671 (2007) (calling “no prioritisation” one of “the two main elements . . . of net neutrality”); Florian Schuett, *Network Neutrality: A Survey of the Economic Literature*, 9 REV. NETWORK ECON., no. 2, 2010, at 1, 1 (“Roughly speaking, network neutrality refers to the principle that all data packets on an information network are treated equally.”); Martin Cave et al., Statement by

Many network neutrality proposals allow some, but not all, forms of Quality of Service, with different proposals drawing the line between acceptable and unacceptable forms of Quality of Service in different ways.²³ Underlying these differences are disagreements over the social desirability of different forms of Quality of Service. This Article advances the debate both descriptively, by examining which forms of Quality of Service would be allowed by which rule, and normatively, by exploring which, if any, forms of Quality of Service a network neutrality regime should allow. While many forms of Quality of Service allow Internet service providers to distort competition among applications and interfere with user choice, some forms of user-controlled Quality of Service do not. If a network neutrality regime includes certain restrictions on charging and provisions that protect the quality of the baseline service from dropping below unacceptable levels, these forms of Quality of Service provide the social benefits of different types of network service without the social costs and should be allowed. The nondiscrimination rule proposed by this Article and the Open Internet Order's nondiscrimination rule allow network providers to offer these (and only these) forms of Quality of Service.²⁴

Finally, this Article provides a detailed analysis of the Open Internet Order's nondiscrimination rule for fixed broadband Internet access and of its implications for network providers' ability to manage their networks and offer Quality of Service. An accurate understanding of the rule is central to the current debate over the future of network neutrality in the United States. The rule bans discrimination that is "unreasonable," subject to reasonable network management.²⁵ Whether specific discriminatory conduct is unreasonable will be decided in future case-by-case adjudications. Thus, it is not immediately apparent which types of differential treatment the rule forbids. Drawing on a close

European Academics on the Inappropriateness of Imposing Increased Internet Regulation in the EU 1 (Jan. 8, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1329926 ("They [sic] key issue is whether internet service providers should be prevented from introducing differentiated quality of service levels on the Internet."); AT&T et al., *Ensuring Network Stability and Consumer Confidence in Competitive Markets*, LA QUADRATURE DU NET 2 (2008), <http://www.laquadrature.net/files/net.confidence.coalition.pdf> ("Net neutrality' advocates typically suggest . . . an 'all bits must be treated the same' approach.").

Participants in the debate also often assume that the broad version of the end-to-end arguments would make it impossible to offer Quality of Service. This assumption is not correct either. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 106-07.

23. Quality of Service can be offered in different ways that create different social benefits and social costs. For example, under some Quality of Service architectures, network providers decide which applications get which form of Quality of Service. Under others, users make that choice. Network providers may make Quality of Service available exclusively to individual applications or to classes of applications with similar needs.

24. This Article's findings with respect to network neutrality and Quality of Service are summarized in more detail in the Conclusion.

25. 47 C.F.R. § 8.7 (2014), invalidated by *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

reading of the text of the Order, the Article sets out the Open Internet Order's nondiscrimination standard as clarified by the text of the Order and shows how it may apply to specific discriminatory conduct, in particular to the provision of Quality of Service.

According to the text of the Order, the FCC was to evaluate discriminatory conduct under the nondiscrimination rule and the reasonable network management exception based on how well the conduct preserves two of the factors that were at the core of the Internet's success: user choice and application-agnosticism.²⁶ This standard allows certain forms of user-controlled Quality of Service. The Order explicitly rejects attempts to base nondiscrimination rules on an antitrust framework. Banning only discrimination that violates the antitrust laws or is "anticompetitive," the Order explains, would be too narrow and would not capture all instances of discrimination that the Open Internet Rules are concerned about. While the FCC did not adopt the nondiscrimination rule proposed by this Article, the proposal heavily influenced the Open Internet Order's nondiscrimination rule. In particular, whether discriminatory behavior complies with the proposed rule (i.e., whether it is application-agnostic) is one of the factors the FCC was to use to determine whether the conduct violates the FCC's nondiscrimination rule and the reasonable network management exception. Thus, this Article's discussion of application-specific and application-agnostic discrimination can illuminate the rationale underlying the FCC's rule and illustrate how these provisions apply to specific instances of discriminatory conduct.

Many network neutrality proponents were disappointed by the Open Internet Rules. While the Rules were not perfect, this Article shows that they provided the FCC with a powerful set of tools to protect users and innovators against discrimination by providers of fixed broadband Internet access service.

This Article is part of the broader debate over network neutrality that has been raging for more than ten years. While the debate originally focused on the need for rules against blocking and discrimination, it has since evolved into a number of subdebates. Each subdebate focuses on a specific way in which a network provider could exploit its ability to control or interfere with the applications on its network and discusses whether rules are needed to address the problems this particular practice may cause.

As a result, the question, "Should we adopt network neutrality rules?" can no longer be answered with a simple yes or no. Instead, legislators and regulators considering whether to enact network neutrality rules need to answer a series of questions as they decide which, if any, network neutrality rules they should adopt. (See Box 1: Thinking About Network Neutrality Rules below.)²⁷

26. In addition, preserving the freedom to innovate without permission is an explicit purpose of the Open Internet Rules. 47 C.F.R. § 8.1. Thus, this factor can be used to interpret any provision of the Rules, including the nondiscrimination rule.

27. Throughout this Article, boxes are used to provide additional information that is relevant to the argument in the text without interrupting the flow of the main argument. They

The first question is as follows: Do we need a rule against blocking, that is, a rule that forbids network providers from blocking access to applications, content, and services on their networks? Such a rule is part of all network neutrality proposals; this is the one rule on which all network neutrality proponents agree. This Article assumes that the case for a rule against blocking has been made.²⁸

This Article focuses on the second question: Should the rules also ban differential treatment that falls short of blocking (discrimination), and, if so, which forms of differential treatment should be banned? For example, if a network provider slows down Internet video applications like Netflix, Hulu, or YouTube that compete with the network provider's own Internet video application or provides low-delay service only to its own Internet video application, should these practices be prohibited?

The answer depends in part on the framework we use to evaluate network neutrality rules—whether we use an antitrust framework or the broader theoretical framework used by most network neutrality proponents and the FCC in its Open Internet Order. This Article assumes that the case for the broader theoretical framework has been made.

BOX 1
THINKING ABOUT NETWORK NEUTRALITY RULES

Legislators and regulators considering whether to enact network neutrality rules need to answer the following questions as they decide which, if any, network neutrality rules they should adopt.

A. Goal of the Rules

General-purpose infrastructure vs. antitrust

B. Rules

1. Ban blocking?
2. *Ban discrimination? (subject of this Article)*
3. Impose limits on charging?
 - i. for access to end users?
 - ii. for enhanced access to end users?

C. Exceptions

1. For what?
2. How to define?

may, for example, explain a concept that some readers may not be familiar with, or explore an issue in more depth.

28. See, e.g., VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, chs. 6-9, at 215-375.

D. Scope

1. Wireline vs. wireless
2. Internet access services vs. specialized services

This Article does not address whether and, if so, whom network providers should be allowed to charge for any differential treatment that the chosen nondiscrimination rule allows. (See Box 2: Charging for Quality of Service below.) Concerns about offering differential treatment and about charging for it are driven by different sets of policy considerations, which should be considered and evaluated separately. I have taken up restrictions on charging elsewhere.²⁹ There, I argue that network providers should only be allowed to charge their own Internet service customers for any differential treatment allowed by the nondiscrimination rule.³⁰

BOX 2
CHARGING FOR QUALITY OF SERVICE

If policymakers adopt a nondiscrimination rule that allows network providers to offer some form of Quality of Service or other forms of enhanced treatment, they need to decide whether and, if so, whom network providers should be allowed to charge for it. Again, policymakers have a number of options, each supported by at least some proponents of network neutrality: (1) the

29. See *id.* at 278-80, 290-93; Barbara van Schewick, Assistant Professor of Law, Stanford Law Sch., Opening Statement at the Federal Communications Commission's Workshop on Approaches to Preserving the Open Internet (Apr. 28, 2010) [hereinafter van Schewick, Open Internet Opening Statement], available at <https://www.law.stanford.edu/sites/default/files/publication/259136/doc/slsppublic/schewick-statement-20100428.pdf>; Barbara van Schewick, Outline of Presentation for the Federal Communications Commission's Workshop on Approaches to Preserving the Open Internet 10-12 (2010) (unpublished background paper) (on file with author) [hereinafter van Schewick, Background Paper]; Barbara van Schewick, *The Case for Rebooting the Network-Neutrality Debate*, ATLANTIC (May 6, 2014, 2:37 PM ET), <http://www.theatlantic.com/technology/archive/2014/05/the-case-for-rebooting-the-network-neutrality-debate/361809> [hereinafter van Schewick, *Rebooting the Network-Neutrality Debate*]; Barbara van Schewick, *The FCC Changed Course on Network Neutrality. Here Is Why You Should Care.*, STAN. LAW SCH. CTR. FOR INTERNET & SOC'Y BLOG (Apr. 25, 2014, 7:16 AM), <http://cyberlaw.stanford.edu/blog/2014/04/fcc-changed-course-network-neutrality-here-why-you-should-care> [hereinafter van Schewick, *FCC Changed Course*].

30. In addition, I argue that network neutrality proposals should ban any access charges to application and content providers (i.e., they should prohibit network providers from charging application or content providers who are not their Internet service customers for the right to access the network provider's Internet service customers), not just access charges in return for better transport. See van Schewick, Open Internet Opening Statement, *supra* note 29; van Schewick, Background Paper, *supra* note 29, at 7-10.

network provider is not allowed to charge anyone for the use of Quality of Service (though it can increase the general price for Internet service);³¹ (2) it can charge only its Internet service customers;³² (3) it can charge its Internet service customers and/or application and content providers, but is required to offer the service to application and content providers on a nondiscriminatory basis;³³ or (4) it can charge its Internet service customers and/or application and content providers.³⁴

In sum, this Article assumes that the decision to base network neutrality regulation on a theoretical framework that considers a broader range of harms than an antitrust framework and the decision to adopt a rule against blocking have been made.

31. See, e.g., Internet Freedom Preservation Act, S. 215, 110th Cong. § 2 (2007); Internet Freedom and Nondiscrimination Act of 2006, H.R. 5417, 109th Cong. § 3 (2006); Network Neutrality Act of 2006, H.R. 5273, 109th Cong. § 4(a)(7) (2006).

32. See, e.g., *Network Neutrality: Hearing Before the S. Comm. on Commerce, Sci. & Transp.*, 109th Cong. 57-58 (2006) [hereinafter *Hearing on Network Neutrality*] (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School). For criticism of this proposal, see Susan P. Crawford, *The Internet and the Project of Communications Law*, 55 UCLA L. REV. 359, 403-04 (2007); and Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 1009-12 (2005). Most proposals in this category would ban any access charges to application and content providers (i.e., they would prohibit network providers from charging application or content providers who are not their Internet service customers for the right to access the network provider's Internet service customers), not just access charges in return for better transport. See, e.g., Internet Non-Discrimination Act of 2006, S. 2360, 109th Cong. § 4(a)(3) (2006); Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, J. ECON. PERSP., Summer 2009, at 61, 63-64; van Schewick, Open Internet Opening Statement, *supra* note 29, at 1; van Schewick, Background Paper, *supra* note 29, at 7-10; van Schewick, *Rebooting the Network-Neutrality Debate*, *supra* note 29; van Schewick, *FCC Changed Course*, *supra* note 29. For criticism of these proposals, see Robert Hahn & Scott Wallsten, *The Economics of Net Neutrality*, ECONOMISTS' VOICE, June 2006, at 1, 3-5; and C. Scott Hemphill, *Network Neutrality and the False Promise of Zero-Price Regulation*, 25 YALE J. ON REG. 135, 145-50 (2008).

33. See, e.g., *The Future of the Internet: Hearing Before the S. Comm. on Commerce, Sci. & Transp.*, 110th Cong. 56 (2008) [hereinafter *Hearing on the Future of the Internet*] (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School). For criticism of this proposal, see J. Gregory Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet*, 2 J. COMPETITION L. & ECON. 349, 349-50 (2006).

34. See, e.g., Comments of Verizon & Verizon Wireless at 68-74, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Verizon Open Internet Comments], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020378523>; Comments of Verizon & Verizon Wireless on the Notice of Inquiry at 35-38, Broadband Industry Practices, WC Docket No. 07-52 (June 15, 2007) [hereinafter Verizon Broadband Industry Practices Comments], available at <http://apps.fcc.gov/ecfs/document/view?id=6519529411>.

The Article proceeds in three parts. Part I sets out criteria that policymakers and others can use to choose among alternative proposals for network neutrality rules, interpret existing rules, and evaluate specific forms of discriminatory conduct.

Part II evaluates eight existing proposals for nondiscrimination rules against these criteria and proposes a nondiscrimination rule—ban application-specific discrimination, allow application-agnostic discrimination—that policymakers should adopt. In the process, it explains how the different nondiscrimination rules affect network providers’ ability to offer Quality of Service and which, if any, forms of Quality of Service a nondiscrimination rule should allow.

Part III sets out the Open Internet Order’s nondiscrimination rule for fixed broadband Internet access. It evaluates the rule against the criteria used throughout this Article and discusses how the rule would affect network providers’ ability to offer Quality of Service.

Opponents of network neutrality regulation have created the impression that network neutrality rules force policymakers to choose between protecting users and application innovators against interference from network providers on the one hand and innovation in the network and the needs of network providers on the other hand. This Article refutes that myth. It shows how policymakers can protect users and innovators while also giving network providers the tools they need to manage their networks and allowing the network to evolve.

I. A FRAMEWORK FOR EVALUATING NETWORK NEUTRALITY RULES

When evaluating alternative proposals for nondiscrimination or other network neutrality rules, legislators or regulators should consider a number of factors. Nondiscrimination rules are part of a set of network neutrality rules that share common goals. Thus, an important criterion in evaluating proposals is how well they support these goals. The answer depends, of course, on what these goals are.

Some participants in the network neutrality debate view the debate through an antitrust lens. They interpret concerns about blocking, discrimination, or other practices as concerns about anticompetitive vertical leveraging or vertical foreclosure and apply an antitrust framework to evaluate and address these concerns.³⁵ Among network neutrality proponents, this is a minority position. Most network neutrality proponents base their calls for regulation on a theoretical framework that considers a wider range of economic and noneconomic harms.³⁶ The FCC’s Open Internet Rules are based on this broader framework

35. See sources cited *infra* Part II.C.1.

36. See, e.g., *Network Neutrality: Competition, Innovation, and Nondiscriminatory Access: Hearing Before the Task Force on Telecom & Antitrust of the H. Comm. on the Judiciary*, 109th Cong. 57-59 (2006) [hereinafter *Task Force Hearing*] (prepared statement of

as well.³⁷ Due to these differences, proponents of an antitrust framework and proponents of a broader framework will reach differing conclusions when evaluating proposals.³⁸ This Article assumes that the case for the broader theoretical framework has been made.

According to this broader theoretical framework, network neutrality regulation serves three major goals. Most generally, network neutrality rules are intended to preserve the Internet's ability to serve as an open, general-purpose infrastructure that provides value to society over time in various economic and noneconomic ways.³⁹ More specifically, network neutrality rules aim, first, to foster innovation in applications.⁴⁰ Fostering application innovation not only is

Timothy Wu, Professor of Law, Columbia Law School); Comments of the Center for Democracy & Technology at 8-9, 30, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Center for Democracy & Technology Comments], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020378292>; Free Press Open Internet Comments, *supra* note 3, at 76-77, 134-36; Comments of the Open Internet Coalition at 76, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Open Internet Coalition Comments], available at <http://apps.fcc.gov/ecfs/document/view?id=7020377928>; Comments of Public Interest Commenters at 23, 24-28, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Public Interest Comments], available at <http://apps.fcc.gov/ecfs/document/view?id=7020378818>; Crawford, *supra* note 32, at 380-92; Susan P. Crawford, *Transporting Communications*, 89 B.U. L. REV. 871, 916-17, 919 (2009); Frischmann, *supra* note 32, at 1012-22; Brett M. Frischmann & Barbara van Schewick, *Network Neutrality and the Economics of an Information Superhighway: A Reply to Professor Yoo*, 47 JURIMETRICS J. 383, 423-28 (2007); Lawrence Lessig, *The Internet Under Siege*, FOREIGN POL'Y (Nov. 1, 2001), https://web.archive.org/web/20120129230040/http://www.foreignpolicy.com/articles/2001/11/01/the_internet_under_siege (accessed via the Internet Archive index).

37. See 47 C.F.R. § 8.1 (2014); *Open Internet Order*, 25 FCC Rcd. 17,905, 17,908-15, 17,949-50 (2010) (report and order), vacated in part, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

38. See, e.g., Frischmann & van Schewick, *supra* note 36, at 426-28; Jerry Kang, *Race.Net Neutrality*, 6 J. ON TELECOMM. & HIGH TECH. L. 1, 6-14 (2007); see also *infra* Part II.C.1.

39. See, e.g., VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 387-88; Frischmann & van Schewick, *supra* note 36, at 423-28; see also 25 FCC Rcd. at 17,908-15, 17,949-50.

40. See, e.g., LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 246-47 (2001); Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. ON TELECOMM. & HIGH TECH. L. 329, 332 (2007); Tim Wu, *The Broadband Debate, A User's Guide*, 3 J. ON TELECOMM. & HIGH TECH. L. 69, 72-74, 80-84 (2004) [hereinafter Wu, *Broadband Debate*]; Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141, 145 (2003) [hereinafter Wu, *Network Neutrality*]; van Schewick, Dissertation, *supra* note 2, at 3-4, 102-03, 237-78, 342-49, 362-64.

critical for economic growth,⁴¹ but also increases the Internet's potential to create value in the social, cultural, and political domains.⁴² Second, network neutrality rules are designed to protect users' ability to choose how they want to use the network, without interference from network providers. This ability to choose is fundamental if the Internet is to create maximum value for users and for society.⁴³ Third, network neutrality rules aim to preserve the Internet's ability to improve democratic discourse, facilitate political organization and action, and provide a decentralized environment for social, cultural, and political interaction in which anybody can participate.⁴⁴

Network neutrality rules also have social costs: First, they limit the evolution of the network's core. Second, they limit network providers' ability to realize all potential efficiency gains or optimize the network in favor of the applications of the day. Third, they may reduce network providers' profits. Fourth, like any regulatory regime, they may create costs of regulation that burden providers, users, and society as a whole.⁴⁵

Thus, the decision to adopt network neutrality rules is based on a trade-off.⁴⁶ In a way, the first two costs are the price of a system that can evolve and

41. See, e.g., VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 356-57; Wu, *Broadband Debate*, *supra* note 40, at 80-81; van Schewick, Dissertation, *supra* note 2, at 346-49.

42. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 359-61.

43. *Id.* at 361-64; see also *infra* Box 3; *infra* note 60 and accompanying text.

44. See, e.g., Remarks of Jack M. Balkin at FCC Workshop on Speech, Democratic Engagement, and the Open Internet, December 15, 2009, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 22, 2009) [hereinafter Balkin Remarks], available at <http://apps.fcc.gov/ecfs/document/view?id=7020355385>; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 359-62, 364-65; Jack M. Balkin, *The Future of Free Expression in a Digital Age*, 36 PEPP. L. REV. 427, 436-38 (2009) [hereinafter Balkin, *Future of Free Expression*]; Bill D. Herman, *Opening Bottlenecks: On Behalf of Mandated Network Neutrality*, 59 FED. COMM. L.J. 103, 112-14 (2006); Marvin Ammori, *Net Neutrality and the 21st Century First Amendment*, BALKINIZATION (Dec. 10, 2009, 10:54 AM), <http://balkin.blogspot.com/2009/12/net-neutrality-and-21st-century-first.html>. On the Internet's social, cultural, and political potential, see generally YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM (2006).

45. See, e.g., VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 365-68. These costs feature prominently, of course, in the arguments made by network neutrality opponents as well. See, e.g., Gary S. Becker et al., *Net Neutrality and Consumer Welfare*, 6 J. COMPETITION L. & ECON. 497, 512-13, 516-19 (2010); Gerald R. Faulhaber, *Economics of Net Neutrality: A Review*, 3 COMM. & CONVERGENCE REV. 7, 22 (2011); Gerald R. Faulhaber & David J. Farber, *The Open Internet: A Customer-Centric Framework*, 4 INT'L J. COMM. 302, 313-15, 317-18, 321-24 (2010); Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 18-70 (2005); David Farber & Michael Katz, *Hold Off on Net Neutrality*, WASH. POST (Jan. 19, 2007), <http://wapo.st/1AzObII>.

46. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 368-71; Frischmann & van Schewick, *supra* note 36, at 423-25. For a detailed analysis of the trade-off from the perspective of a network neutrality opponent, see Yoo, *supra* note 45, at 60-68, 70-76.

support new applications in the future.⁴⁷ And while lower profits may to some degree reduce network providers' incentives to deploy more and better broadband networks, letting network providers block, discriminate, or charge access fees removes the very features that were at the core of the Internet's success. Given that there are other ways to foster broadband deployment that are not similarly harmful, sacrificing the very aspects that drive the Internet's value seems too high a price to pay.⁴⁸ As Tim Wu put it, it is like selling the painting to get a better frame.⁴⁹ Based on this reasoning, proponents of network neutrality resolve the trade-off in favor of the social benefits.⁵⁰

Any network neutrality rule will impose these types of social costs, but different proposals for a nondiscrimination rule will support the goals of network neutrality regulation to varying degrees and will have different social costs. Most generally, policymakers should choose the rule that realizes the goals of network neutrality regulation and imposes the least social cost.⁵¹

In line with these considerations, a nondiscrimination rule (or any other network neutrality rule) should meet the following criteria⁵²:

First, as I have explained elsewhere,⁵³ there are a number of factors that have allowed the Internet to foster application innovation, improve democratic

47. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 368-70.

48. *Id.* at 370-71.

49. Tim Wu, *Why You Should Care About Network Neutrality*, SLATE (May 1, 2006, 4:35 PM), <http://www.slate.com/id/2140850>.

50. See, e.g., *Task Force Hearing*, *supra* note 36, at 56-57 (prepared statement of Timothy Wu, Professor of Law, Columbia Law School); VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 368-71; Frischmann & van Schewick, *supra* note 36, at 423-25.

Opponents of network neutrality regulation come to a different conclusion. In particular, they stress the potential impact of network neutrality rules on incentives to invest in network infrastructure. See, e.g., Comments of Cisco Systems, Inc. at 5-8, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Comments of Cisco Systems], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020374147>; Becker et al., *supra* note 45, at 506; Yoo, *supra* note 45, at 48-53.

51. This is not a strict optimization problem. The different types of social costs not only may be difficult to quantify exactly, but also may be incommensurable.

52. See, e.g., Barbara van Schewick, Network Neutrality: What A Non-Discrimination Rule Should Look Like at 4-6, Attachment to Ex Parte Letter, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52, Framework for Broadband Internet Service, GN Docket No. 10-127 (Dec. 14, 2010) [hereinafter van Schewick, December 2010 Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020923837> (asking the FCC to use these criteria in evaluating alternative proposals for nondiscrimination rules in the context of the Open Internet proceeding); Barbara van Schewick, Network Neutrality: What a Non-Discrimination Rule Should Look Like at 1, Attachment to Notice of Ex Parte Conversation, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Aug. 2, 2010) [hereinafter van Schewick, August 2010 Attachment], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020652518> (same).

discourse, facilitate political organization and action, and provide a more decentralized environment for social, cultural, and political interaction in which anybody can participate. These factors need to be preserved to allow the Internet to continue to do so in the future,⁵⁴ and they should serve as guiding principles not only when choosing among alternative options for network neutrality rules, but also when evaluating discriminatory conduct under existing network neutrality rules.⁵⁵ They are the following⁵⁶:

53. This paragraph is adapted from Barbara van Schewick, Notice of Ex Parte Meetings at 1-2, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 8, 2010) [hereinafter van Schewick, Notice of Ex Parte Meetings], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020922658>.

54. See *infra* note 56.

55. See, e.g., van Schewick, Notice of Ex Parte Meetings, *supra* note 53, at 1-2 (arguing that the FCC should use these factors “as guiding principles when choosing among alternative options for network neutrality rules, as well as when interpreting any network neutrality rules that should be adopted in the future”); Barbara van Schewick, Assistant Professor of Law, Stanford Law Sch., Opening Statement at the Federal Communications Commission’s Workshop on Innovation, Investment and the Open Internet, Attachment to Notice of Ex Parte Meetings, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No 07-52 (Jan. 19, 2010) [hereinafter van Schewick, Innovation Opening Statement], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020382126> (asking the FCC to choose network neutrality rules that preserve application-blindness, user choice, innovation without permission, and low costs of application innovation).

56. The factors that have fostered application innovation in the past are described in detail in VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 12 tbl.I.2 (pointing to the parts of the book discussing these factors). For a short overview, see van Schewick, Innovation Opening Statement, *supra* note 55. For a brief discussion of the factors that are at the core of the Internet’s political, social, and cultural potential, see Balkin Remarks, *supra* note 44; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 359-65; and Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 FED. COMM. L.J. 561, 565-68 (2000). The original Internet created an environment characterized by these factors as a consequence of its architectural design. In particular, they are the result of the application of the layering principle and the broad version of the end-to-end arguments. On the layering principle, the broad version of the end-to-end arguments, and their relationship to the original architecture of the Internet, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 61-75, 96-103; and van Schewick, Dissertation, *supra* note 2, at 81-109, 114-29. On early arguments that the architecture of the Internet, due to the end-to-end arguments, created a beneficial environment for innovation that regulation should preserve, see Written Ex Parte of Professor Mark A. Lemley & Professor Lawrence Lessig at 1-2, 5-12, Application for Consent to the Transfer of Control of Licenses MediaOne Group, Inc. to AT&T Corp., CS Docket No. 99-251 (Nov. 10, 1999) [hereinafter Lemley & Lessig, Written Ex Parte], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=6009850930> (discussing the issue in the context of the debate over open access to cable networks). For a similar discussion in the context of network neutrality, see *Hearing on the Future of the Internet*, *supra* note 33, at 52-57 (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School); *Hearing on Network Neutrality*, *supra* note 32, at 8-14 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.); *Hearing on Network Neutrality*, *supra* note 32, at 54-59 (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School); *Government Role in Promoting the Future of the Telecommunications Sector*, *supra* note 32, at 1-10 (prepared statement of Mark A. Lemley, Professor of Law, Stanford Law School).

- *Innovation Without Permission.* Innovators independently choose which applications they want to pursue; they do not need support or “permission” from network providers in order to realize their ideas for an application. Adding additional decisionmakers who need to endorse the idea or take action before an idea can be realized reduces the chances that innovative ideas can be realized.⁵⁷
- *User Choice.* Users independently choose which applications they want to use without interference from network providers.⁵⁸ Letting users, not network providers, choose which applications will be successful is an important part of the mechanism that produces innovation under uncertainty.⁵⁹ At the same time, letting users choose how they want to use the network enables them to use the Internet in a way that creates more value for them (and for society) than if network providers made this choice for them.⁶⁰ (See Box 3: The Importance of User Choice below.)
- *Application-Agnosticism.* The network is application-agnostic. While an application-agnostic network may have some information about the applications on the network, it does not make distinctions among data packets based on that information.⁶¹ This ensures that network provid-

tions Industry and Broadband Deployment: Hearing Before the S. Comm. on Commerce, Sci. & Transp., 107th Cong. 33-34 (2002) (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School); Timothy Wu & Lawrence Lessig, Ex Parte Letter at 2-7, Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities, CS Docket No. 02-52 (Aug. 22, 2003), available at <http://apps.fcc.gov/ecfs/document/view?id=6514683885>; LESSIG, *supra* note 40, at 34-46, 153-68, 246-49; Wu, *Broadband Debate*, *supra* note 40, at 145-51, 154-55, 170-72; Wu, *Network Neutrality*, *supra* note 40; van Schewick, Dissertation, *supra* note 2, at 3-4, 102-03, 237-349, 362-64; and note 2 above.

57. On innovation without permission in the original Internet, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 204, 211, 293. On the impact of innovation without permission on innovation, see *id.* at 345-48. See also Hearing on Network Neutrality, *supra* note 32, at 8-10 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.); Balkin Remarks, *supra* note 44 (focusing on the social, cultural, and political implications).

58. See Hearing on Network Neutrality, *supra* note 32, at 8-9, 13 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.); VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 144, 152-55, 293-95, 362-64.

59. See van Schewick, Innovation Opening Statement, *supra* note 55, at 6; see also VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 349-51; *infra* note 60.

60. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 362-63; see also Hearing on Network Neutrality, *supra* note 32, at 8-9, 13 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.). On the importance of user choice for the Internet’s social, cultural, and political potential, see, for example, Balkin Remarks, *supra* note 44; and VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 359-65.

61. The original Internet was application-blind and application-agnostic. This was a consequence of its architecture, in particular of the broad version of the end-to-end arguments and of the layering principle. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 72-75, 217-18; van Schewick, Dissertation, *supra* note 2, at 101-03; *supra*

ers cannot interfere with innovators' and users' choices, that they cannot distort competition among applications (or classes of applications), and that they cannot reduce application developers' profits through access fees.⁶² We may call this "innovation without fear." (On the relationship between application-agnosticism and application-blindness, see Box 4: Application-Agnostic vs. Application-Blind below.)

- *Low Costs of Application Innovation.* The low costs of application innovation not only make many more applications worth pursuing, but also allow a large and diverse group of people to become innovators.⁶³ If there is uncertainty (for example, about technology or user needs) or user needs are heterogeneous, a larger and more diverse group of innovators will create more and better application innovation than a smaller, less diverse group of innovators, and these applications will better meet the needs of Internet users.⁶⁴ In the current Internet, there is uncertainty

note 2; *infra* Box 4; *see also, e.g.*, Hearing on Network Neutrality, *supra* note 32, at 8-10, 13 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.); Lemley & Lessig, Written Ex Parte, *supra* note 56, at 7; Reed, *supra* note 2. For a short summary of the importance of application-blindness, see van Schewick, Innovation Opening Statement, *supra* note 55, at 3-4. For a detailed analysis, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 215-81, 286-95, 349-53, 355-65. While the analysis in these sources focuses on the impact of application-blindness, the analysis equally applies to application-agnosticism. An application-blind network is necessarily application-agnostic. In particular, both create the same environment for application innovation and network use. *See infra* Box 4. Thus, their economic, social, cultural, and political impact is the same. *See also* Balkin Remarks, *supra* note 44; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 359-65 (focusing on the social, cultural, and political implications); Benkler, *supra* note 56, at 565-68.

62. Access fees are fees that the network provider imposes on application and content providers who are not its Internet service customers. Access fees come in two variants: In the first variant, a network provider charges application or content providers for the right to access the network provider's Internet service customers. In the second variant, which is sometimes called "paid prioritization" or "third-party-paid prioritization," a network provider charges application or content providers for prioritized or otherwise enhanced access (e.g., access that does not count towards the users' monthly bandwidth cap) to these customers. A discussion of access fees is outside the scope of this Article. On access fees, see, for example, van Schewick, Open Internet Opening Statement, *supra* note 29. *See also supra* Box 2; *supra* notes 29-30 and accompanying text.

63. For a short version of the argument, see van Schewick, Innovation Opening Statement, *supra* note 55, at 2-3, 5-6; and van Schewick, Open Internet Opening Statement, *supra* note 29, at 4-5. On the low cost of application innovation in the original Internet, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 138-48, 204-05, 289-90. On the impact of low-cost innovation on who can innovate, see *id.* at 204-13, 292-93. *See also* Balkin Remarks, *supra* note 44 (focusing on the social, cultural, and political implications); Benkler, *supra* note 56, at 565-68 (same).

64. For a short version of the argument, see van Schewick, Innovation Opening Statement, *supra* note 55, at 5-6; and van Schewick, Open Internet Opening Statement, *supra* note 29, at 4-5. For a detailed version, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 298-349.

and user needs are heterogeneous, so the conditions under which innovator diversity increases the amount and quality of innovation are met.⁶⁵

Second, a nondiscrimination rule should not constrain the evolution of the network more than is necessary to reach the goals of network neutrality regulation and should not impose other unnecessary social costs.

Finally, the rule should make it easy to determine which behavior is and is not allowed in order to provide certainty for industry participants. For application providers, uncertainty over the level of protection provided by the rule reduces their incentives to innovate and their ability to get funding.⁶⁶ For network providers, uncertainty over the legality of network management practices or of different forms of Quality of Service may make it more difficult to manage their network and may limit the evolution of the network infrastructure. Uncertainty over the regulatory regime may also reduce network providers' incentives to invest more generally.⁶⁷ Thus, certainty increases the social benefits and reduces the social costs of a nondiscrimination rule.

In sum, policymakers should look for a rule that fosters application innovation, protects user choice, and preserves the Internet's economic, social, cultural, and political potential while avoiding unnecessary social costs. In particular, the rule should preserve user choice, innovation without permission, application-agnosticism, and low costs of application innovation. As this Article will show, this framework not only can help guide the choice among alternative proposals for nondiscrimination rules or other network neutrality rules, but also can be used to interpret existing nondiscrimination rules or evaluate specific forms of discriminatory conduct.

BOX 3
THE IMPORTANCE OF USER CHOICE⁶⁸

Why the emphasis on user choice? First, user choice is fundamental if the Internet is to create the maximum value to society. As a general-purpose technology, the Internet creates value by enabling users to do the things they want or need to do. Users, not network providers, understand best which use of the

65. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 356.

66. See *infra* notes 236-37 and accompanying text.

67. See *infra* notes 233-35 and accompanying text.

68. This Box is adapted from Barbara van Schewick, Assistant Professor of Law, Stanford Law Sch., Official Testimony at the Federal Communications Commission's Second Public En Banc Hearing on Broadband Network Management Practices at 7-8, *Broadband Industry Practices*, WC Docket No. 07-52 (Apr. 17, 2008) [hereinafter van Schewick, Official Testimony], available at www.fcc.gov/broadband_network_management/041708/vanschewick-written.pdf.

network is most valuable to them at any given time. Of course, in order for users to behave efficiently, they also need to bear (at least some of) the costs of their actions, something that the current system does not sufficiently provide.

User choice is also a fundamental component of the mechanism that enables application-level innovation to function effectively. In the current Internet, it is impossible to predict what future applications will be successful. Enabling widespread experimentation at the application level and enabling users to choose the applications they prefer is at the heart of the mechanism that enables innovation under uncertainty to be successful.

By singling out specific applications, network providers pick winners and losers on the Internet, but not necessarily in the way that users would prefer, leading to applications that users would not have chosen and forcing users to engage in an Internet usage that does not create the value it could.

BOX 4 APPLICATION-AGNOSTIC VS. APPLICATION-BLIND

The Internet's original architecture was based on the layering principle and on the broad version of the end-to-end arguments. As a consequence of that design, the Internet was application-blind and application-agnostic. An application-blind network is unable to distinguish among the applications on the network, and, as a result, it is unable to make distinctions among data packets based on this information.⁶⁹ Unlike an application-blind network, an application-agnostic network may have information about the applications on the network, but, like an application-blind network, it does not make distinctions among data packets based on this information.

Thus, an application-blind network is necessarily application-agnostic: it does not make distinctions among data packets based on information about the applications on the network, because it does not have this information. By contrast, an application-agnostic network is not necessarily application-blind, because it may have information about the applications on the network.

If the Internet's original architecture was both application-blind and application-agnostic, why am I arguing for the network to be application-agnostic and not application-blind?

For network providers, information about the applications on their network may be useful for capacity planning or security. Data on patterns of network

69. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 72-74, 217-18; van Schewick, Dissertation, *supra* note 2, at 101-03; *supra* note 2; see also, e.g., Hearing on Network Neutrality, *supra* note 32, at 8-10, 13 (prepared statement of Vinton G. Cerf, Vice President & Chief Internet Evangelist, Google Inc.); Reed, *supra* note 2.

use may enable network providers to predict or at least observe changes in the behavior of users, which may facilitate capacity planning.⁷⁰ Similarly, a clear overview of the applications using a network at a specific point in time may make it easier to detect security attacks.⁷¹ At the same time, the potential harm to application innovation and user choice arises not from information about the use of the network as such, but from network providers' ability to use that information to distort competition among applications or classes of applications or to interfere with user choice, for instance, by using this information to block, discriminate against, or charge for the use of specific applications or classes of applications. Thus, from a policy perspective, the focus on application-agnosticism balances the public interest in protecting users and application providers from interference from network providers on the one hand and the needs of network providers on the other hand. From an architectural perspective, focusing on application-agnosticism instead of application-blindness constitutes a trade-off between architectural purity and the interests of network providers in being able to collect information about the use of the network.⁷²

This analysis is not meant to imply that network providers should have the unlimited right to collect information about applications or user behavior. The erosion of application-blindness in today's Internet not only threatens the Internet's ability to reach its economic, social, cultural, and political potential, but also threatens users' privacy.⁷³ Network neutrality rules address the first

70. Marjory S. Blumenthal & David D. Clark, *Rethinking the Design of the Internet: The End-to-End Arguments vs. the Brave New World*, 1 ACM TRANSACTIONS ON INTERNET TECH. 70, 77-78, 86 (2001); David D. Clark et al., *Tussle in Cyberspace: Defining Tomorrow's Internet*, 13 IEEE/ACM TRANSACTIONS ON NETWORKING 462, 472 (2005); Internet Eng'g Task Force, RFC 3639, Considerations on the Use of a Service Identifier in Packet Headers 4 (M. St. Johns & G. Huston eds., Oct. 2003), <https://tools.ietf.org/html/rfc3639>. This sentence and the next draw on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 73.

71. Internet Eng'g Task Force, *supra* note 70, at 4.

72. Using devices in the network to access higher-layer protocol data units (or, less technically, the messages passed to the Internet layer by a higher layer for delivery to its higher-layer protocol peer) to gather information violates the layering principle. However, as long as the device does not modify or act on that higher-layer data, the independence of lower layers from higher layers, one of the key features of layering, is still preserved. Thus, the negative effect of this violation will be marginal. By contrast, the architectural effect of devices that modify or act upon information contained in higher-layer protocol data units is usually quite severe. For a longer explanation, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 74-75.

73. *What Your Broadband Provider Knows About Your Web Use: Deep Packet Inspection and Communications Laws and Policies: Hearing Before the Subcomm. on Telecomms. & the Internet of the H. Comm. on Energy & Commerce*, 110th Cong. 61-62, 68-74, 77-84 (2008) (statement of David P. Reed, Adjunct Professor, Media Lab, Massachusetts Institute of Technology); Alissa Cooper, *Doing the DPI Dance: Assessing the Privacy Impact of Deep Packet Inspection*, in PRIVACY IN AMERICA: INTERDISCIPLINARY PERSPECTIVES 139, 146-53 (William Aspray & Philip Doty eds., 2011).

threat only; they are not concerned with user privacy. While application-agnosticism adequately protects the values that network neutrality is designed to protect, privacy values may require stronger limits on the visibility of information in the network. Thus, even if network neutrality rules do not restrict network providers' ability to collect information about applications or user behavior, privacy law may need to limit that ability to address the privacy threats arising from the erosion of application-blindness in today's Internet.⁷⁴

In its Open Internet Order, the FCC adopted a framework similar to the one described above. The Open Internet Rules set forth in this Order are explicitly based on the broader theoretical framework supported by most network neutrality proponents and used here.⁷⁵ Preserving user choice and innovation without permission is an explicit purpose of the Rules.⁷⁶ Thus, these factors can be used to guide the interpretation of individual provisions of the Open Internet Rules. Moreover, as will be explained in more detail below, the text of the Order explicitly specified that the FCC would evaluate discriminatory conduct based on how well it preserves user choice and the application-agnosticism of the network in order to determine whether the behavior is "reasonable" and therefore allowed under the Open Internet Rules' nondiscrimination rule.⁷⁷ (The same factors would be used to evaluate discriminatory or exclusionary conduct under the Rules' exception for reasonable network management.) Thus, the FCC explicitly specified that it would interpret key provisions of its rules—the nondiscrimination rule for fixed broadband Internet access and the reasonable network management exception—based on how well they preserve three of the factors used to evaluate alternative options for nondiscrimination rules and specific discriminatory conduct throughout this Article: user choice, application-

74. By contrast, if network neutrality rules prohibited network providers from collecting information about the applications on their networks, these rules would have the side effect of safeguarding users' privacy. Similarly, strong privacy laws that prohibit network providers from gathering that information would also recreate the application-blindness of the network, making it impossible for network providers to block, discriminate, or charge differently based on that information. On the interactions between network neutrality laws and privacy laws, see Paul Ohm, *The Rise and Fall of Invasive ISP Surveillance*, 2009 U. ILL. L. REV. 1417, 1489-96.

How privacy law should react to the erosion of application-blindness in today's Internet is beyond the scope of this Article. On this question, see, for example, Cooper, *supra* note 73, at 150-61; and Ohm, *supra*, at 1489-96.

75. 47 C.F.R. § 8.1 (2014); *Open Internet Order*, 25 FCC Rcd. 17,905, 17,908-15, 17,932-33, 17,949-50 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

76. 47 C.F.R. § 8.1 ("The purpose of this part is to preserve the Internet as an open platform enabling *consumer choice*, freedom of expression, *end-user control*, competition, and the freedom to *innovate without permission*." (emphases added)).

77. See the discussion of the FCC's nondiscrimination rule in Part III below.

agnosticism, and innovation without permission.⁷⁸ The results of this Article indicate how the nondiscrimination rule and reasonable network management exception could apply to specific discriminatory conduct, which, in turn, may help adjudicators apply these rules in specific cases or help market participants understand the implications of these rules in more detail.

II. PROPOSALS FOR NONDISCRIMINATION RULES

When determining whether to adopt network neutrality rules, legislators and regulators need to decide whether the network neutrality rules should only ban blocking or whether they should also ban discrimination. If they decide to ban discrimination, then they must also determine how discrimination should be defined. The answers to these questions may affect how the core of the network can evolve. In particular, they determine whether a network provider can offer Quality of Service.⁷⁹

This Part provides a comprehensive overview of existing proposals for nondiscrimination rules and evaluates them against the criteria developed in Part I to help policymakers choose among the available options. In the process, it explains how the different nondiscrimination rules affect network providers' ability to offer Quality of Service and which, if any, forms of Quality of Service a nondiscrimination rule should allow.

Part II.A defines the range of behaviors to which nondiscrimination rules apply. Nondiscrimination rules apply to any form of differential treatment that falls short of blocking. This includes the differential handling of data packets in the network, but also differential pricing practices directed towards subscribers.⁸⁰ Thus, nondiscrimination rules cover, for example, network provider practices that count only some applications, but not others, towards a subscriber's monthly bandwidth cap, or pricing plans that charge subscribers different Internet service fees for different applications or types of applications.

78. Since preserving innovation without permission is an explicit purpose of the Open Internet Rules, this factor can be used to interpret any provision of the Open Internet Rules, including the nondiscrimination rule.

79. On Quality of Service, see notes 15-19 above. The following overview draws in part on BARBARA VAN SCHEWICK, NETWORK NEUTRALITY AND QUALITY OF SERVICE: WHAT A NON-DISCRIMINATION RULE SHOULD LOOK LIKE, at iv-xvii (2012), *available at* http://cyberlaw.stanford.edu/files/publication/files/20120611-NetworkNeutrality_0.pdf, and van Schewick, *supra* note 20.

80. The nondiscrimination discussed in this Article do not address a network provider's pricing practices with respect to application providers that are not its Internet service customers. Whether an Internet service provider can charge application providers who are not its subscribers an "access fee" for access or for prioritized or otherwise enhanced access to its subscribers is governed by a network neutrality regime's rules about access fees. For a definition of the term "access fees," see note 62 above. A discussion of access fees is outside the scope of this Article. For a short overview of the debate, see Box 2 and notes 29-30 above.

A first set of proposals, discussed in Part II.B, takes an all-or-nothing approach to nondiscrimination. These approaches ban or allow all forms of differential treatment. While they provide a high degree of certainty and are easy to enforce, they do not accurately distinguish socially beneficial from socially harmful discrimination. As a result, they are either overinclusive or underinclusive and should be rejected.

A second set of proposals, discussed in Part II.C, recognizes that some forms of differential treatment will be socially harmful, while others will be socially beneficial, but assumes that it is impossible to distinguish among them in advance. Therefore, these proposals suggest adopting standards that specify criteria that will be used to judge specific discriminatory conduct in the future. Proposals in this category are afflicted with two problems: First, depending on the standard, they do not necessarily accurately separate socially beneficial from socially harmful conduct. For example, network neutrality proponents usually think of discriminatory conduct that favors an application over others as a distortion of competition and, therefore, as “anticompetitive.” However, since antitrust law is based on a different theoretical framework that only considers a narrow range of economic harms, the term “anticompetitive” has a much narrower scope in antitrust law. As a result, a rule that bans behavior that is anti-competitive or violates an antitrust framework does not capture all instances of discrimination that threaten the values that network neutrality rules are designed to protect. Second, proposals in this category leave all decisions over the legality of specific discriminatory conduct to future adjudications. This creates considerable social costs. Case-by-case approaches fail to provide much-needed certainty to industry participants. They create high costs of regulation and tilt the playing field against those—end users, low-cost innovators, start-ups, nonprofits, independent artists, and members of underserved communities—who do not have the resources to engage in extended fights over the legality of specific discrimination in the future. They are also unlikely to lead to decisions that adequately protect the values network neutrality rules are intended to protect. In spite of these considerable social costs, the strategic interests of policymakers and of the big stakeholders on both sides of the network neutrality debate are aligned in favor of open-ended, case-by-case approaches. Thus, it is not surprising that many proposals in this category emerged from negotiations at the FCC or in Congress, or from direct negotiations between big stakeholders on opposite sides of the debate.

A final group of proposals would adopt more nuanced rules that specify in advance which differential treatment is and is not allowed. They are discussed in Part II.D. By adopting more nuanced criteria than all-or-nothing approaches, these proposals aim to more accurately distinguish between socially beneficial and socially harmful conduct (avoiding the problems of the all-or-nothing approaches), while doing so *ex ante* (avoiding the social costs of the standards-based approaches).

Of the three proposals in this category, only one, explored in Part II.D.2.b, accurately separates socially beneficial from socially harmful discrimination. It

would ban application-specific discrimination, but allow all application-agnostic discrimination. This is the rule policymakers should adopt. The rule balances the public interest in network neutrality with the legitimate interests of network providers. It prevents network providers from interfering with user choice or distorting competition among applications or classes of applications while giving them broad flexibility to differentiate and price their Internet service offerings and manage their network in application-agnostic ways. The rule allows the network to evolve; for example, it allows network providers to offer certain forms of user-controlled Quality of Service. As a bright-line rule, the rule provides certainty to market participants, keeps the cost of regulation low, and makes it feasible for users, start-ups, and nonprofits to navigate the process. Technically, it reinforces key architectural principles on which the Internet was based without locking in the original architecture of the Internet itself.

The two other proposals in this category—ban discrimination that is not disclosed and ban discrimination that does not treat like traffic alike—do not accurately distinguish socially beneficial from socially harmful discrimination and should be rejected.

Participants on both sides of the debate often assume that nondiscrimination rules that ban discriminatory conduct that is not disclosed will be sufficient to prevent blocking and discrimination if there is competition in the market for Internet services. As Part II.D.1 shows, this assumption is not correct. The market for Internet services is characterized by a number of factors—incomplete customer information, product differentiation in the markets for Internet access and for wireline and wireless bundles, and switching costs—that limit the effectiveness of competition and reduce consumers’ willingness to switch. Rules that require network providers to disclose whether and how they interfere with applications and content on their networks reduce the problem of incomplete customer information, but only to some degree. They do not remove any of the other problems. As a result, they leave network providers with a substantial degree of market power over their customers that enables them to restrict some applications and content on their network without losing too many Internet service customers. Disclosure rules also do not affect the cognitive biases, cognitive limitations, and externality problems that lead users to underestimate the benefits of switching providers compared to what would be in the public interest. Thus, disclosure rules are not a substitute for substantive rules against blocking or discrimination, even if there is competition in the market for Internet access services. This insight is particularly relevant for the debate over wireless network neutrality in the United States and for the network neutrality debates in Europe, Canada, and Australia.

Many network neutrality proponents support nondiscrimination rules that would allow discrimination among applications or classes of applications that are not alike as long as the network provider does not discriminate among like applications or classes of applications. (This requirement is often called “like treatment.”) Part II.D.2.a shows, however, that nondiscrimination rules that require like treatment do not adequately protect the values that network neutrality

rules are designed to protect. In particular, like treatment negatively affects several of the factors that have fostered application innovation in the past. It removes the application-agnosticism of the network and gives network providers discretion to decide which applications are alike. This allows network providers to deliberately or inadvertently distort competition among applications or classes of applications and to interfere with user choice. Like treatment violates the principle of user choice, resulting in levels of Quality of Service or differential treatment that do not necessarily meet users' needs. It violates the principle of innovation without permission, reducing the chance that new applications actually get the type of service they need. Due to the ambiguities surrounding the definition of "like," the rule creates considerable uncertainty that will need to be resolved in case-by-case adjudications, resulting in high costs of regulation.

A. *Scope of Nondiscrimination Rules*

Nondiscrimination rules apply to any form of differential treatment that falls short of blocking. The most obvious examples involve differential handling of data packets associated with different applications or uses. For example, a network provider may provide a low-delay service to its own streaming video application but not to competing streaming video applications. Streaming video applications are sensitive to delay, so this increases the relative performance of the network provider's own application during times of congestion.⁸¹

The scope of nondiscrimination rules is, however, not restricted to differential handling of packets in the network. Network neutrality rules aim to prevent network providers from distorting the playing field among applications or classes of applications and from interfering with users' choices regarding the use of the network. In line with this goal, nondiscrimination rules apply to any form of differential treatment that may make some applications, classes of applications, or uses relatively more attractive to users than others. For example, Internet service providers can favor certain applications over others by not counting them towards users' monthly bandwidth caps or by charging a lower bandwidth-adjusted price for these applications. Therefore, these forms of differential treatment are subject to the nondiscrimination rules described in this Article, regardless of whether the packets associated with the favored applications receive the same technical treatment in the network as nonfavored applications.

An Internet service provider can make certain applications relatively more attractive by not counting (or "zero-rating") the traffic associated with these applications towards subscribers' monthly bandwidth cap. Consider an Internet service provider that zero-rates its own streaming video application, while the traffic of all other applications is counted towards subscribers' bandwidth cap. (For an example, see Box 5: Differential Counting of Traffic Towards the

81. The size of the advantage is related to the size of the delay and how well the different applications can cope with increases in delay.

Monthly Bandwidth Cap: Comcast's Xfinity TV App for the Xbox below.) For users who have not exhausted their monthly bandwidth allowance, watching a video that produces 2 gigabytes (GB) of traffic via an unaffiliated application brings those users 2 GB closer to exhausting their bandwidth cap. By contrast, watching the same video via the Internet service provider's application does not reduce the amount of bandwidth available to users before they reach the bandwidth cap. Users who have exhausted the monthly bandwidth allowance and watch the video using the unaffiliated application will have to bear the consequences of using another 2 GB (e.g., paying overage charges, having their traffic throttled, or being cut off from Internet access), while users watching the video via the affiliated application will not face any consequences. Thus, although the data packets associated with different streaming video applications receive the same technical treatment in the network,⁸² the practice of counting only some streaming video applications towards the monthly bandwidth cap makes those applications relatively more attractive and is subject to the nondiscrimination rules discussed in this Article.

BOX 5

DIFFERENTIAL COUNTING OF TRAFFIC TOWARDS THE MONTHLY BANDWIDTH CAP: COMCAST'S XFINITY TV APP FOR THE XBOX

In the spring of 2012, Comcast, the largest provider of Internet service in the United States, introduced a new application for the Xbox, the Xfinity TV app. The Xfinity TV app allows Comcast's Internet service subscribers to view selected video content from Comcast's on-demand service on the Xbox if they also subscribe to Comcast's traditional video offering and Microsoft's Xbox Live Gold subscription service. At the time, Comcast's Internet service had a 250 GB monthly bandwidth cap.⁸³ Traffic associated with the Xfinity TV app to the Xbox did not count towards that cap, while traffic of other applications that also allow users to view on-demand video content on the Xbox (e.g., HBO GO and Netflix) did.⁸⁴ As explained in the text, this type of differential counting of traffic towards the monthly bandwidth cap is generally subject to the nondiscrimination rules discussed in this Article, even if the data packets asso-

82. In the example of Comcast discussed in Box 5, it is unclear whether Comcast also prioritizes traffic associated with the Xfinity TV app for the Xbox over other traffic traveling to and from the Xbox in addition to zero-rating that traffic. See *infra* Box 5.

83. Cathy Avgiris, *Comcast to Replace Usage Cap with Improved Data Usage Management Approaches*, COMCAST (May 17, 2012), <http://corporate.comcast.com/comcast-voices/comcast-to-replace-usage-cap-with-improved-data-usage-management-approaches>. In May 2012, Comcast suspended enforcement of the 250 GB monthly bandwidth cap and started trialing several different data usage management approaches in selected markets. *Id.*

84. *FAQs: Xbox 360*, COMCAST, <http://xbox.comcast.net/faqs.html> (last visited Jan. 7, 2015).

ciated with the different streaming video applications receive the same technical treatment in the network.⁸⁵ Comcast claimed, however, that the Xfinity TV app was not provided over the public Internet and was therefore not subject to the FCC's Open Internet Rules.⁸⁶ Whether this assessment is correct is outside the scope of this Article.

It is unclear whether Comcast also prioritizes traffic associated with the Xfinity TV app for the Xbox over other traffic traveling to and from the Xbox. At the time, tests showed and Comcast admitted that Xfinity TV app traffic received special marking. In tests, the marked Xfinity TV app traffic consistently outperformed unmarked Netflix traffic to the Xbox during times of congestion, but Comcast claimed it was not prioritizing this traffic.⁸⁷

Internet service providers may also favor specific applications or classes of applications over others by charging their subscribers different Internet service fees for different applications or types of applications.⁸⁸ For example, an Internet service provider may charge a higher bandwidth-adjusted price for Internet access for Internet telephony traffic than for the traffic of other applications, for instance to extract more of the value that Internet telephony users realize from the use of that application.⁸⁹ Other things being equal, this increases the costs of using Internet telephony relative to other applications, making Internet te-

85. For further discussion, see Box 15 and note 373 below.

86. Tony Werner, *The Facts About Xfinity TV and Xbox 360: Comcast Is Not Prioritizing*, COMCAST (May 15, 2012), <http://corporate.comcast.com/comcast-voices/the-facts-about-xfinity-tv-and-xbox-360-comcast-is-not-prioritizing>.

87. See Andrew Dugan, *An IP Engineer and Consumer View of Xfinity Traffic Prioritization*, BEYOND BANDWIDTH (May 17, 2012), <http://blog.level3.com/2012/05/17/an-ip-engineer-and-consumer-view-of-xfinity-traffic-prioritization>; Stacey Higginbotham, *He Said, She Said: Is Comcast Prioritizing Traffic or Not?*, GIGAOM (May 15, 2012, 1:17 PM PT), <http://gigaom.com/2012/05/15/he-said-she-said-is-comcast-prioritizing-traffic-or-not>; Werner, *supra* note 86.

88. Currently, Internet service providers in the United States generally charge the same per-byte (or otherwise bandwidth-adjusted) price for all applications. For a detailed analysis of network providers' incentives to engage in application-specific pricing and of the impact on application developers and users, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 273-75, 277-78. See also *infra* note 425.

89. For a real-world example, two providers of deep packet inspection technology for mobile networks, Allot Communications and Openet, described a pricing scheme in which subscribers would pay two cents per megabyte for Facebook traffic, three dollars per month for Skype traffic, fifty cents per month for YouTube traffic, and nothing for traffic associated with the mobile provider's content offerings. See Allot Commc'ns & Openet, Managing the Unmanageable: Monetizing and Controlling OTT Applications, FierceMarks Webinar 7, Attachment to Free Press Ex Parte Letter, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 14, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020923750>.

lephony relatively less attractive.⁹⁰ Thus, Internet access plans that charge different bandwidth-adjusted prices for different applications would be subject to the nondiscrimination rules in this Article, even if the data packets associated with the different applications receive the same treatment in the network.

B. All-or-Nothing Approaches

A first set of approaches takes an all-or-nothing position towards differential treatment of packets.

The first approach would *allow all forms of discrimination*, which is equivalent to not adopting a nondiscrimination rule. This rule would not impose any constraints on Quality of Service. Proponents of this approach focus on the social benefits of allowing Quality of Service and other forms of differential treatment.

The second approach would *ban all forms of discrimination*. This approach would require network providers to treat each packet the same, which, by definition, would make it impossible to offer Quality of Service. Proponents of this approach emphasize the potential social costs of allowing Quality of Service and other forms of differential treatment. In particular, they are concerned that network providers may use Quality of Service as a tool to distort competition among competing applications by offering Quality of Service selectively to one of several competing applications. In addition, they fear that allowing network providers to offer Quality of Service and charge for it may reduce the quality of the baseline service and reduce network providers' incentives to increase the capacity of their networks.

All-or-nothing approaches are appealing because they impose clear obligations that are easy to enforce. All industry participants know what to expect and can adjust their behavior accordingly. However, these advantages come at a cost. Differential treatment and Quality of Service are not always good or always bad (for example, different forms of Quality of Service have different social benefits and social costs), but all-or-nothing approaches treat all forms of discrimination in the same way. As a result, banning all discrimination is overinclusive because that would ban socially beneficial forms of discrimination and would restrict the evolution of the network more than necessary to protect the values that network neutrality rules are designed to protect. Allowing all discrimination is underinclusive because that would allow socially harmful forms of discrimination and would effectively make the rule against blocking meaningless. Thus, both approaches should be rejected.

90. On the potential harms resulting from differentiating among classes of applications, see notes 366-406 and accompanying text below.

1. *Allow all discrimination (or “no rule against discrimination”)*

Network providers and other opponents of network neutrality regulation oppose any restrictions on network providers’ ability to differentiate among data packets.⁹¹ They would not adopt a nondiscrimination rule and instead would allow all discrimination. This approach would not restrict network providers’ ability to offer Quality of Service in any way. The FCC’s Open Internet Order adopted this approach for wireless networks in December 2010. The Open Internet Rules for wireless networks ban blocking of some, though not all, applications, but do not impose any restrictions on discrimination.⁹²

Proponents of this approach contend that a ban on all discrimination would make it impossible to offer services such as Quality of Service or to manage networks during times of congestion.⁹³ They argue that without Quality of Service, certain types of applications—those that require special treatment from the network—will not be able to operate. Thus, banning Quality of Service may reduce innovation in applications that need or benefit from Quality of Service and deprive users and society of the benefits these applications would have created.⁹⁴ While some forms of differential treatments such as those involved in Quality of Service would be socially beneficial, the argument continues, trying to distinguish between beneficial and harmful discrimination (to the extent it

91. In the United States, see, for example, Comments of Cisco Systems, *supra* note 50, at 5-8; Comments of David Clark et al. at 21-22, 25, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Comments of Clark et al.], available at <http://apps.fcc.gov/ecfs/document/view?id=7020373725>; Comments of AT&T Inc. at iii, Broadband Industry Practices, WC Docket No. 07-52 (June 15, 2007) [hereinafter Comments of AT&T Inc.], available at <http://apps.fcc.gov/ecfs/document/view?id=6519529324>; Comments of the National Cable & Telecommunications Ass’n at 36, Broadband Industry Practices, WC Docket No. 07-52 (June 15, 2007) [hereinafter Comments of the National Cable & Telecommunications Ass’n], available at <http://apps.fcc.gov/ecfs/document/view?id=6519529328>; Verizon Broadband Industry Practices Comments, *supra* note 34, at 41-42, 47-56; and Faulhaber & Farber, *supra* note 45, at 316-17, 336. In Europe, see, for example, Cave & Crocioni, *supra* note 22, at 1-3; and AT&T et al., *supra* note 22, at 1-4.

92. *Open Internet Order*, 25 FCC Rcd. 17,905, 17,956-61 (2010) (report and order), vacated in part, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

93. See Comments of AT&T Inc., *supra* note 91, at 52-53.

94. See Becker et al., *supra* note 45, at 511-12, 518-19; Faulhaber, *supra* note 45, at 13; Robert E. Litan & Hal J. Singer, *Unintended Consequences of Net Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 533, 569-70 (2007). Allowing Internet service providers to offer Quality of Service may also allow them to differentiate themselves from their competitors. See, e.g., Yoo, *supra* note 45, at 29-33 (discussing the benefits of allowing network providers to differentiate their Internet service offerings in general); see also Comments of AT&T Inc., *supra* note 91, at 71-73; Verizon Broadband Industry Practices Comments, *supra* note 34, at 57-58; Comments of TELUS Communications Co. at 20, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) (Can.) [hereinafter Comments of TELUS], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1029656.pdf.

exists) would be too difficult.⁹⁵ Since technology is evolving rapidly, regulators are likely to get it wrong.⁹⁶ Even if legislators or regulators succeed in identifying criteria that accurately distinguish between beneficial and harmful discrimination when the regulation is enacted, these criteria may not be accurate in the future. For these reasons, the argument concludes, regulators should give up on trying to separate socially beneficial from socially harmful discrimination and allow all discrimination instead.

This view fails to recognize that banning blocking but allowing discrimination will make the rule against blocking meaningless by offering a legal alternative to blocking—discrimination—that is less costly and potentially more effective.⁹⁷ Blocking and discrimination have the same effect: the network provider's Internet service customers stop using the blocked or degraded application and switch to the application that is not blocked or degraded. Discrimination reduces the perceived quality of the affected application relative to others. If a network provider secretly slows down packets or uses methods that are difficult to detect, its customers may attribute the poor performance of the affected application or website to design flaws and happily switch to the network provider's supposedly superior offering. But while blocking and discrimination have the same effect, the costs of discrimination are much lower. If the network provider blocks an application, users will notice and may switch to another Internet service provider.⁹⁸ By contrast, users who do not realize that their network provider interfered with their preferred application and think they chose the better application will have no incentive to switch.⁹⁹

Based on these considerations, we would expect network providers to prefer discrimination over outright blocking. Indeed, their actual behavior is in line with these predictions. In the examples that are often highlighted in the debate, network providers often use methods that make it more difficult or costly to reach particular applications or content instead of blocking access to them completely. For example, as the investigation of network providers' Internet traffic management practices by the Canadian Radio-Television and Telecommunications Commission (CRTC) showed, most of the larger Canadian Internet service providers throttled or otherwise interfered with peer-to-peer file-sharing applications, but did not block them completely.¹⁰⁰ Similarly, in 2009, British

95. See Comments of AT&T Inc., *supra* note 91, at 83-85.

96. See Comments of TELUS, *supra* note 94, at 4; Becker et al., *supra* note 45, at 509; Yoo, *supra* note 45, at 67.

97. The following paragraph draws on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 260-61.

98. A user who notices that his application is being blocked will not necessarily switch providers, even if he would have preferred to use the blocked application over alternative applications that are not blocked. See *infra* Part II.D.1.

99. Requiring network providers to disclose whether they interfere with applications and content will not fully solve this problem. See *infra* Part II.D.1.

100. CHRISTOPHER PARSONS, SUMMARY OF JANUARY 13, 2009 CRTC FILINGS BY MAJOR ISPs IN RESPONSE TO INTERROGATORY PN 2008-19 WITH FEBRUARY 9, 2009 UPDATES 23-31

telecommunications provider BT restricted the bandwidth available to the BBC iPlayer and other streaming video applications to 896 kilobits per second in BT's "Up to 8 Mbps Option 1" broadband service; it did not block these applications completely.¹⁰¹ Available evidence suggests that network providers are well aware of the advantages of this strategy. In 2007, Comcast was found to be interfering with BitTorrent and other peer-to-peer file-sharing applications. To shut down BitTorrent connections, Comcast used "forged" data packets that seemed to come from the other party involved in the specific BitTorrent connection.¹⁰² RCN, a competitive cable provider in the United States, used the same technology from 2005 to 2009.¹⁰³ As white papers produced by Comcast's equipment vendor, Sandvine, showed, this method of interference was deliberately chosen to prevent customers from noticing it.¹⁰⁴ Network providers know that the use of file-sharing applications is an important driver of broadband adoption, and they do not want to lose customers who wish to use these applications.¹⁰⁵

Finally, proponents of this approach implicitly assume that all forms of Quality of Service are equally beneficial. This assumption is not correct. Different forms of Quality of Service have different social benefits and social

(2009), available at [http://www.christopher-parsons.com/PublicUpload/Summary_of_January_13_2009_ISP_filings_with_February_9_2009_Updates_version_1.0\(for_web\).pdf](http://www.christopher-parsons.com/PublicUpload/Summary_of_January_13_2009_ISP_filings_with_February_9_2009_Updates_version_1.0(for_web).pdf).

101. See Rory Cellan-Jones, *iPlayer: BBC v BT*, BBC NEWS DOT.LIFE (June 2, 2009, 9:20 AM GMT), http://bbc.co.uk/blogs/technology/2009/06/iplayerbbc_v_bt.html.

102. See Comcast Corp. Description of Current Network Management Practices, Letter from Kathryn A. Zache, Vice President, Regulatory Affairs, Comcast Corp., to Marlene Dortch, Sec'y, FCC, Attachment A, Formal Complaint of Free Press & Public Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications, No. EB-08-IH-1518, Broadband Industry Practices, WC Docket No. 07-52 (Sept. 19, 2008) [hereinafter Comcast Description], available at <http://apps.fcc.gov/ecfs/document/view?id=6520172537>.

103. Like Comcast, RCN limited the number of simultaneous, unidirectional uploads and prevented additional uploads from occurring when the threshold had been reached; both also used the same Sandvine equipment (Sandvine PTS 8210). However, Comcast deployed the Sandvine Policy Switch out-of-line, while RCN deployed it in-line. *See id.* at 4, 5; *see also* RCN Corp., Ex Parte Notice at 1-4, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (May 7, 2010) [hereinafter RCN Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020450131>.

104. See SANDVINE INC., MEETING THE CHALLENGE OF TODAY'S EVASIVE P2P TRAFFIC: SERVICE PROVIDER STRATEGIES FOR MANAGING P2P FILESHARING 14 (2004), available at http://www.larryblakeley.com/Articles/p2p/Evasive_P2P_Traffic.pdf.

105. See Eric Hellweg, *The Kazaa Conundrum*, CNN MONEY (Sept. 10, 2003, 1:15 PM EDT), <http://money.cnn.com/2003/09/10/technology/techinvestor/hellweg/index.htm>; Thomas Mennecke, *DSL Broadband Providers Perform Balancing Act*, SLYCK News (Nov. 1, 2005), <http://www.slyck.com/news.php?story=973>; *see also* Comments of the National Cable & Telecommunications Ass'n, *supra* note 91, at 31 ("[C]able operators will not go down the path of blocking access to video or P2P services. Blocking such services would be a recipe for . . . massive dissatisfaction among consumers, which would lead to loss of customers to our competitors."); SANDVINE INC., *supra* note 104, at 5-6.

costs. Some are socially beneficial, and some are socially harmful. As a result, a blanket permission of Quality of Service is not justified.

In sum, allowing all forms of discrimination does not adequately protect users and application developers against socially harmful discrimination and makes the rule against blocking meaningless. Thus, an effective network neutrality regime needs to ban blocking *and* socially harmful discrimination. As will be explained below, beneficial forms of discrimination can be accommodated through the definition of discrimination or through exceptions.

2. *Ban all discrimination*

By contrast, some participants in the debate would ban all discrimination, requiring network providers to treat every packet the same.¹⁰⁶ The FCC's draft nondiscrimination rule in the Open Internet proceeding is an example of this type of approach.¹⁰⁷ A rule that required network providers to treat every packet the same would make it impossible to offer Quality of Service, which, by definition, entails the network treating packets differently.¹⁰⁸

106. See Crawford, *supra* note 32, at 403-04; see also Brett M. Frischmann, Notice of Ex Parte Conversation, Preserving the Open Internet, GN Docket No. 09-191 (Aug. 9, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020664240>; BRETT M. FRISCHMANN, INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES 348-55 (2012) [hereinafter FRISCHMANN, INFRASTRUCTURE]. While Frischmann's proposed nondiscrimination rule would not require network providers to treat all packets the same (it would ban discrimination based on the identity of the user or use, whether or not there is congestion), Frischmann would ban all forms of Quality of Service or prioritization, even during times of congestion. FRISCHMANN, INFRASTRUCTURE, *supra*, at 348-55; see also Frischmann, *supra* note 32, at 1011-12.

107. Preserving the Open Internet, 24 FCC Rcd. 13,064, 13,104 (proposed Oct. 22, 2009) ("Subject to reasonable network management, a provider of broadband Internet access service must treat lawful content, applications, and services in a nondiscriminatory manner." (italics omitted)); *id.* at 13,104-06 (noting that the proposed nondiscrimination rule "bears more resemblance to unqualified prohibitions on discrimination added to Title II in the 1996 Telecommunications Act than it does to the general prohibition on 'unjust or unreasonable discrimination' by common carriers in section 202(a) of the Act" (emphasis omitted)). This rule would have been subject to an exception for reasonable network management. *Id.* at 13,113-15. This nondiscrimination rule was supported by, for example, Free Press, Free Press Open Internet Comments, *supra* note 3, at 74-75; the Open Internet Coalition, Open Internet Coalition Comments, *supra* note 36, at 15-17; and public interest commenters, Public Interest Comments, *supra* note 36, at v. These commenters would have coupled the non-discrimination rule with a relatively narrow reasonable network management exception. While the details of the proposed standards for defining "reasonable network management" differ, these commenters generally agreed that a particular practice would have to (1) serve a legitimate purpose related to the technical management of the network and (2) be narrowly tailored to address that purpose. See, e.g., Free Press Open Internet Comments, *supra* note 3, at 78-79, 82-104; Open Internet Coalition Comments, *supra* note 36, at 41-50; Public Interest Comments, *supra* note 36, at 35-44.

108. Nondiscrimination rules usually have an exception for reasonable network management. Thus, even under the strict nondiscrimination rule described in the text, network

Proponents of this option are concerned that network providers may use the provision of Quality of Service as a tool to distort competition among applications or classes of applications. For example, they are concerned that a network provider may offer Quality of Service exclusively to its own applications, but not to other, competing applications, or may sell Quality of Service exclusively to one of several competing applications.¹⁰⁹ They also point out that network providers who offer Quality of Service and are allowed to charge for it have an incentive to reduce the quality of the baseline service below acceptable levels to motivate users to pay for better service.¹¹⁰ Moreover, selling Quality of Service allows network providers to profit from bandwidth scarcity, which reduces their incentives to increase the capacity of their networks.¹¹¹ While these arguments all have merit, these problems can be solved without totally banning Quality of Service. As will be explained below, it is sufficient to constrain how Quality of Service can be offered and charged for.¹¹²

providers may still be able to provide some or all forms of Quality of Service, provided that the form of Quality of Service under consideration meets the definition of reasonable network management. This, in turn, depends on the definition and interpretation of reasonable network management.

109. Free Press Open Internet Comments, *supra* note 3, at 21-23; Public Interest Comments, *supra* note 36, at 48, 51.

110. See, e.g., Nicholas Economides, *Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers' Investment*, in *NET NEUTRALITY: CONTRIBUTIONS TO THE DEBATE* 87, 94 (Jorge Pérez Martínez ed., 2010).

111. Center for Democracy & Technology Comments, *supra* note 36, at 28-29; Free Press Open Internet Comments, *supra* note 3, at 22; Open Internet Coalition Comments, *supra* note 36, at 46; Public Interest Comments, *supra* note 36, at 45; Economides, *supra* note 110, at 94, 99-100.

112. First, the nondiscrimination rule I propose below allows only certain forms of Quality of Service. The constraints imposed by the rule make it impossible for network providers to use the provision of Quality of Service to distort competition among applications or classes of applications. See *infra* Part II.D.2.b.i.A; *infra* note 483 and accompanying text. Second, my proposal requires the regulatory agency in charge of enforcing network neutrality rules to monitor the quality of the baseline service and set minimum quality standards if the quality of the baseline service drops below acceptable levels. This prevents Internet service providers from degrading the quality of the baseline best-effort service (e.g., by allocating less bandwidth to the best-effort service or by refraining from adding needed network capacity) to motivate users to pay for an enhanced type of service. See van Schewick, Background Paper, *supra* note 29, at 10-11; *infra* note 482 and accompanying text. Third, the proposed rule constrains how network providers can charge for Quality of Service. These constraints prevent network providers from charging in ways that would distort competition or harm application innovation. See van Schewick, Innovation Opening Statement, *supra* note 55, at 4-6; van Schewick, Open Internet Opening Statement, *supra* note 29, at 3-5; van Schewick, Background Paper, *supra* note 29, at 10-12; *infra* note 477 and accompanying text.

Supporters of banning Quality of Service also question whether Quality of Service is needed at all.¹¹³ If there is no need for Quality of Service, then banning it creates limited social costs.¹¹⁴ So far, proponents of a ban point out, the lack of Quality of Service has not prevented real-time applications from becoming successful on the public Internet.¹¹⁵ For example, although Internet telephony is sensitive to delay and high variations in delay (“jitter”) and may benefit from a network service that provides low delay and low jitter, Internet telephony applications such as Skype or Vonage work in the current Internet.¹¹⁶ Video telephony applications like Skype or Google Video Chat function over today’s broadband connections.¹¹⁷ The success of real-time applications on today’s best-effort Internet is due to two reasons: First, many regions currently seem to have sufficient network capacity to prevent the lack of Quality of Service from becoming a problem.¹¹⁸ If there is enough capacity so that congestion is generally low, the level of delay will be low enough most of the time to be tolerable for real-time applications.¹¹⁹ Second, network engineers and application designers have developed end-host-based techniques that allow real-time applications to compensate for the lack of Quality of Service in the network.¹²⁰ Pointing to this experience, proponents of a ban argue that capacity increases, combined with end-host-based measures, are sufficient to meet the needs of applications that require low delay or low jitter.¹²¹

While available capacity affects the benefits of offering Quality of Service, the relationship between the two is more nuanced than is often assumed. Applications that would benefit from Quality of Service (“QoS-sensitive applications”) are sensitive to the increase in delay, jitter, or loss, or to the variation in throughput that arises if queues build up in routers along the application’s path,

113. See Open Internet Coalition Comments, *supra* note 36, at 33-35; Public Interest Comments, *supra* note 36, at 49-50.

114. For a similar interpretation, see Comments of Clark et al., *supra* note 91, at 10.

115. See Open Internet Coalition Comments, *supra* note 36, at 33-35; Public Interest Comments, *supra* note 36, at 49-50.

116. PETERSON & DAVIE, *supra* note 15, at 531.

117. For example, Skype video requires a high-speed broadband connection of at least 512 kilobits per second (kbps) download and 128 kbps upload. For best quality, Skype recommends “a high-speed broadband connection of 4Mbps down / 512kbps up.” *Skype for Windows Desktop: System Requirements*, SKYPE, <http://www.skype.com/intl/en-us/get-skype/on-your-computer/windows> (last visited Jan. 7, 2015).

118. Bruce Davie, *Deployment Experience with Differentiated Services*, 2003 PROC. ACM SIGCOMM 2003 WORKSHOPS 131, 134.

119. See KUROSE & ROSS, *supra* note 15, at 629-30. For a more detailed analysis of the relationship among capacity, congestion, and Quality of Service, see the discussion in the following paragraphs.

120. See *id.* at 616-29.

121. See, e.g., Open Internet Coalition Comments, *supra* note 36, at 43-46; FRISCHMANN, INFRASTRUCTURE, *supra* note 106, at 353-55.

creating congestion.¹²² (See Box 6: The Relationship Between Congestion, Delay, Jitter, and Loss below.) A network that offers Quality of Service can “help” these applications by providing classes of service that may offer throughput, delay, loss, or jitter that are better suited to the needs of QoS-sensitive applications than the unpredictable and potentially highly variable throughput, delay, loss, and jitter offered by the best-effort service.¹²³ Potential classes of service may offer throughput, loss, delay, or jitter that is relatively better than the throughput, loss, delay, or jitter provided by best-effort service during times of congestion¹²⁴ or may provide a performance that is more constant and predictable than best-effort service.¹²⁵ These services, however, can improve on the performance of best-effort service only if there is congestion.¹²⁶ If there is no congestion (i.e., if all queues are empty), congestion-related loss and queuing delay will constantly be zero, jitter will be low for all packets, and data flows

122. The definition of congestion used throughout this Part is derived from the definition of congestion in queuing theory. By contrast, network providers often define congestion differently. For more on the two definitions and their implications, see Box 7 below.

123. Different QoS-sensitive applications will often have different requirements in terms of throughput, delay, jitter, or loss, so different QoS-sensitive applications may benefit from classes with differing characteristics. The combinations of throughput, delay, jitter, and loss that could be provided by a class of service are limited. In any queuing system with finite buffers, there is a relationship between the distributions of loading factors, loss, and delay. Combinations of two of these three variables determine the value of the third. In particular, “[f]or fixed loss rate, reducing delay implies that throughput will fall. . . . For fixed throughput, reducing delay implies an increase in loss rate. . . . For fixed delay, reducing loss rate will reduce available throughput.” NEIL DAVIES ET AL., AN OPERATIONAL MODEL TO CONTROL LOSS AND DELAY OF TRAFFIC AT A NETWORK SWITCH 3 (1999), available at <http://www.cs.bris.ac.uk/Publications/Papers/1000387.pdf>. The variability of delay in turn determines jitter.

124. These types of service provide service that is as good as best-effort service if there is no congestion, and better than best-effort service if there is congestion. See Geoff Huston, *The QoS Emperor’s Wardrobe*, ISP COLUMN 2 (June 2012), <http://www.potaroo.net/ispcol/2012-06/noqos.pdf>.

125. The performance of these services does not vary with congestion. As a result, their performance may be better than best-effort during times of congestion, but worse than best-effort if there is no congestion. This may occur, for example, if the service offers a constant performance that is specified in absolute terms, and the specified performance is worse than the performance experienced by the best-effort service if the network is not congested. *Id.*

While most network neutrality-related discussions focus on services whose performance is better than best-effort service, a network that offers Quality of Service may also offer services that are worse than best-effort service during times of congestion. For example, a class of service may provide a “less-than-best-effort” service (“scavenger class”) that sends almost no traffic during times of congestion. See CISCO SYS., ENTERPRISE QOS SOLUTION REFERENCE NETWORK DESIGN GUIDE 1-22 (2005), available at http://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/WAN_and_MAN/QoS_SRND/QoS-SRND-Book.pdf; Stanislav Shalunov & Benjamin Teitelbaum, Internet2, QBone Scavenger Service (QBSS) Definition (Mar. 16, 2001) (on file with author).

126. How the performance of the service compares with best-effort service in the absence of congestion depends on the type of service. See *supra* notes 124-25 and accompanying text.

will experience the maximum throughput and minimum end-to-end delay that is possible on their path.¹²⁷ No class of service can improve on that. Thus, Quality of Service is only useful if there is at least some congestion.

BOX 6
THE RELATIONSHIP BETWEEN CONGESTION, DELAY, JITTER, AND LOSS

Throughout this Part, “congestion” denotes the building up of a queue for an outgoing link at a router, which may increase delay, jitter, or packet loss.¹²⁸ (This definition differs from the definition of congestion that is often used by network providers. See Box 7: Definitions of Congestion and Benefits from Quality of Service below.)

Data packets travel across the Internet from router to router until they reach their final destination. At each router, packets arrive through incoming links and are transmitted through the appropriate outgoing link that leads to the next stop—which can be a router or the receiving end host—on their path to their ultimate destination.

If packets arrive for transmission over an outgoing link while another packet is being transmitted across that link, they are stored in a queue (or “buffer”) for that link until it is their turn to be transmitted.¹²⁹ If packets destined for a specific outgoing link arrive faster than they can be transmitted over that link, the number of packets in the queue increases. This may happen, for example, at routers that connect faster incoming links with slower outgoing links, or when different data transfers across the same link coincide.¹³⁰ As the

127. Even in an uncongested network, applications will still experience delay and may encounter losses. Data packets need to travel across the network, which takes time, and packets may get lost for reasons other than congestion. *See KUROSE & ROSS, supra* note 15, at 36-40 (describing the different types of delay contributing to a packet’s total end-to-end delay).

128. The definition of congestion used throughout this Part is derived from the definition of congestion in queuing theory. *See infra* Box 7.

129. On the following, see Testimony of Doctor David Reed ¶¶ 6-18, Initial Comments of Campaign for Democratic Media, Attachment B, Part 1, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) (Can.) [hereinafter Reed CRTC Testimony], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1029987.zip. *See generally* KUROSE & ROSS, *supra* note 15, at 337-40, 653-54; PETERSON & DAVIE, *supra* note 15, at 16-17, 479-80, 492-93. The text describes the scheduling and drop policy—first in, first out (FIFO) queuing with tail drop—that is commonly used in the public Internet at the time of this writing. Each outgoing link has one queue. The router transmits packets over the link in the order in which they arrive (“first in, first out”). If the queue is full when a packet arrives, that packet is discarded (“tail drop”). Under some drop policies, the router may discard packets from its queue to make space for the arriving packet. *See* PETERSON & DAVIE, *supra* note 15, at 492-93.

130. *See, e.g.*, PETERSON & DAVIE, *supra* note 15, at 16-17; *BufferBloat: What’s Wrong With the Internet?*, COMM. ACM, Feb. 2012, at 40, 43. For a more detailed description of potential reasons for congestion, see Box 8 below.

number of packets in the queue increases, packets arriving for transmission across that link have to wait longer until they are transmitted, which increases the delay they experience. If the queue is full and cannot accommodate additional packets, the router starts dropping arriving packets, creating packet loss.

The end-to-end delay (or “latency”) experienced by a packet indicates how long it takes the packet to travel from its origin to its destination. A packet’s end-to-end delay consists of a number of components: how long it takes for the packet to be processed by the various routers along its path, how much time the packet spends in router queues waiting to be transmitted (or, in other words, how much congestion the packet encounters along its path), how long the various routers need to transmit the packets onto the appropriate outgoing link, and how long the packet needs to travel along the links from one router to the next.¹³¹ The longer a packet has to wait in one or more router queues along its path, the higher its end-to-end delay.

Now consider an application that sends a number of data packets from one end host to another that travel along the same path (“data flow”). If the different packets spend varying amounts of time in router queues along their way, their end-to-end delay will vary. This variation in end-to-end delay is called jitter.¹³² If all packets in a data flow have a similar end-to-end delay (e.g., because they all experience no queuing delay, or because all experience a similar, higher queuing delay), jitter is low. By contrast, if the end-to-end delay experienced by packets in the flow is highly variable (e.g., because some packets experience a lot of delay while others experience little delay), jitter is high.

BOX 7

DEFINITIONS OF CONGESTION AND BENEFITS FROM QUALITY OF SERVICE

Throughout this Part, “congestion” denotes the building up of a queue for an outgoing link at a router, which may increase delay, jitter, or packet loss. (See Box 6: The Relationship Between Congestion, Delay, Jitter, and Loss.) This definition is derived from the definition of congestion used in queuing theory.¹³³ As explained in the text, Quality of Service only provides an improvement over best-effort service if this type of congestion exists.

131. More technically, a packet’s end-to-end delay consists of the sum of all the processing delays, queuing delays, transmission delays, and propagation delays the packet experiences along its path. See KUROSE & ROSS, *supra* note 15, at 37-40; PETERSON & DAVIE, *supra* note 15, at 46-47.

132. PETERSON & DAVIE, *supra* note 15, at 54-55.

133. See Steven Bauer et al., The Evolution of Internet Congestion 10 (Aug. 15, 2009) (unpublished manuscript), available at http://people.csail.mit.edu/wlehr/Lehr-Papers_files/Bauer_Clark_Lehr_2009.pdf (“According to [the queuing theory] definition, as soon as a queue starts to build traffic congestion is occurring.”); see also Reed CRTC Testimony, *su-*

By contrast, under a definition often used by network providers, congestion occurs if the average utilization of a link over a certain time period exceeds a certain threshold.¹³⁴

While Quality of Service is useless in a network that never experiences congestion under the definition used throughout this Part, it may still be useful in a network that is not congested under the definition used by network providers. Even in a network with low average utilization, queues will build up occasionally.¹³⁵ Thus, a network that is not congested under the definition used by network providers may experience congestion under the definition used throughout this Part and may therefore benefit from Quality of Service. As a result, the statement “Quality of Service is only useful if there is congestion” is correct only under this Part’s definition of congestion, but is false if the term “congestion” is used according to the network providers’ definition.

In a network where average utilization is high, congestion will occur often and for extended periods of time. During periods of extended congestion, QoS-sensitive applications may become effectively unusable with best-effort service and may require a different class of service to function satisfactorily.¹³⁶ In such a network, users may find Quality of Service very valuable and may be very willing to pay for it.¹³⁷

Adding capacity to reduce average utilization will reduce the amount of congestion. If average utilization is low, congestion will tend to occur less often and may cause less loss or delay. But even a network with low average utiliza-

pra note 129, ¶¶ 7, 9 (“In the Internet context, congestion manifests itself in routers or switches that forward Internet datagrams along the path between a particular source or destination. . . . Congestion . . . occurs when the amount of data that must travel through a particular link out of a particular router exceeds the data rate of that link for a long enough period such that a queue builds up.”).

134. See Reed CRTC Testimony, *supra* note 129, ¶¶ 24-25; Bauer et al., *supra* note 133, at 10-11. A network can be congested under the queuing theory definition but not under the network provider’s definition and vice versa. Bauer et al., *supra* note 133, at 11. For a detailed analysis and comparison of different definitions of congestion, see *id.* at 8-13.

135. See *infra* Box 8; *infra* note 138.

136. While offering different types of service may improve the performance of applications at a given capacity relative to a single best-effort service operating over the same capacity, even a network that offers different types of service needs a certain amount of capacity to provide satisfactory performance. See, e.g., KUROSE & ROSS, *supra* note 15, at 664-65; PETERSON & DAVIE, *supra* note 15, at 553.

137. As discussed above, proponents of a ban on Quality of Service are concerned that network providers may have an incentive to operate networks in this state since this increases users’ willingness to pay for Quality of Service. While this incentive exists, it can be constrained in other ways that fall short of banning all forms of Quality of Service. See *supra* notes 110-12 and accompanying text.

tion will experience occasional congestion.¹³⁸ For a number of reasons, queues will form temporarily even when average utilization is low, and if the resulting increase in delay, jitter, or loss exceeds the amount that a QoS-sensitive application can compensate for, the performance of that application will suffer.¹³⁹ (See Box 8: Causes of Congestion in a Network with Low Average Utilization.)

BOX 8

CAUSES OF CONGESTION IN A NETWORK WITH LOW AVERAGE UTILIZATION

Congestion will occur even in a network with low average utilization. For a number of reasons, queues will form temporarily, creating congestion, even when average network utilization is low.

Many Internet applications are bursty: their peak rate is much higher than their average rate.¹⁴⁰ Under these circumstances, focusing only on average utilization is misleading. The capacity of the links along a bursty application's path may be more than sufficient to transmit data at that application's average rate without delay. But if the application's peak rate is higher than a link's available capacity, the application will temporarily send data faster than the link can transmit, filling up the link's queue until the burst subsides. More generally, whether a specific link gets congested at a specific point in time depends on whether the actual data rates of the various applications sharing the link at

138. This insight is well established in the literature. See, e.g., Comments of Clark et al., *supra* note 91, at 10; Brian E. Carpenter & Kathleen Nichols, *Differentiated Services in the Internet*, 90 PROC. IEEE 1479, 1482-83 (2002) ("It is not necessary for the network's long-term utilization to be high for this to occur; the traffic burstiness mentioned above can lead to congestive incidents even when average traffic is modest."); Bauer et al., *supra* note 133, at 6, 11, 16, 32 ("However, because demand is not smooth and fluctuates stochastically over time at many different time-scales and because the available capacity [of] the Internet varies across the network, congestion events may arise commonly even in a network that may be considered to be generally 'over-provisioned.'").

139. The ability of an application to compensate for increases in delay, jitter, or loss resulting from congestion at the end host is systematically limited. Whether and to what extent a certain application will be able to compensate depends on the performance requirements of that application and the size of the congestion-related increase in delay, jitter, or loss. For example, an application that streams video from a server to the user (such as YouTube or Netflix) can tolerate or compensate for a higher level of jitter than an interactive, real-time videoconferencing application. Applications compensate for jitter by buffering data for playback. Compensating for higher jitter requires a larger buffer. The resulting increase in delay will be more tolerable for streaming stored video than for interactive real-time applications. See, e.g., PETERSON & DAVIE, *supra* note 15, at 532-34; Ilpo Järvinen et al., Impact of TCP on Interactive Real-Time Communication 1-2 (July 28, 2012) (unpublished manuscript), available at http://www.tschofenig.priv.at/cc-workshop/irtf_iab-ccirtpaper9.pdf.

140. The relationships described in the text are explained in more detail in, for example, Reed CRTC Testimony, *supra* note 129, ¶¶ 16-18; KUROSE & ROSS, *supra* note 15, at 40-42; and PETERSON & DAVIE, *supra* note 15, at 54, 54.

that moment exceed the link's capacity, not on the average data rates of these applications.

On today's Internet, bursty applications create challenges for interactive applications. For example, applications such as web browsing or streaming video send short bursts of data packets that may temporarily fill queues; when the burst ends, the queues drain quickly. This rapid building up and emptying of queues not only increases the delay experienced by other applications that are transferring data over the same link at the same time, but also increases jitter. The increase in jitter and delay harms applications such as interactive voice and video applications or online gaming applications that need low jitter or delay.¹⁴¹ Recent changes to transport protocols¹⁴² and operating systems¹⁴³ have increased the amount of data a single Transmission Control Protocol (TCP) connection may send, which increases the potential peak rate at which bursts may occur. In addition, today's browsers transmit data over several parallel transport-layer connections simultaneously, creating even larger bursts of data that can easily fill up a link's queue.¹⁴⁴

Applications that upload or download a lot of data using TCP (e.g., for uploading a video to YouTube, sending or receiving e-mails with large attachments, or backing up data to the cloud) pose challenges of a different kind. They create long-lived data flows that cause standing queues in routers for the

141. See Järvinen et al., *supra* note 139 (discussing the problem of increased jitter and delay and presenting the results of an experiment that demonstrates the problem).

142. For example, a recent IETF experimental standard proposed an increase in the permitted upper bound for TCP's initial window (IW) to ten segments depending on the maximum segment size. J. Chu et al., Internet Eng'g Task Force, RFC 6928, Increasing TCP's Initial Window (Apr. 2013), <https://tools.ietf.org/html/rfc6928>. These changes allow each new TCP connection "to send as much as 2.5 times as much data as in the past." Jim Gettys, Internet Eng'g Task Force, Internet-Draft, IW10 Considered Harmful (Aug. 26, 2011), <https://tools.ietf.org/html/draft-gettys-iw10-considered-harmful-00>. For an analysis of these changes' impact on other applications that are transferring data at the same time, see Järvinen et al., *supra* note 139; Chu et al., *supra*, at 5, 10, 12-15, 21-23; and Gettys, *supra*.

143. For example, Windows XP did not implement TCP window scaling, and therefore it limited the number of packets it sent before it received an acknowledgment. As a result, Windows XP was less likely to saturate links than newer versions of the Windows operating system, which do implement TCP window scaling. At the time of this writing, Mac OS X, Linux, and Windows operating systems after XP all implement window scaling. See *BufferBloat: What's Wrong With the Internet?*, *supra* note 130, at 44-45; Jim Gettys & Kathleen Nichols, *Bufferbloat: Dark Buffers in the Internet*, 55 COMM. ACM 57, 64 (2012). TCP window scaling is a TCP option that makes it possible to increase the size of TCP's receive window beyond 65,535 bytes, the maximum size of the receive window under normal TCP. V. Jacobson et al., Internet Eng'g Task Force, RFC 1323, TCP Extensions for High Performance (May 1992), <https://www.ietf.org/rfc/rfc1323.txt>.

144. For example, current browsers open six or more (e.g., fifteen) TCP connections to a single website. In addition, some websites ("sharded websites") are engineered to appear as if data is coming from different domains, which tricks the browser into allowing even more TCP connections. See Järvinen et al., *supra* note 139, at 1; Gettys, *supra* note 142, at 3-4.

duration of the flow, which increases delay for other applications trying to transfer data at the same time.¹⁴⁵

Moreover, TCP is designed to increase its transmission rate until it uses all available bandwidth and to reduce its transmission rate when it detects congestion. Thus, as long as the amount of data to be sent by an application is sufficiently large, TCP by design creates instantaneous congestion, even in a well-provisioned network.¹⁴⁶

While many users may be willing to tolerate the temporary lower performance associated with occasional congestion, some users may value more reliable performance. Many users use Skype even though the quality of the call often varies over the duration of the call and calls break up occasionally. While Skype's quality will often be good enough for them, at least some of these users (or users who are not using Skype in the current Internet because Skype's performance is not good enough for them) may value (and be willing to pay for) the option of using a different class of service that would allow them to get reliably good or even excellent call quality for selected Skype calls. Hearing-impaired users that rely on sign language to communicate may value perfect picture quality in video telephony more than "normal" users. A traveler on a business trip may be willing to tolerate occasional glitches and breakups in the video chat when saying good night to her children at home, but may need high-quality, predictable performance when using the same application to give a talk at a conference.¹⁴⁷ Thus, the absence of classes of service that provide more reliable (or potentially better) performance than best-effort service may hurt users who would value being able to take advantage of them when needed.

In addition, allowing Quality of Service may enable the development of new applications that cannot function in today's public Internet since they have requirements that a best-effort network cannot support. For example, a best-effort network cannot provide any guarantees with respect to throughput, jitter, or delay, making it impossible to support applications that strictly need guaran-

145. See Kathleen Nichols & Van Jacobson, *Controlling Queue Delay*, ACM QUEUE, May 2012, at 1, 4-5; Järvinen et al., *supra* note 139, at 2. This problem has been exacerbated by large buffers ("bufferbloat") in the access networks and elsewhere. The larger the buffer, the longer the queue can become, and the longer the delay experienced by packets that are arriving when the queue is almost full. See generally *BufferBloat: What's Wrong With the Internet?*, *supra* note 130; Gettys & Nichols, *supra* note 143.

146. See Comments of Clark et al., *supra* note 91, at 10; Bauer et al., *supra* note 133, at 16.

147. The interest in getting more reliable performance may vary across users and for the same user over time, and any rules for Quality of Service should reflect that. How this insight affects which forms of Quality of Service a nondiscrimination rule should allow is discussed below in notes 430-36 and accompanying text (discussing forms of Quality of Service that treat like traffic alike) and notes 484-85 and accompanying text (discussing certain forms of user-controlled Quality of Service).

teed throughput, jitter, or delay.¹⁴⁸ More generally, there may be applications that may benefit from the availability of services other than best-effort. Thus, it is at least possible that a total ban on Quality of Service may reduce innovation in QoS-sensitive applications, harming users who would have benefited from these applications.¹⁴⁹ In conversations, proponents of a ban on Quality of Service often reject this argument as hypothetical. They would like to see compelling examples of applications that require Quality of Service before they are willing to consider the possibility that Quality of Service may foster application innovation.¹⁵⁰ Economic theory and the history of general-purpose technologies suggest, however, that it is usually not possible to predict in advance how a general-purpose technology will be used and which potential uses will be successful.¹⁵¹ Throughout the history of the Internet, most Internet applications that later became highly successful either were not envisaged by the designers of the network or were met by widespread skepticism when they first became available. This was true, for example, for e-mail, the World Wide Web, eBay, and search engines.¹⁵² Thus, just because we cannot imagine socially beneficial applications that require Quality of Service does not mean that such applications do not exist. Instead, the history of the Internet suggests that when a large, diverse group of innovators is allowed to innovate under the right conditions,¹⁵³ the innovators will find ways to use the Internet's functionality that those who originally designed that functionality had not necessarily thought of,

148. It is not possible to construct a transport-layer service that guarantees delay (or bandwidth) if, as in the current best-effort Internet, the Internet layer does not guarantee delay (or bandwidth). KUROSE & ROSS, *supra* note 15, at 97, 201; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 142 box 4.3.

149. See Litan & Singer, *supra* note 94, at 569-70.

150. This argument has come up repeatedly in personal discussions with proponents of a ban.

151. See, e.g., Nathan Rosenberg, *Uncertainty and Technological Change*, in THE MOSAIC OF ECONOMIC GROWTH 334, 334 (Ralph Landau et al. eds., 1996). The following sentences draw on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 301-02.

152. For a more detailed discussion of these examples, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 301-04.

153. These conditions include the factors described above: innovation without permission, innovation without fear (or application-agnosticism), user choice, and low costs of application innovation. See *supra* notes 56-65 and accompanying text. If we want Quality of Service to foster application innovation, any rule allowing Quality of Service must ensure that it is offered in a way that preserves these factors. To see how this insight affects which forms of Quality of Service a nondiscrimination rule should allow, see notes 407-40 and accompanying text (discussing forms of Quality of Service that treat like traffic alike) and notes 482-86 and accompanying text (discussing certain user-controlled forms of Quality of Service) below.

and at least some of the resulting applications or uses will create significant social value.¹⁵⁴

Finally, in situations in which a user's desire for bandwidth exceeds the amount of bandwidth available to him (for example, because the size of the access link is limited or the network provider limits the amount of bandwidth available to individual subscribers during peak times when average network utilization is high), allowing certain forms of Quality of Service may enable users to use that limited amount of bandwidth more efficiently.¹⁵⁵

Network providers could reduce the likelihood of congestion even further by increasing capacity so that "the capacity of individual links is significantly larger than the peak average traffic of all users."¹⁵⁶ This solution is called "overprovisioning."¹⁵⁷ Provisioning links significantly above the peak average traffic of all users of the link requires considerably more capacity (and will be considerably more expensive) than ensuring low average utilization. For example, in 2006, representatives of the research network Internet2 suggested that overprovisioning residential access networks, or, as they described it, providing the "overabundance of bandwidth . . . [that] ensure[s] that the odds of network congestion are minimized," would require offering a 1 gigabit per second connection to residential users (where 1 gigabit per second equals 1000 megabits per second (Mbps)).¹⁵⁸ Since then, the demands and capabilities of end devices and applications have evolved rapidly, so the capacity required to overprovision access networks today will most likely be higher. For example, a single TCP connection on a personal computer can send data at a rate of hundreds of

154. For a more detailed discussion of this argument based on economic theory and the history of specific Internet applications, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, ch. 8, at 297-353.

155. See the discussion of application-agnostic network management coupled with user-controlled differentiation in Part II.D.2.b.i.B below.

156. Reed CRTC Testimony, *supra* note 129, ¶ 23.

157. As Bauer et al. explain, a common approach to provisioning, which provisions for expected peak demand over some time period, may often result in networks that are over-provisioned over considerable amounts of time:

Indeed, a common approach to managing resource sharing is to provision for expected peak demand over some time period, and because many network investments need to be made in relatively large fixed increments and over an investment time horizon that takes months or more, capacity is provisioned in advance of realized demand. Thus, during off-peak periods (which may be measured in periods of hours or days) and over the life of infrastructure investments (which may be measured in periods of months or years), there may be significant amounts of time when the network is over-provisioned relative to offered demand.

Bauer et al., *supra* note 133, at 6.

158. STEVEN C. CORBATÓ & BEN TEITELBAUM, INTERNET2 AND QUALITY OF SERVICE: RESEARCH, EXPERIENCE, AND CONCLUSIONS 2-3 (2006), available at <http://www.educause.edu/ir/library/pdf/CSD4577.pdf>; see also Reconsidering Our Communications Laws: Ensuring Competition and Innovation: Hearing Before the S. Comm. on the Judiciary, 109th Cong. 219 (2006) [hereinafter Hearing on Communications Laws] (prepared statement of Jeff C. Kuhns, Senior Director, Consulting and Support Services, Pennsylvania State University); Hearing on Network Neutrality, *supra* note 32, at 65-66 (prepared statement of Gary R. Bachula, Vice President, Internet2).

megabits per second, so a single user could easily create peak rates of more than a gigabit per second by opening several TCP connections simultaneously.¹⁵⁹ Moreover, TCP is designed to use all available bandwidth. As long as it has data to send, TCP speeds up until it detects congestion, so any network over which TCP is used will always experience some temporary congestion.¹⁶⁰ Finally, even in an overprovisioned network, data may travel from faster to slower links, coinciding data transfers may temporarily exceed the capacity of a link, or unexpected spikes in demand may exhaust a link's capacity, all of which create congestion as well.¹⁶¹ Thus, while overprovisioning will further reduce the probability of congestion, it cannot eliminate it.¹⁶² Due to the low likelihood of congestion, a network that is truly overprovisioned will probably be able to support most QoS-sensitive applications most of the time. But even in such a network, Quality of Service may still be useful as "insurance" against the residual risk of congestion.¹⁶³

In sum, the value of Quality of Service is not restricted to networks with high average utilization, which are often congested. While Quality of Service is only useful if there is congestion (i.e., if queues build up in routers), increasing

159. Comments of Clark et al., *supra* note 91, at 10.

160. For a detailed explanation of this point, see *id.* ("Some observers seem to argue that a preferred alternative to adding QoS is simply to expand capacity, or equivalently, over-provisioning of the network so that congestion does not occur. . . . We believe that this line of reasoning is flawed. . . . Since TCP tries to go as fast as possible unless it is being artificially throttled (as does occur today in some cases), congestion will occur somewhere along the path, if only in the server itself."); Bauer et al., *supra* note 133, at 16.

161. See *supra* Box 8.

162. For a number of reasons,

there may be significant amounts of time when the network is over-provisioned relative to offered demand. During such periods, the network may appear to be relatively uncongested.

However, because demand is not smooth and fluctuates stochastically over time at many different time-scales and because the available capacity [of] the Internet varies across the network, congestion events may arise commonly even in a network that may be considered to be generally "over-provisioned."

Bauer et al., *supra* note 133, at 6; see also Ben Teitelbaum & Stanislav Shalunov, Internet2, Why Premium IP Service Has Not Deployed (and Probably Never Will) (Jan. 9, 2006) (on file with author) ("Although well-provisioned networks deliver very good typical performance, they will, in general, deliver unpredictable service and, in the worst case, no service.").

163. Benjamin Teitelbaum & Stanislav Shalunov, *What QoS Research Hasn't Understood About Risk*, 2003 PROC. ACM SIGCOMM 2003 WORKSHOPS 148, 149 (arguing that the ultimate goal of Quality of Service in a well-provisioned network is "to eliminate or bound the risk that preferred traffic will experience congestion," and that this function is valuable even in a well-provisioned network). Teitelbaum and Shalunov also argue that "premium service" would be valuable even in an overprovisioned network like Internet2:

Premium service is about guaranteeing service quality. In essence, it is about removing a component of unreliability from the system—the probability that a network transaction fails because of network congestion. Although typical performance may be perfect, there would be considerable value in being able to assure that important sessions receive perfect network performance.

Teitelbaum & Shalunov, *supra* note 162.

capacity does not necessarily prevent congestion, and Quality of Service may therefore be useful in networks with more capacity as well. In networks that have low average utilization, but are not overprovisioned, Quality of Service may give users the option to improve the performance of existing applications by using classes of service that provide more reliable or potentially better performance than best-effort service if congestion occurs.¹⁶⁴ Quality of Service may also enable new applications that we have not yet thought of that cannot function in a best-effort Internet or that would benefit from classes of service other than best-effort. And it may allow users whose bandwidth is limited to use that limited amount of bandwidth more efficiently. While the relative value of Quality of Service is likely to decline as a network's capacity approaches the capacity required for overprovisioning, Quality of Service may provide benefits even in overprovisioned networks by allowing users to protect selected applications against the residual risk of congestion. Thus, banning Quality of Service has social costs, and these costs exist over a wide range of network capacities.

While some proponents of banning all forms of Quality of Service argue that the costs of a ban are negligible since the needs of QoS-sensitive applications can be met by increasing capacity, some supporters of a ban make a stronger claim: According to them, banning Quality of Service does not have social costs because overprovisioning is economically and technologically more efficient than offering Quality of Service, so banning Quality of Service only prohibits a technical solution that is less efficient anyway.¹⁶⁵ Quality of Service makes the network more complex and is more difficult to manage than a single best-effort service. Network engineers have debated for years whether the benefits of Quality of Service outweigh the added complexity and cost, or whether overprovisioning is more efficient.¹⁶⁶ After developing and successfully testing Quality of Service technology in the research network Internet2 for several years, Internet2 researchers suspended the effort indefinitely.¹⁶⁷ While

164. Overprovisioning requires considerably more capacity than ensuring low average utilization, so a lot of networks may belong to this category.

165. See, e.g., Open Internet Coalition Comments, *supra* note 36, at 43-46 (citing the experience of Internet2 as support for the proposition that “[t]he most technologically and economically efficient means of managing Internet traffic is by increasing capacity”).

166. See KUROSE & ROSS, *supra* note 15, at 602-04; Gregory Bell, *Failure to Thrive: QoS and the Culture of Operational Networking*, 2003 PROC. ACM SIGCOMM 2003 WORKSHOPS 115, 116-19 (discussing the trade-off in the context of enterprise networks); Davie, *supra* note 118, at 134-35. For proponents of overprovisioning, see ANDREW ODLYZKO, THE ECONOMICS OF THE INTERNET: UTILITY, UTILIZATION, PRICING, AND QUALITY OF SERVICE (Ctr. for Discrete Mathematics & Theoretical Computer Sci., DIMACS Technical Report 99-08, 1999), available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.45.7943&rep=rep1&type=pdf>; Andrew Odlyzko, *The Current State and Likely Evolution of the Internet*, 3 GLOBAL TELECOMM. CONF.: GLOBECOM '99, at 1869 (1999); Dan Bricklin, *Why We Don't Need QOS: Trains, Cars, and Internet Quality of Service*, DAN BRICKLIN'S WEBSITE (Aug. 2, 2003), <http://www.bricklin.com/qos.htm>; Huston, *supra* note 124; and sources cited in note 169 below.

167. Teitelbaum & Shalunov, *supra* note 162.

they acknowledged that being able to protect important applications against the risk of congestion is valuable even in an overprovisioned network, they concluded that “the costs . . . are too high relative to the perceived benefits” and that overprovisioning was the more efficient solution.¹⁶⁸ In congressional testimony and elsewhere, representatives of Internet2 have used this experience to argue in favor of network neutrality rules that ban Quality of Service.¹⁶⁹

While introducing Quality of Service creates costs, overprovisioning—which requires considerably more capacity than that needed to ensure low average utilization—is not costless, either. Routers’ processing power, the administrative costs of deploying and managing Quality of Service technology, and the costs of deploying additional capacity may differ across different types of networks and may change over time. For example, backbones may be easier to overprovision than access networks because they can take advantage of statistical aggregation. Overprovisioning research networks whose users are already attached to high-speed campus networks may be less costly than overprovisioning residential access networks. The complexity and costs of deploying and running Quality of Service may be lower in enterprise networks, where the same entity controls all parts of the network infrastructure (including the end hosts) than in multiprovider networks.¹⁷⁰ Today, many corporate intranets use Quality of Service; large Internet service providers give business customers the

168. *Id.* (“Premium service on a well-provisioned network would do little to change packet forwarding under normal conditions. Internet2 networks are generally well-provisioned and almost always lightly loaded. Packet loss and jitter experienced by best-effort traffic on Internet2 paths is almost always zero or is due to non-congestive causes. Nevertheless, . . . Premium service is about *guaranteeing* service quality. In essence, it is about removing a component of unreliability from the system—the probability that a network transaction fails because of network congestion. Although typical performance may be perfect, there would be considerable value in being able to assure that important sessions receive perfect network performance.”). While the document discusses the QBone Premium service, an interdomain virtual leased-line IP service built on DiffServ forwarding primitives, the authors claim that the reasons for suspending the deployment of the QBone Premium service “apply not just to Premium, but to any IP quality of service (QoS) architecture offering a service guarantee.” *Id.*

169. *Hearing on Communications Laws*, *supra* note 158, at 218-19 (prepared statement of Jeff C. Kuhns, Senior Director, Consulting and Support Services, Pennsylvania State University); *Hearing on Network Neutrality*, *supra* note 32, at 65-68 (prepared statement of Gary R. Bachula, Vice President, Internet2). The Internet2 experience is often cited by proponents of a ban on Quality of Service. *See, e.g.*, Open Internet Coalition Comments, *supra* note 36, at 43-45 (citing the experience of Internet2 as support for the proposition that “[t]he most technologically and economically efficient means of managing Internet traffic is by increasing capacity”).

170. In addition, in enterprise deployments, the entity that incurs the costs of deploying and running Quality of Service also reaps the benefits. By contrast, the business model (and therefore, the expected benefits) associated with introducing Quality of Service in the public multiprovider Internet may be less clear, which makes it more difficult to justify the high costs of operating Quality of Service across the networks of multiple providers. *See* Davie, *supra* note 118, at 134; Huston, *supra* note 124.

option of buying different classes of service.¹⁷¹ Thus, whether overprovisioning is more efficient than introducing Quality of Service may differ depending on the circumstances and may change over time.

The debate over the relative costs and benefits of overprovisioning and Quality of Service is an important one that is worth having. But whatever the merits of this debate from a technical perspective, arguments over the relative cost efficiency of alternative technical solutions should be irrelevant for the regulatory debate over network neutrality rules.

Rather, in the context of the network neutrality debate, the only relevant question is whether banning Quality of Service is necessary to protect the values that network neutrality rules are designed to protect. If the restrictions are not necessary to protect these values, they should not be imposed.¹⁷² By contrast, whether introducing Quality of Service makes sense from a technical or business perspective is a question that should be left to network engineers and network providers.¹⁷³ If regulators adopt nondiscrimination rules that allow certain forms of Quality of Service, they do not pick winners and losers in this debate. Such nondiscrimination rules do not require network providers to introduce Quality of Service; they only allow them to do so within the constraints imposed by the rules. If network providers decide that overprovisioning offers a better cost-benefit trade-off than offering Quality of Service in line with the rules, they are free to go down that route.

In sum, while allowing Quality of Service may indeed harm competition among applications or investment in the network, these concerns can be mitigated without totally banning Quality of Service. Different forms of Quality of Service have different social benefits and social costs, so a more nuanced treatment than an all-or-nothing approach is needed. While the value of Quality of Service may decline as network capacity increases, Quality of Service may be useful over a wide range of network capacities, not just in networks with

171. On enterprise deployments, see PETERSON & DAVIE, *supra* note 15, at 554; and Davie, *supra* note 118, at 133-34. On Quality of Service offerings for business customers, see, for example, FALK VON BORNSTAEDT, DEUTSCHE TELEKOM GRP., QUALITY-OF-SERVICE (QoS) FOR IP-TRANSIT / PEERING 1, 3 (2012), available at <https://bscw.ict-etics.eu/pub/bscw.cgi/d44579/DT%20QoS%20White%20Paper.pdf>; and Verizon, Verizon Private IP 25, 29 (2006) (on file with author) [hereinafter Verizon Presentation].

172. This is an example of the general principle, described in Part I above, that while network neutrality rules may require imposing some restrictions on innovation in the network in order to allow the Internet to continue to foster application innovation, preserve user choice, and foster democratic discourse, they should not restrict the evolution of the network more than necessary to realize these goals. See *supra* notes 46-50 and accompanying text.

173. Of course, the constraints imposed by a nondiscrimination rule that allows all or some forms of Quality of Service will influence network providers' private costs and benefits of overprovisioning and Quality of Service. For example, other things being equal, introducing Quality of Service may be more attractive under a regime that allows network providers to charge whomever they like for the provision of different classes of service, and less attractive under a regime that prohibits network providers from charging for Quality of Service.

high average utilization. In networks that have low average utilization without being overprovisioned, Quality of Service may allow users to improve the performance of existing applications, enable new applications that benefit from the availability of different classes of service, and enable users whose bandwidth is limited to use that bandwidth more efficiently. Ensuring low average utilization requires considerably less capacity than overprovisioning, so many networks may belong to the category just described. In an overprovisioned network, Quality of Service offers users the option of protecting applications against the residual risk of congestion. Thus, at least some forms of Quality of Service may provide social benefits over a wide range of network capacity. At the same time, the social costs of offering Quality of Service can be limited through appropriate rules. Under these circumstances, requiring network providers to treat every packet the same would be too restrictive, constraining the evolution of the network more than absolutely necessary to protect the values that network neutrality is designed to protect.

C. Case-by-Case Approaches

A second set of approaches would determine case by case whether discriminatory behavior that falls short of blocking should be forbidden. Proponents of these approaches recognize that some forms of differential treatment will be socially harmful, while others will be socially beneficial. As a result, they reject a blanket ban on discrimination as overinclusive. At the same time, they doubt that it is possible to distinguish socially beneficial from socially harmful differential treatment in advance. According to them, this determination is best made ex post, when the facts that will allow an accurate assessment of the practice, such as the motivations for and impact of the practice, are known.¹⁷⁴ To support their proposals, they point to the example of antitrust law, which evaluates behavior that may be anticompetitive or procompetitive depending on the circumstances after the fact on a case-by-case basis.¹⁷⁵

Approaches in this group differ along two dimensions¹⁷⁶: the degree to which they prescribe the standard that regulators should use to assess specific

174. See, e.g., Robert Hahn et al., *Addressing the Next Wave of Internet Regulation: Toward a Workable Principle for Nondiscrimination*, 4 REG. & GOVERNANCE 365, 368 (2010); Philip J. Weiser, *Toward a Next Generation Regulatory Strategy*, 35 LOY. U. CHI. L.J. 41, 75-76 (2003); Christopher S. Yoo, *What Can Antitrust Contribute to the Network Neutrality Debate?*, 1 INT'L J. COMM. 493, 515-17 (2007).

175. See, e.g., Weiser, *supra* note 174, at 75-76; Yoo, *supra* note 174, at 515-16.

176. Proposals also differ on which institutional actor should perform the adjudication in the United States: the Federal Trade Commission (FTC), *see, e.g.*, Jonathan E. Nuechterlein, *Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate*, 7 J. ON TELECOMM. & HIGH TECH. L. 19, 57-65 (2009), or the FCC, *see, e.g.*, Hahn et al., *supra* note 174, at 366, 368 (listing reasons for enforcement by the FCC without taking a side in the debate); Weiser, *supra* note 174, at 75, 77-78. This question is outside the scope of this Article. The FTC is only a plausible option for those who base network neutrality regulation on an antitrust framework. If network neutrality regulation is

discriminatory behavior, and the extent to which the approaches are able to capture the instances of discrimination that threaten the values that network neutrality rules are designed to protect. Taken together, these two characteristics determine how likely it is that an actor who encounters discrimination that network neutrality proponents would classify as harmful will prevail in the future.

Approaches at one end of the spectrum specify the standard for separating socially harmful from socially beneficial discrimination, but the standard would not capture many instances of discrimination that threaten the values that network neutrality rules are intended to protect, classifying them as socially beneficial. Thus, these approaches would often make it impossible to successfully challenge behavior that network neutrality proponents would view as harmful. Proposals that suggest using an antitrust framework, discussed in Part II.C.1, are an example of this type of approach.

Approaches at the other end of the spectrum do not specify the standard at all. As a result, the proposed rule is consistent with interpretations that capture all relevant (from the perspective of network neutrality proponents) instances of discrimination and with interpretations that do not. Thus, under such a rule it is at least possible, but not certain, that a challenge to behavior that network neutrality proponents deem harmful will be successful. The draft Open Internet Rules circulated by FCC Chairman Genachowski in early December 2010 are an example of this type of approach. They banned “unreasonable discrimination,” without specifying how this term should be interpreted, as discussed in Part II.C.3.

In all case-by-case approaches, whether certain discriminatory conduct violates the nondiscrimination rule is determined in future case-by-case adjudications. As Part II.C.4 shows, this creates considerable social costs. Rules in this category provide little certainty to the market, result in high costs of regulation, and tilt the playing field against those who do not have the resources to engage in long and costly regulatory proceedings. They are also unlikely to lead to decisions that adequately protect the values network neutrality rules are intended to protect. In spite of these costs, the strategic incentives of policymakers and big stakeholders are aligned in favor of such approaches, so it is not surprising that many negotiated compromise proposals favor this type of approach.

1. *Ban discrimination that violates an antitrust framework*

The first set of proposals in this group suggests using an antitrust framework to distinguish socially beneficial from socially harmful discrimination.¹⁷⁷

based on a broader framework, as assumed in this Article, the FCC is the right agency to enforce the rules, since it is accustomed to and tasked with applying a broader public interest standard.

177. See, e.g., Becker et al., *supra* note 45, at 508; Hahn et al., *supra* note 174, at 374-79; Hazlett & Wright, *supra* note 21, at 796-806; Nuechterlein, *supra* note 176, at 43-45; J.

These proposals interpret the concerns raised by proponents of network neutrality regulation as concerns about anticompetitive vertical leveraging or vertical foreclosure¹⁷⁸ and apply the framework used to evaluate vertical leveraging and vertical foreclosure claims under U.S. antitrust laws to determine whether discriminatory conduct should be banned.¹⁷⁹ The term “vertical leveraging” describes a situation in which a firm that has a monopoly in one market—here, a provider of Internet access service—“abuses” or “leverages” its market power in the first market to obtain an unfair¹⁸⁰ advantage in a second, vertically related market—for example, in the market for a specific application.¹⁸¹ The term “vertical foreclosure” applies to situations in which a monopolist in a primary market—that is, a provider of Internet access service—uses its market power in the first market to deny firms in a second, vertically related market—that is, the market for a specific application—access to that second market.¹⁸² Over the years, the views of U.S. antitrust scholars and courts towards these practices have evolved considerably. Today, U.S. antitrust law condemns vertical leveraging or vertical foreclosure only if the exclusionary conduct meets the criteria of section 2 of the Sherman Act, which prohibits monopolization or attempts to monopolize.¹⁸³

Gregory Sidak & David J. Teece, *Innovation Spillovers and the “Dirt Road” Fallacy: The Intellectual Bankruptcy of Banning Optional Transactions for Enhanced Delivery over the Internet*, 6 J. COMPETITION L. & ECON. 521, 562-63 (2010); Weiser, *supra* note 174, at 74-84 (proposing an “antitrust-like approach”); Christopher S. Yoo, *Network Neutrality After Comcast: Toward a Case-by-Case Approach to Reasonable Network Management*, in NEW DIRECTIONS IN COMMUNICATIONS POLICY 55, 81-83 (Randolph J. May ed., 2009) [hereinafter Yoo, *After Comcast*]; Christopher S. Yoo, *Network Neutrality, Consumers, and Innovation*, 2008 U. CHI. LEGAL F. 179, 245-47, 257-61 [hereinafter Yoo, *Consumers & Innovation*]; Yoo, *supra* note 174, at 508-17; Maureen K. Ohlhausen, Comm'r, FTC, Remarks at MaCCI Law and Economics Conference on the Future of the Internet 11-17 (Oct. 26, 2012), http://www.ftc.gov/sites/default/files/documents/public_statements/open-internet-regulating-save-unregulated-internet/121026mannheim_0.pdf.

178. See, e.g., Becker et al., *supra* note 45, at 501-02, 508; Hazlett & Wright, *supra* note 21, at 796-806; Nuechterlein, *supra* note 176, at 34; Weiser, *supra* note 174, at 71-74; Ohlhausen, *supra* note 177, at 10-11.

179. Proposals differ both in the level of detail with which they describe the framework and in the exact criteria they use to distinguish socially harmful from socially beneficial discrimination. The text focuses on what seem to be the unifying threads in the various proposals.

180. HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 7.9, at 348 (4th ed. 2011).

181. See 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 652a, at 130 (3d ed. 2008) [hereinafter ANTITRUST LAW] (defining vertical leveraging).

182. See HOVENKAMP, *supra* note 180, § 10.6b2, at 462-63 (defining foreclosure).

183. 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 652b, at 134-35; HOVENKAMP, *supra* note 180, § 7.9, at 349. Tying and exclusive dealing are evaluated according to different criteria, but most of the behavior that concerns network neutrality proponents does not qualify as tying or exclusive dealing.

This standard does not capture all instances of discrimination that threaten the values that network neutrality rules are designed to protect. Challenges to discriminatory behavior that network neutrality proponents deem socially harmful may fail for one of four reasons.

First, U.S. antitrust law only condemns a network provider's discriminatory behavior that affects the market for a specific application, content, or service if the network provider participates in that market or is affiliated with a participant in that market. As Phillip Areeda and Herbert Hovenkamp's antitrust treatise explains,

Even the most expansive formulations of 'leveraging' . . . limit the concept to situations where the defendant [i.e., the primary good monopolist] actually does or intends to do business in the secondary market. Mere injury to firms in a vertically related market in which the defendant does not operate cannot be leveraging, for nothing is being leveraged.¹⁸⁴

By contrast, network neutrality proponents are also concerned about discrimination in application markets in which the network provider does not participate. For example, network providers may have an incentive to block unwanted content that threatens the company's interests or does not comply with the network provider's chosen content policy. This incentive is independent of whether the network provider operates in the market for the affected content. In the examples of content-based discrimination that are often mentioned in the debate (e.g., TELUS/Voices for Change, Verizon Wireless/NARAL Pro-Choice America, and Apple/iSinglePayer, discussed below in Box 9: Examples of Content-Based Discrimination), none of the content providers whose content was blocked was competing with the network provider. Similarly, a network

184. 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 652b, at 139 (discussing the question in the context of monopoly leveraging claims under section 2 of the Sherman Act). Behavior by a monopolist that negatively affects competition in a complementary market in which the monopolist does not operate does not violate 15 U.S.C. § 45(a) (2013) (section 5 of the FTC Act), either. The FTC originally adopted a different view in its order against Official Airline Guides, but this decision was reversed by *Official Airline Guides, Inc. v. FTC*, 630 F.2d 920, 927-28 (2d Cir. 1980). Since then, the FTC has signaled that it no longer deems this type of behavior actionable under section 5. See Federal Trade Commission Comments, Docket Nos. OST-97-2881, OST-97-3014, OST-98-4775 (June 6, 2003), available at http://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-comment-department-transportation-concerning-rules-governing-airline-computer-reservation/dotcomment.pdf.

In the network neutrality context, vertical integration by network providers into applications is viewed as a prerequisite for regulatory intervention. See, e.g., Martin Cave & Pietro Crocioni, *Net Neutrality in Europe*, 3 COMM. & CONVERGENCE REV. 57, 65 (2011) (explaining that consumer harm from exclusion depends on Internet service providers being vertically integrated into applications); Hahn et al., *supra* note 174, at 373, 375-76 ("[I]n the absence of vertical integration into the content space, a BSP [Broadband Service Provider] will lack any *incentive* to discriminate between content providers who demand the same service."); Sidak & Teece, *supra* note 177, at 563 (criticizing the nondiscrimination rule proposed in the FCC's Open Internet Notice of Proposed Rulemaking as overbroad because it would apply to network providers regardless of whether they are "vertically integrated into providing competing content").

provider may have an incentive to exclude or slow down selected bandwidth-intensive applications to manage bandwidth on its network, even if the network provider does not offer a competing application itself.¹⁸⁵ In these cases, the resulting harm—users’ inability to participate in social, cultural, or democratic discourse related to the blocked content, their inability to use the Internet in the way that is most valuable to them, or application developers’ difficulty in obtaining funding for an application—is caused by the discriminatory behavior as such and is independent of whether the network provider is active in the market or not.

BOX 9
EXAMPLES OF CONTENT-BASED DISCRIMINATION¹⁸⁶

In 2005, TELUS, Canada’s second-largest Internet service provider, blocked access to a website that was run by a member of the Telecommunications Workers Union. At the time, TELUS and the union were engaged in a contentious labor dispute, and the website allowed union members to discuss strategies during the strike. In 2007, Verizon Wireless rejected a request by NARAL Pro-Choice America, an abortion rights group, to let them send text messages over Verizon Wireless’s network using a five-digit short code. In the same year, AT&T deleted words from a webcast of a Pearl Jam concert in which the singer criticized President George W. Bush. In 2009, Apple rejected an application called iSinglePayer that advocated for a single-payer health insurance system as “politically charged.” Verizon Wireless, AT&T, and Apple all argued that the rejected or deleted content violated their content policies. They later changed their view after the incidents were widely reported. While the latter three examples are not direct examples of Internet service providers restricting content on their networks (Verizon Wireless restricted a service on its wireless mobile network, not the wireless Internet; AT&T acted in its role as a content provider, not as an Internet service provider; and Apple acted as provider of the Apple App Store), it is easy to imagine virtually identical incidents in which an Internet service provider enacts a content policy and restricts content on its network accordingly.¹⁸⁷

185. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 264-66.

186. This paragraph is adapted from van Schewick & Farber, *supra* note 4, at 32.

187. For a more detailed description of these examples, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 266-69. On Apple/iSinglePayer, see *iSinglePayer iPhone App Censored by Apple*, LAMBDAJIVE (Sept. 26, 2009, 9:15 PM), <http://lambdajive.wordpress.com/2009/09/26/isinglepayer-iphone-app-censored-by-apple/>; Ryan Singel, *Developer: Apple Denied Health Care App for Political Reasons*, WIRED (Sept. 28, 2009, 6:16 PM), <http://www.wired.com/epicenter/2009/09/apple-denied-health-care-app-for-political-reasons-developer-says>.

Second, U.S. antitrust law only condemns vertical leveraging or vertical foreclosure as monopolization or attempted monopolization under section 2 of the Sherman Act if the monopolist is reasonably capable of monopolizing the primary market or the secondary market.¹⁸⁸ Thus, to be classified as socially harmful under an antitrust framework, a network provider's discriminatory behavior in the market for a specific application must be reasonably capable of creating, increasing, or maintaining monopoly power in the market for that application or in the market for Internet access services.¹⁸⁹ By contrast, network neutrality proponents may classify discriminatory behavior as socially harmful even if the behavior is unlikely to monopolize the application market or the market for Internet access services.

U.S. antitrust law generally only condemns exclusionary conduct if there is a reasonable likelihood that the behavior will harm competition, not just competitors, by worsening the structure or performance of the affected market.¹⁹⁰ In the case of section 2 of the Sherman Act, the behavior must be reasonably capable of creating, increasing, or maintaining a monopoly or of producing the higher prices or lower output or quality that attend monopoly. A firm's exclusionary behavior that just harms one or more competitors (e.g., by enlarging that firm's market share at the expense of its competitors) without creating or sufficiently threatening the higher prices or lower output or quality associated with monopoly is outside the scope of section 2 of the Sherman Act.¹⁹¹ Thus, to be condemned as socially harmful under an antitrust framework, a network provider's discriminatory conduct in the market for a specific application would have to drive affected applications from the market for that application, prevent new entry into an application market that the network provider has already monopolized, or impair the application provider's ability to compete effectively by forcing it to operate at a less efficient scale.

188. 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 652a, at 130-31, ¶ 652c, at 140-42.

189. Sometimes, the discriminatory behavior may be designed to protect a network provider's existing monopoly in a third market, for example in the market for multichannel video distribution or for telephony services. In this case, it is sufficient if the discriminatory behavior sufficiently threatens to perpetuate the network provider's monopoly in that market. It is unclear, however, whether the proponents of using an antitrust framework to evaluate complaints about nondiscrimination would share this view. See, e.g., Hahn et al., *supra* note 174, at 377-79 (applying an antitrust framework to the BitTorrent and Vonage cases).

190. See 11 HERBERT HOVENKAMP, ANTITRUST LAW, *supra* note 181, ¶ 1802b, at 74 (2011) ("The concern of the antitrust laws is with injury to 'competition,' which generally means injury resulting in lower output and higher prices in a properly defined market."). In the network neutrality context, a number of scholars explicitly evaluate discriminatory behavior based on whether it creates "harm to competition" in the antitrust sense. See, e.g., Becker et al., *supra* note 45, at 501-02; Hahn et al., *supra* note 174, at 377; Farber & Katz, *supra* note 45.

191. 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 652c, at 140-42.

This requirement may be difficult to meet¹⁹². In many cases, the market for the application that is being discriminated against will be national in scope, while the network provider's customers only make up a part of the nation's Internet access customers.¹⁹³ For example, in the United States, the four largest broadband Internet access providers currently serve 25% (Comcast), 19% (AT&T), 14% (Time Warner), and 11% (Verizon) of the nation's broadband Internet access customers.¹⁹⁴ Whether a network provider's discriminatory behavior will be capable of driving the application from the market or preventing the application provider from reaching its minimum efficient scale in a way that unreasonably restrains the application's ability to compete effectively depends on (1) the number of foreclosed Internet access customers relative to the overall number of Internet access customers, (2) the size of any economies of scale in the market for the application, and (3) the size of the cost disadvantage associated with operating at a less than efficient scale.¹⁹⁵ While many Internet applications are subject to significant economies of scale due to large fixed costs and low marginal costs or due to network effects,¹⁹⁶ exclusion from access to one Internet service provider's customers may not create the type of anticompetitive harm that antitrust law is concerned about.¹⁹⁷ In such a case, an antitrust framework would not classify the exclusionary conduct as socially harmful.

By contrast, network neutrality proponents may classify behavior as socially harmful even if it is unlikely to monopolize the market for the affected application. In the Internet context, discrimination will often be profitable even if it

192. See, e.g., Verizon Broadband Industry Practices Comments, *supra* note 34, at 49-52; Hahn et al., *supra* note 174, at 371-72, 376; Litan & Singer, *supra* note 94, at 556-57; Sidak, *supra* note 33, at 470, 472-73; Sidak & Teece, *supra* note 177, at 566-67; Yoo, *supra* note 45, at 71-73. This question is often discussed in the context of network providers' ability to foreclose applications. See, e.g., Hahn et al., *supra* note 174, at 371-72.

193. The market for an application is national in scope if the application or content appeals to consumers nationwide instead of only to consumers in a particular locality. For example, local yellow pages for a specific region primarily appeal to consumers in that region. Thus, the relevant geographic market is local. By contrast, an Internet video platform like Hulu offers content that is of interest to consumers nationwide and has licensed this content for national distribution. Thus, the relevant geographic market is national.

194. This data is current as of the end of the first quarter of 2014. Market share calculations are based on figures from the Leichtman Research Group. See Press Release, Leichtman Research Grp., Nearly 1.2 Million Add Broadband in the First Quarter of 2014 (May 20, 2014), <http://www.leichtmanresearch.com/press/052014release.html>.

195. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 226-32.

196. *Id.* at 231-32.

197. See Hahn et al., *supra* note 174, at 376; see also Hemphill, *supra* note 32, at 156-57; Litan & Singer, *supra* note 94, at 556; Sidak, *supra* note 33, at 470, 472-73; Hal J. Singer & J. Gregory Sidak, *Vertical Foreclosure in Video Programming Markets: Implications for Cable Operators*, 6 REV. NETWORK ECON. 372, 391-92 (2007) ("[A] local cable modem provider with a minuscule share of *national* broadband customers lacks the ability to induce an Internet content provider from exiting the industry or even operating at an inefficient scale."); Yoo, *supra* note 45, at 71-73.

does not monopolize the market for the application in question.¹⁹⁸ While the resulting harm may be irrelevant for antitrust law, network neutrality proposals are driven by concerns about a broader range of harms than the specific type of “harm to competition” that antitrust law is concerned with.¹⁹⁹ For example, exclusion allows the network provider, not the users, to choose which applications will be successful on its network. This not only distorts competition among applications on the network provider’s network, but also removes an important part of the mechanism that creates innovation under uncertainty, reducing the quality of application innovation.²⁰⁰ The threat of future discrimination will often reduce the incentives existing and future application providers have to innovate (not just those of the application provider that is being discriminated against) and will make it more difficult for them to get funding.²⁰¹ The resulting decline in the amount and quality of application innovation limits the Internet’s value for users and its ability to contribute to economic growth.²⁰² Discrimination not only deprives all Internet users of the value of future applications that would have been developed but for the threat of discrimination, but also harms the network provider’s Internet access customers who cannot use the application that is being discriminated against. For applications through which users interact with others (for example, Internet telephony or online gaming), the exclusion also harms other network providers’ Internet access customers by preventing them from using the application to interact with users whose Internet access provider is blocking the application. Finally, exclusion may impair the Internet’s ability to improve democratic discourse, to facilitate political organization and action, or to provide a decentralized environment for social and cultural interaction in which anyone can participate.²⁰³ All of these harms arise even if the behavior is unlikely to monopolize the market for the application in question.

Third, U.S. antitrust law usually has very stringent requirements about the degree of market power in the primary market that is required for vertical exclusionary conduct to be considered problematic.²⁰⁴ By contrast, network neu-

198. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 251-55, 264-66, 270; Frischmann & van Schewick, *supra* note 36, at 412-16.

199. See *supra* note 36 and accompanying text.

200. See *supra* Box 3; *supra* notes 59-60 and accompanying text.

201. See *infra* notes 235-36 and accompanying text.

202. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 356-61.

203. See, e.g., Balkin Remarks, *supra* note 44; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 364-65.

204. For sources stressing the importance of market power in the market for Internet services as a prerequisite for regulatory intervention, see, for example, Comments of AT&T Inc., *supra* note 91, at 66; Becker et al., *supra* note 45, at 505; Cave & Crocioni, *supra* note 184, at 65; Hahn et al., *supra* note 174, at 371; Hazlett & Wright, *supra* note 21, at 809 (arguing against FCC regulation on the ground that “market power [in the market for Internet services] is a necessary condition for such [anticompetitive] foreclosure”); Litan & Singer, *supra* note 94, at 552-54; Sidak & Teece, *supra* note 177, at 564-65; Yoo, *supra* note 174, at 511-15; and Cave et al., *supra* note 22, at 1-2. A few proponents of an antitrust framework

trality proponents are also concerned about a network provider's discriminatory behavior if that network provider does not have a dominant position in the local or nationwide market for Internet services.²⁰⁵

Fourth, under an antitrust framework, discriminatory conduct that is justified by a legitimate business purpose would be classified as socially beneficial.²⁰⁶ While those who propose using an antitrust framework to distinguish between socially beneficial and socially harmful discrimination do not explain this criterion in detail, they seem to agree that conduct that is designed to increase the network provider's private efficiency should not be considered socially harmful.²⁰⁷ For example, most proponents of an antitrust framework seem to assume that any discriminatory conduct that is adopted to manage congestion is procompetitive and should be considered socially beneficial discrimination.²⁰⁸ Price discrimination that is designed to recover fixed costs of net-

for network neutrality do not require proof of monopoly power or of a dominant position in the primary market. *See, e.g.*, Hahn et al., *supra* note 174, at 367.

205. *See, e.g.*, FRISCHMANN, INFRASTRUCTURE, *supra* note 106, at 330-32; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 255-64; Christiaan Hogendorp, *Spillovers and Network Neutrality*, in REGULATION AND THE PERFORMANCE OF COMMUNICATION AND INFORMATION NETWORKS 191, 203-04 (Gerald R. Faulhaber et al. eds., 2012); Tim Wu, *Why Have a Telecommunications Law? Anti-Discrimination Norms in Communications*, 5 J. ON TELECOMM. & HIGH TECH. L. 15, 25, 27-28 (2006); *see also infra* Part II.D.1. In the Open Internet proceeding, this position was supported by several groups. *See, e.g.*, Center for Democracy & Technology Comments, *supra* note 36, at 9-10; Free Press Open Internet Comments, *supra* note 3, at 45-49; Open Internet Coalition Comments, *supra* note 36, at 70-76; Public Interest Comments, *supra* note 36, at 23-24.

206. Cf. 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 658f, at 183-92 (discussing the question of when business justification defenses will be allowed in the context of challenges under section 2 of the Sherman Act to companies' unilateral acts).

207. *See, e.g.*, Hahn et al., *supra* note 174, at 375-76, 378; Weiser, *supra* note 174, at 75-76; Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847, 1885-87 (2006).

Proponents of using an antitrust framework do not provide a lot of detail about how this part of the framework would work in practice. For example, they usually do not discuss the burden of proof or which standard should be used to decide whether the offered business justification is indeed "legitimate." The approach proposed by Christopher Yoo would assume that discriminatory behavior has a procompetitive explanation unless harm to consumers is proven. *See, e.g.*, Yoo, *supra* note 45, at 66-67; Yoo, *Consumers & Innovation*, *supra* note 177, at 257-61. By contrast, Philip Weiser assumes that discriminatory conduct is anticompetitive unless a legitimate business justification is "explained" or "offered," although it is not clear what exactly would have to be proven. *See, e.g.*, Robert D. Atkinson & Philip J. Weiser, *A Third Way on Network Neutrality*, NEW ATLANTIS, Summer 2006, at 47, 57-58 (discussing discriminatory provision of Quality of Service to content providers for a fee); Philip J. Weiser, *The Next Frontier for Network Neutrality*, 60 ADMIN. L. REV. 273, 313-18 (2008) (same); Weiser, *supra* note 174, at 75-76 (same). In cases under section 2 of the Sherman Act, courts differ in how they assign the burden of proof that the business justification is not invalid or pretextual. *See* 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 658f, at 183-85.

208. *See, e.g.*, Jerry Brito et al., Net Neutrality Regulation: The Economic Evidence at 23, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices,

work infrastructure or network innovation is often mentioned as another example of a business justification that may legitimize discriminatory conduct.²⁰⁹ For those who would evaluate discriminatory conduct by network providers under an antitrust framework, the existence of an efficiency rationale ends the inquiry. The efficiencies created by the conduct do not need to outweigh any harm to competition. Nor does it matter whether there is a less restrictive alternative that might reach the same goal with less harm to competition.²¹⁰

By contrast, network neutrality proponents often classify discriminatory behavior as socially harmful even if it is motivated by the network provider's desire to increase its own efficiency.²¹¹ Thus, the existence of a private efficiency rationale does not automatically legitimize the behavior.

Network neutrality proponents evaluate discriminatory conduct based on its social costs and benefits. Network providers make decisions based on the conduct's private costs and benefits. As I have explained elsewhere, these decisions often diverge.²¹² From the perspective of network neutrality proponents, this divergence between the public's interests and the network providers' private interests is a key justification for regulatory intervention. According to them, network neutrality regulation is needed precisely because what is privately efficient for network providers is not necessarily socially efficient. Under these circumstances, the fact that certain behavior is privately efficient for the network provider cannot automatically excuse the behavior.²¹³

WC Docket No. 07-52 (Apr. 12, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020408754>; see also Yoo, *supra* note 207, at 1907 ("An examination of the economics of congestion provides policy justifications for precisely the type of restrictions that network neutrality would condemn.").

209. See, e.g., Howard A. Shelanski, *Network Neutrality: Regulating with More Questions than Answers*, 6 J. ON TELECOMM. & HIGH TECH. L. 23, 30 (2007); Weiser, *supra* note 207, at 315.

210. In the network neutrality context, see, for example, Hahn et al., *supra* note 174, at 375-76, 378. See also 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 658f, at 189-92 (describing the absence of balancing of social benefits and competitive harms under section 2 of the Sherman Act and arguing against searching for a less restrictive alternative in some section 2 cases). But see United States v. Microsoft Corp., 253 F.3d 34, 59 (D.C. Cir. 2001) (requiring the plaintiff to "demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit" under section 2).

211. See, e.g., FRISCHMANN, INFRASTRUCTURE, *supra* note 106, at 348-53 (discussing price discrimination); VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 273-78 (discussing discriminatory pricing strategies); Frischmann & van Schewick, *supra* note 36, at 397-98, 400-07 (discussing discriminatory network management); Wu, *Network Neutrality*, *supra* note 40, at 168-69 (discussing price discrimination); see also Joseph Farrell, *Open Access Arguments: Why Confidence Is Misplaced, in NET NEUTRALITY OR NET NEUTERING: SHOULD BROADBAND INTERNET SERVICES BE REGULATED?* 195, 199-201 (Thomas M. Lenard & Randolph J. May eds., 2006) (discussing collateral damage from price discrimination that limits application innovation).

212. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 355-75.

213. By contrast, in the context of section 2 of the Sherman Act, a legitimate business justification only needs to be privately efficient. See 3 AREEDA & HOVENKAMP, *supra* note 181, ¶ 658f, at 186 ("[W]hen courts speak of the business justification defense as requiring

The social costs of discriminatory conduct are created by the conduct as such; they do not change depending on the network provider's motivation. If an application is being blocked, it cannot reach its customers. Users will be unable to use it, and the application developer and his investors will be unable to reap its benefits, whether the network provider is blocking the application to manage congestion or to exclude a competitor. Thus, the social harm—the reduction in application developers' incentives to innovate and in investors' willingness to invest, and users' inability to use the Internet in the way that is most valuable to them or participate in social, cultural, or democratic discourse related to blocked content—is caused by the blocking as such, not by the motivations that are driving it.

Finally, the possibility that discriminatory behavior may increase efficiency by, for example, reducing costs or increasing performance, has already been factored into the fundamental trade-off underlying calls for network neutrality regulation.²¹⁴ From the perspective of network neutrality proponents, the loss of certain short-term efficiencies from discriminatory behavior is a social cost of network neutrality rules. It is, however, the price of a system that can evolve and will remain open to new applications in the future. In other words, network neutrality rules are based on the assessment that the social benefits associated with network neutrality rules are more important than the social costs, including the loss of short-term efficiencies. Since short-term efficiency gains have already been considered and rejected as a justification for discriminatory behavior on a general basis in the fundamental trade-off underlying network neutrality regulation, the fact that certain discriminatory conduct increases a network provider's efficiency cannot automatically justify individual instances of discriminatory behavior when they occur. After all, if legislators or regulators had deemed the loss of short-term efficiencies more important than the social benefits associated with an open, nondiscriminatory Internet, they would not have adopted network neutrality rules in the first place.

All of this does not mean that proponents of network neutrality will never allow discriminatory conduct that is motivated by considerations of private efficiency. For example, there are circumstances in which discriminatory network management may be justified. For network neutrality proponents, however, the insight that the discriminatory conduct is designed to address a network management problem is only the beginning, not the end, of the inquiry.²¹⁵ As a re-

some showing of ‘efficiency,’ that term should be understood to refer to the costs or output of the monopolist itself (productive efficiency), not to the market as a whole (allocative efficiency).” (footnote omitted)).

214. On this trade-off, see notes 46-50 and accompanying text above.

215. To prevent such an exception from creating a loophole, any exception for reasonable network management needs to be carefully defined. See Marvin Ammori, *A Guide to the Network Neutrality Discussions at the FCC*, HUFFINGTON POST (Aug. 4, 2010, 3:08 PM EDT), http://www.huffingtonpost.com/marvin-ammori/a-guide-to-the-network-ne_b_670784.html (discussing the different options for introducing loopholes into network neutrality rules); see also Comments of Jack Balkin et al., Preserving the Open Internet, GN Docket

sult, discriminatory conduct may be considered socially harmful by proponents of network neutrality, even if it is justified by a legitimate business justification and therefore would be allowed under an antitrust framework.²¹⁶

In sum, a nondiscrimination rule based on an antitrust framework will not prohibit all instances of discrimination that threaten the values that network neutrality rules are designed to protect and should therefore be rejected.²¹⁷

2. *Ban discrimination that is anticompetitive or harms users*

Other proposals would ban discrimination that is “anticompetitive” or “harms users.” The proposed nondiscrimination rule may define certain behaviors as presumptively allowed or not allowed. For example, user-controlled prioritization may be presumptively legal, and application-provider-paid prioritization may be presumptively illegal. Whether a specific discriminatory behavior is anticompetitive or harms users and whether the presumptions should apply would be decided by the regulatory agency in case-by-case adjudications.

The proposal for a legislative framework on network neutrality put forward by Google and Verizon in August 2010 constitutes an example of such a rule. It prohibited “undue discrimination . . . that causes meaningful harm to competition or to users,” and included the rebuttable presumption that “[p]rioritization of Internet traffic would be presumed inconsistent with the non-discrimination standard.”²¹⁸ (It included, however, an exception for reasonable network man-

No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Nov. 2, 2009), available at <http://apps.fcc.gov/ecfs/document/view?id=7020244236> (voicing concerns regarding ambiguities in the definition of the reasonable network management exception in the Open Internet Notice of Proposed Rulemaking). For the reasonable network management exception proposed by this Article, see Box 18 and notes 491-505 and accompanying text below.

216. For example, network management practices that single out specific applications or classes of applications, even though the network management problem could have been solved in application-agnostic ways, would probably be legal under an antitrust framework but banned under the nondiscrimination rule and exception for reasonable network management proposed by this Article. *See infra* Part II.D.2.b.

217. This conclusion is a consequence of this Article’s decision to evaluate network neutrality rules based on the broad theoretical framework used by proponents of network neutrality and by the FCC in its Open Internet Order. In the context of that framework, the antitrust-based rule discussed in this Part is underinclusive. By contrast, those who approach the network neutrality debate from an antitrust framework would view the narrow scope of antitrust-based nondiscrimination rules as a “feature,” not a “bug.” *See Hazlett & Wright, supra* note 21, at 805 (“The FCC and net neutrality proponents often argue that antitrust analysis might not prohibit all use of vertical contracts is a bug, rather than a feature, of that regime. However, the fact that antitrust is not a ‘slam dunk’ can also be a feature.” (footnote omitted)).

218. Verizon & Google, *Verizon-Google Legislative Framework Proposal*, GOOGLE 1, http://static.googleusercontent.com/media/www.google.com/en/us/googleblogs/pdfs/verizon_google_legislative_framework_proposal_081010.pdf (last visited Jan. 7, 2015) (“Non-Discrimination Requirement: In providing broadband Internet access service, a provider would be prohibited from engaging in undue discrimination against any lawful Internet con-

agement that allowed network providers “to prioritize general classes or types of Internet traffic, based on latency.”²¹⁹ The FCC-led industry negotiations in the summer of 2010 seem to have focused on a nondiscrimination rule of this type as well.²²⁰

These proposals are less specific and more ambiguous than proposals based on an antitrust framework. They use criteria that are open to interpretation without indicating which theories of harm should drive the interpretation. Instead, this decision would be made by the agency in the context of a specific adjudication. Compared to an antitrust framework, which would immediately rule out many of the cases that threatens the values that network neutrality rules are designed to protect, these proposals could capture more of these cases under some but not all possible interpretations of the rule.

For proponents of a narrow scope of network neutrality rules, terms like “anticompetitive” or “harm to competition” are meant to evoke the standards used in antitrust analysis, where behavior is only anticompetitive if it harms competition, not just a competitor.²²¹ As explained above, antitrust standards would prohibit only a subset of cases that network neutrality proponents would classify as socially harmful. Under this narrow interpretation, exact outcomes would vary depending on whether the terms “anticompetitive” or “harm to competition” were used to import the full antitrust framework outlined above or only parts of that framework.

By contrast, proponents of network neutrality use terms like “anticompetitive” or “harm to competition” in a looser sense that is not tied to antitrust law. To them, any discriminatory behavior that singles out specific applications or classes of applications for differential treatment distorts competition among applications or classes of applications. This harms the competitive process, and thereby competition, by making it impossible for all applications to compete on a level playing field, without interference from network providers. It is unclear how far such an interpretation would go, but it would capture more, if not all, of the cases that threaten the values that network neutrality rules are intended to protect than an interpretation based on antitrust law.²²²

tent, application, or service in a manner that causes meaningful harm to competition or to users. Prioritization of Internet traffic would be presumed inconsistent with the non-discrimination standard, but the presumption could be rebutted.” (bolding and underlining omitted).

219. *Id.*

220. This statement is based on conversations with various participants in the negotiations. On the FCC-led negotiations, see, for example, Cecilia Kang, *FCC Draws Fire over Talks with Internet, Telecom Giants on ‘Net Neutrality,’* WASH. POST (Aug. 5, 2010), <http://wapo.st/1wHWLLu> [hereinafter Kang, *FCC Draws Fire*]; Cecilia Kang, *FCC Ends Talks for Deal on Net Neutrality*, WASH. POST (Aug. 6, 2010), <http://wapo.st/1FEShib>; Todd Shields, *Critics Decry ‘Secret Deal’ as AT&T, Google Huddle with FCC*, BLOOMBERG (Aug. 3, 2010), <http://www.bloomberg.com/news/2010-08-02/google-verizon-at-t-seek-internet-peace-in-closed-door-talks-with-fcc.html>.

221. For one example, see Farber & Katz, *supra* note 45.

222. See *supra* Part II.C.1.

From the perspective of network neutrality proponents, the term “harm to users” resonates with the notion that network neutrality is designed to safeguard users’ ability to use the applications of their choice and to access and distribute the content of their choice without interference from network providers. There is, however, considerable uncertainty regarding the interpretation of this term. Depending on how the term is interpreted, it could capture fewer instances of discrimination than network neutrality proponents would find justified.

Consider the example of Comcast’s blocking of BitTorrent. Proponents of network neutrality usually agree that singling out specific applications to manage bandwidth on a network is not an acceptable form of discrimination or “reasonable network management” as long as other, application-agnostic ways of managing the network are available.²²³

An application of the rule to this case immediately raises a number of questions:

First, who is a user? Singling out a specific application to manage bandwidth on a network harms the network provider’s Internet access customers who want to use the application as well as the provider of the application. It is unclear, however, whether the term “harm to users” refers only to end users or also to application and content providers.

Second, how do regulators determine whether users are harmed? Do they focus on the individual user who cannot use the Internet as she would like, or do they focus on users as a group, similar to the way antitrust law defines harm to consumers when evaluating whether certain conduct is anticompetitive? For example, slowing down peer-to-peer file sharing, a network provider may argue, may harm the file-sharing users and the provider of the file-sharing software, but, according to the network provider, is only done to protect the Internet experience of all the other non-file-sharing users.²²⁴

223. See, e.g., Barbara van Schewick, Outline of Proposal for Open Internet Rules at 2, Attachment to Notice of Ex Parte Conversations, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (May 25, 2010), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020493599>; Open Internet Coalition Comments, *supra* note 36, at 49 (proposing a test that requires the network management practices to result in “as little discrimination or preference as reasonably possible”); Public Interest Comments, *supra* note 36, at 40 (same); van Schewick, Official Testimony, *supra* note 68, at 4-7. The CRTC adopted a similar test to evaluate the Internet traffic management practices of Canadian Internet service providers. Review of the Internet Traffic Management Practices of Internet Service Providers, Telecom Regulatory Policy CRTC 2009-657 ¶ 43 (2009), available at <http://www.crtc.gc.ca/eng/archive/2009/2009-657.htm> (asking, among other questions, whether a discriminatory network management practice results “in discrimination or preference as little as reasonably possible”).

224. See, e.g., David L. Cohen, Executive Vice President, Comcast Corp., Statement at the Federal Communications Commission’s Public En Banc Hearing on “Broadband Network Management Practices” at 15, Broadband Industry Practices, WC Docket No. 07-52, (Feb. 25, 2008), available at http://www.fcc.gov/broadband_network_management/022508/cohen.pdf (arguing that interfering with peer-to-peer file-sharing applications “make[s] the aggregate online service better for all users and all services”); Comments of Bell Aliant Re-

Third, does it matter that there are alternative, nondiscriminatory ways of managing the network that are not similarly harmful to the users and the providers of the file-sharing software yet maintain the quality of the Internet experience for the non-file-sharing users? Network neutrality proponents usually allow discriminatory network management only if the problem cannot be solved in a nondiscriminatory way,²²⁵ but it is unclear whether a regulatory agency would read this requirement into the term “harm to users.”

Finally, individual filmmakers often use peer-to-peer file-sharing applications to inexpensively distribute their creative works, as we know from the Canadian proceeding that reviewed the Internet traffic management practices of Internet service providers.²²⁶ Nonprofits can use peer-to-peer file sharing to distribute their video contributions to political debates.²²⁷ Thus, peer-to-peer file-sharing applications help foster a more decentralized environment for democratic discourse and cultural production in which anybody can participate.²²⁸ Network neutrality proponents factor the loss of these societal benefits into their evaluation of discriminatory behavior, but it is unclear whether the term “harm to users” would permit this type of consideration.

In sum, while seemingly more specific, the rule’s substantive criteria are open to interpretation and do not necessarily capture the behavior that concerns network neutrality proponents. However, contrary to a nondiscrimination rule based on an antitrust framework, it is at least possible that challenges to discriminatory conduct that proponents of network neutrality consider harmful will be successful.

gional Communications, L.P. & Bell Canada ¶¶ 86-87, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) (Can.) [hereinafter Bell Aliant Comments], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1029804.zip (arguing that throttling peer-to-peer file-sharing applications between 4:30 PM and 2:00 AM “is aimed at delivering a more positive and better experience on the network for all users”).

225. See, e.g., *infra* Box 18; see also *infra* Part II.D.2.b.i.B.

226. Comments of the Canadian Film & Television Production Ass’n ¶¶ 53-54, 56, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) [hereinafter Canadian Film Comments], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1030120.pdf (citing concrete examples); Comments of the Documentary Organization of Canada at 1-2, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) [hereinafter Documentary Organization Comments], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1030141.pdf (same); Comments of the Independent Film & Television Alliance ¶ 8, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009), available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1032007.doc.

227. Brief Amicus Curiae of Professors Jack M. Balkin, Jim Chen, Lawrence Lessig, Barbara van Schewick, & Timothy Wu Urging that the FCC’s Order Be Affirmed at 33-35, Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291) [hereinafter Law Professor Comcast Amicus Brief], available at <http://cyberlaw.stanford.edu/files/publication/files/vanschewick-2009-amicus-brief.pdf>.

228. See *id.* at 31-38; Balkin, *Future of Free Expression*, *supra* note 44, at 432, 436-40.

3. *Ban discrimination that is unreasonable*

A final set of approaches does not specify the criteria to be used in separating socially beneficial from socially harmful discrimination beyond very general terms. For example, the draft Open Internet Rules circulated by the FCC Chairman in early December 2010 banned “unreasonable” discrimination by providers of wireline broadband Internet access without specifying how the term should be interpreted.²²⁹ The Chairman’s proposal was based on a compromise bill that had been negotiated by the Chairman of the House Committee

229. The draft rules were not released publicly, but they were described by the Chairman in public remarks when he circulated the draft rules: “And so the proposed framework includes a bar on unreasonable discrimination in transmitting lawful network traffic.” Julius Genachowski, Chairman, FCC, Remarks on Preserving Internet Freedom and Openness (Dec. 1, 2010), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303136A1.pdf.

While this language mirrors that of the nondiscrimination rule for common carriers in section 202 of the Communications Act (47 U.S.C. § 202(a) (2013), full text below), it is not clear whether and, if so, how this would affect the interpretation of the rule. Motivated at least in part by heavy resistance from network providers, the FCC made a deliberate decision not to reclassify Internet access services as telecommunications services, which would have made section 202 immediately applicable. The decision not to reclassify could be interpreted as a deliberate decision against the substantive framework provided by Title II. Moreover, 47 U.S.C. § 153(51) prohibits the FCC from imposing common-carrier-type rules on entities that, like Internet service providers, have not been classified as common carriers. *Verizon v. FCC*, 740 F.3d 623, 649-50 (D.C. Cir. 2014). Even if interpreters were willing to look to Title II’s common carrier nondiscrimination rule for guidance on how to interpret terms in a network neutrality nondiscrimination rule enacted under Title I of the Communications Act, it is unclear whether precedents developed for telephony services would be applicable to Internet access services. Beyond this general objection, lawyers would find ample opportunity to fight over the relevance of specific precedents. See, for example, the exchange between Harold Feld, legal director of the public interest group Public Knowledge, and lawyers for AT&T regarding the consequences of reclassifying Internet access services as a telecommunications service for the treatment of paid prioritization under the resulting Title II regime. Harold Feld, *Genachowski Hits the Legal Reset Button—“Title II Lite,”* WETMACHINE (May 7, 2010), <http://tales-of-the-sausage-factory.wetmachine.com/content/genachowski-hits-the-legal-reset-button-title-ii-lite>; Harold Feld, *Sorry AT&T, Title II Would Not Require the FCC to Allow Paid Prioritization*, WETMACHINE (Oct. 8, 2010), <http://www.wetmachine.com/content/sorry-att-title-ii-would-not-require-the-fcc-to-allow-paid-prioritization>; Hank Hultquist, *Harold Feld is Right (About Some Things)*, AT&T PUB. POL’Y BLOG (Oct. 13, 2010, 5:32 PM), <http://attpublicpolicy.com/government-policy/harold-feld-is-right-about-some-things>; Bob Quinn, *Who Keeps Pulling the Net Neutrality Football?*, AT&T PUB. POL’Y BLOG (Sept. 9, 2010, 10:00 AM), <http://attpublicpolicy.com/government-policy/who-keeps-pulling-the-net-neutrality-football>; see also Daniel A. Lyons, *Net Neutrality and Nondiscrimination Norms in Telecommunications*, 54 ARIZ. L. REV. 1029, 1058-64 (2012).

Section 202(a) reads in full:

It shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with like communication service, directly or indirectly, by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person, class of persons, or locality, or to subject any particular person, class of persons, or locality to any undue or unreasonable prejudice or disadvantage.

47 U.S.C. § 202(a).

on Energy and Commerce, Representative Henry A. Waxman, and the Chairman of the House Subcommittee on Communications, Technology and the Internet, Representative Rick Boucher, with the large phone and cable network providers, Internet companies, consumer groups, and open Internet groups in the fall of 2010.²³⁰ The bill would have banned network providers from “unjustly or unreasonably discriminat[ing] in transmitting lawful traffic over a consumer’s wireline broadband Internet access service.”²³¹

This type of rule leaves all substantive decisions about the legality of discrimination to decisions by the regulatory agency in future case-by-case adjudications, providing future decisionmakers with maximum flexibility. Contrary to nondiscrimination rules based on an antitrust framework, this type of proposal does not immediately rule out cases that concern network neutrality proponents and makes it at least possible, but not certain, that a complaint targeting behavior that network neutrality proponents deem socially harmful will be successful.

4. Problems with case-by-case adjudication

All of the proposals in this Subpart leave the substantive decision over the legality of specific discriminatory behavior to future case-by-case adjudications. The most general proposals ban “unreasonable discrimination” but do not provide any guidance on how to distinguish socially beneficial from socially harmful discrimination, leaving both the development of substantive criteria and their application to the specific behavior under consideration to future decisionmakers. While proposals that prohibit discrimination that “causes meaningful harm to competition or to users” seem more specific, they are afflicted with the same problem. The outcome of any adjudication depends entirely on how these ambiguous terms would be interpreted, with different inter-

230. See Press Release, Henry A. Waxman, Waxman Statement on Net Neutrality Proposal (Sept. 29, 2010), <http://waxman.house.gov/chairman-waxmans-statement-net-neutrality-proposal>; see also Sara Jerome, *Waxman May Move Without Full Consensus on Net-Neutrality Bill*, HILL (Sept. 23, 2010, 5:32 PM ET), <http://thehill.com/policy/technology/120571-waxman-may-move-without-full-consensus-on-net-neutrality-bill>. Not all participants in the negotiations supported the final proposal. John Eggerton, *Free Press Pushed Hard Against Waxman’s Net Neutrality Bill*, MULTICHANNEL NEWS (Sept. 30, 2010), http://www.multichannelnews.com/article/457836-Free_Press_Pushed_Hard_Against_Waxman_s_Net_Neutrality_Bill.php; Sara Jerome, *Sources: OIC Not Supporting Waxman Net-Neutrality Bill*, HILL (Sept. 28, 2010, 10:39 PM EDT), <http://thehill.com/policy/technology/121493-sources-oic-will-not-support-waxman-net-neutrality-bill> [hereinafter Jerome, *OIC*]. It was dropped when the Republican members of the House Committee on Energy and Commerce refused to support the bill. Press Release, Henry A. Waxman, *supra*; see also Kim Hart, *Net Neutrality Bill Stillborn*, POLITICO (Sept. 29, 2010, 6:47 PM EST), <http://www.politico.com/news/stories/0910/42919.html>. Chairman Waxman later filed the draft bill in the Open Internet docket. Open Internet Act of 2010 Draft Bill, Attachment to Comments of Henry A. Waxman, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 1, 2010) [hereinafter Draft Bill], available at <http://apps.fcc.gov/ecfs/document/view?id=702092223>. On the Waxman proposal’s influence on the Chairman’s proposal, see notes 546, 558-60 and accompanying text below.

231. Draft Bill, *supra* note 230, § 2, at 2 (proposing to add § 12(a)(1)(B)).

pretations leading to radically different outcomes. Other nondiscrimination rules evaluate discriminatory conduct after the fact using multiple factors without specifying how the factors relate to each other. Here, the outcome of specific adjudications depends not only on how future decisionmakers interpret and apply those factors, but also on how they weigh the different factors against each other. The nondiscrimination rule proposed by the FCC in its May 2014 Notice of Proposed Rulemaking is an example of such a rule.²³²

These kinds of case-by-case approaches create considerable social costs.²³³

a. *Lack of certainty and predictability*

First, case-by-case approaches fail to provide much-needed certainty for industry participants.

Under the proposals discussed above, network providers do not know which forms of network management are acceptable. For example, it is unclear whether and, if so, which forms of Quality of Service would be considered socially beneficial in future applications of the rule. It seems rather unlikely that network providers would make the investment needed to introduce Quality of Service in their Internet access networks if that investment could subsequently be made moot if a regulator, following a complaint, declared the practice socially harmful.²³⁴ By contrast, the more nuanced rules described below would clearly allow certain, though not all, forms of Quality of Service. Thus, under a case-by-case approach, network providers may refrain from deploying network technology that would have been clearly legal under one of the more nuanced rules discussed below. The resulting lack of evolution of the network infrastructure harms innovation in applications that need Quality of Service and deprives users of the benefits associated with the emergence of these applications.

More generally, some research and anecdotal evidence suggest that in the broadband context, certainty regarding the regulatory framework and its stabil-

232. The nondiscrimination rule for fixed broadband Internet access proposed by the FCC would ban “commercially unreasonable discrimination.” Whether certain discriminatory conduct is commercially unreasonable would be determined after the fact on a case-by-case basis, using a number of factors that have yet to be specified, taking into account the totality of circumstances. 29 FCC Rec. 5561, 5599-610, 5618-21 (proposed May 15, 2014) (to be codified at 47 C.F.R. pt. 8).

233. The relative costs and benefits of laws that specify legal commands before individuals act (i.e., when the law is promulgated) (“rules”) and laws where legal commands are specified after individuals have acted (i.e., in the context of adjudication) (“standards”) as well as the costs and benefits of proceeding by adjudication rather than rulemaking are discussed by three bodies of literature: the literature on rules vs. standards, the literature on rulemaking vs. adjudication in administrative law, and the literature on *per se* rules vs. the rule of reason in antitrust law.

234. Comments of the National Cable & Telecommunications Ass’n, *supra* note 91, at 15; Verizon Broadband Industry Practices Comments, *supra* note 34, at 44-45.

ity over time may be more important for network investment than the substance of the regulatory decision.²³⁵

In a network that can identify applications and control their execution, application developers who must decide whether to realize their innovative ideas and investors who consider funding them face the fundamental risk that the network may discriminate against the application at any time, which would reduce the affected application provider's ability to reap the benefits associated with her innovation. Thus, the threat of discrimination reduces application developers' incentives to innovate and their ability to get funding.²³⁶ Network neutrality rules aim at mitigating that problem by providing application developers and their investors with certainty that they will not be discriminated against. A case-by-case approach falls short of this goal. Innovators and their investors will not know in advance if and against which network provider conduct they are protected because this decision will only be made after discriminatory conduct has occurred. If the application is discriminated against, its chances with users are harmed immediately, and this harm persists while the application provider goes through a long and costly process to reach a regulatory decision on the discriminatory behavior in question. In markets in which first-mover advantages are important, the temporary disadvantage may be sufficient to tip the competition against the affected application. Moreover, venture capitalists and other investors fund start-ups so that these companies can build their products and better meet the needs of their users. Paying lawyers and economists to clarify how to interpret an ambiguous nondiscrimination rule in order to allow the application to reach its customers is not how investors would like their funds to be used. Thus, this type of nondiscrimination rule does not sufficiently protect users and application developers against actual

235. See, e.g., Verizon Broadband Industry Practices Comments, *supra* note 34, at 44-45; CHRISTIAN WERNICK, STRATEGIC INVESTMENT DECISIONS IN REGULATED MARKETS: THE RELATIONSHIP BETWEEN INFRASTRUCTURE INVESTMENTS AND REGULATION IN EUROPEAN BROADBAND 129-30, 158-85 (2007).

236. See, e.g., *Hearing on the Future of the Internet*, *supra* note 33, at 55-56 (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School); VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 270-73.

As I know from many conversations with entrepreneurs and investors, the threat of discrimination reduces entrepreneurs' ability to secure funding today. For two publicly documented examples, see Barbara van Schewick, Assistant Professor of Law, Stanford Law Sch., Oral Testimony at the Federal Communications Commission's Second Public En Banc Hearing on Broadband Management Practices at 2, Broadband Industry Practices, WC Docket No. 07-52 (Apr. 17, 2008) [hereinafter van Schewick, Oral Testimony], available at www.fcc.gov/broadband_network_management/041708/vanschewick-oral.pdf, and the letter submitted by the founders of the online video company Zediva to the FCC, Ex Parte Letter of Zediva at 1-2, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 10, 2010) [hereinafter Zediva Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020923207>. See also *Hearing on the Future of the Internet*, *supra* note 33, at 55-56 (prepared statement of Lawrence Lessig, Professor of Law, Stanford Law School).

discrimination and fails to remove the threat of discrimination as a factor that affects application developers' and innovators' decisions about innovation.²³⁷

While individual adjudications may reduce the amount of uncertainty over time, it is unclear whether and how fast useful precedents will emerge.

Over time, individual adjudications may clarify the interpretation of the standard and its application to specific behavior, reducing uncertainty.²³⁸ Whether future adjudications manage to reduce uncertainty in a meaningful way depends on a variety of factors: First, network providers need to be willing to engage in discriminatory conduct and take the risk of being faced with a complaint and having the behavior declared socially harmful. If network providers do not engage in a particular practice (e.g., if they do not deploy Quality of Service in their networks), there is no basis for a complaint, and the legality of the practice will never be determined. Second, contrary to a rule that clearly specifies which behavior is and is not allowed, an adjudicatory regime puts the burden on a particular party to bring a complaint that will allow the uncertainty to be resolved. Third, future adjudicators may not be any more willing than the current legislator or regulator to do more than absolutely necessary to resolve the case under consideration. Narrow decisions that are deliberately tied to the facts of the specific case and refuse to elaborate broader principles may not provide meaningful guidance for future cases.²³⁹ Thus, it is unclear whether and how quickly useful precedents will emerge. In the meantime, the costs associated with the uncertainty persist.²⁴⁰ Moreover, as set out in more detail below, the substantive principles emerging from case-by-case adjudications are

237. Of course, even a rule-based approach that specifies in advance which differential treatment is and is not acceptable cannot provide absolute certainty that discriminatory behavior that violates the rule will never occur. In the presence of clear rules, however, network providers will know what behavior is not allowed and may prefer complying over risking detection, enforcement, and fines. (The network provider's exact calculus depends on the likelihood of detection, the agency's willingness to enforce the rule, and the sanctions associated with a rule violation.) In addition, since enforcing a clear rule is easier, faster, and less costly than engaging in the type of case-by-case adjudication described above, the overall harm to an application developer and to users if discrimination occurs is smaller than under a case-by-case regime.

238. See, e.g., Yoo, *After Comcast*, *supra* note 177, at 82.

239. See, e.g., Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 612-13 (1992) (discussing courts' tendency to issue narrow decisions that minimize or postpone the creation of precedents); Cass R. Sunstein, *Incompletely Theorized Agreements*, 108 HARV. L. REV. 1733, 1735-38, 1739-51 (1995) (discussing the dynamics that give rise to this phenomenon).

240. See, e.g., Yoo, *After Comcast*, *supra* note 177, at 57, 82 (noting the uncertainty surrounding the FCC's interpretation of "reasonable network management" in the aftermath of the FCC's order against Comcast until enough precedents exist). See generally Louis Kaplow, *General Characteristics of Rules*, in 5 ENCYCLOPEDIA OF LAW AND ECONOMICS: THE ECONOMICS OF CRIME AND LITIGATION 502, 512 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000) (noting the costs associated with waiting for precedents to resolve an open legal question instead of resolving the question through an earlier announcement of a rule); Kaplow, *supra* note 239, at 612-14.

less likely to adequately protect the values and actors that network neutrality rules are designed to protect.

b. *High costs of regulation*

Second, case-by-case approaches create high costs of regulation.²⁴¹ Each adjudication requires detailed investigations into the facts of the case and invites protracted and resource-intensive fights over the interpretation of the rule. Precedents established through adjudication may not necessarily be binding on other industry actors.²⁴² Their applicability may also be limited by the facts of the case.²⁴³ As a result, subsequent cases may need to be fully adjudicated even if they are based on similar facts, with network providers arguing that the facts of their case differ from the precedent in relevant ways. For example, when the FCC ordered Comcast to stop interfering with BitTorrent and adopt application-agnostic ways of managing congestion,²⁴⁴ the Commission based its decision on three different rationales: First, the specific practice used by Comcast—sending RST packets to terminate BitTorrent connections—was quite questionable and violated the Internet Engineering Task Force (IETF) standards for the operation of the TCP.²⁴⁵ Second, the discriminatory practice, which singled out BitTorrent and other peer-to-peer file-sharing applications for differential treatment, was not narrowly tailored to Comcast’s stated goal of managing congestion.²⁴⁶ Third, Comcast had not disclosed the use of the practice to its Internet access customers.²⁴⁷ The order did not explain whether each of these factors alone would have made the network management “unreasonable” or whether the Commission’s decision was based on the confluence of these factors, providing ample room for network providers to distinguish their case on the basis that their behavior violated only one, but not all, of the criteria used in the Comcast case.²⁴⁸

241. See, e.g., 1 RICHARD J. PIERCE, JR., ADMINISTRATIVE LAW TREATISE §§ 6.8-9, at 497-508 (5th ed. 2010); Kaplow, *supra* note 240, at 510.

242. See 1 PIERCE, *supra* note 241, § 6.8, at 498-99; M. Elizabeth Magill, *Agency Choice of Policymaking Form*, 71 U. CHI. L. REV. 1381, 1394, 1396 (2004).

243. See 1 PIERCE, *supra* note 241, § 6.8, at 499-500; Magill, *supra* note 242, at 1396.

244. Formal Complaint of Free Press & Pub. Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications, 23 FCC Rcd. 13,028, 13,059-61 (2008) (memorandum opinion and order), *vacated*, Comcast Corp. v. FCC, 600 F.3d 642 (D.C. Cir. 2010).

245. *Id.* at 13,054-55.

246. *Id.* at 13,055-58.

247. *Id.* at 13,058-59.

248. The Comcast Order was vacated by the U.S. Circuit Court of Appeals for the District of Columbia in April 2010. *Comcast*, 600 F.3d at 661.

c. *Limited ability to protect values and actors that network neutrality rules are designed to protect*

Finally, in the context of network neutrality, case-by-case approaches are less likely than rule-based approaches to adequately protect the values and actors that network neutrality rules aim to protect.

Case-by-case approaches provide an advantage to well-financed actors and tilt the playing field against those—end users, low-cost application developers, start-ups, nonprofits, independent artists, and members of underserved communities—who do not have the resources necessary to engage in extended fights over the legality of specific instances of discrimination in the future.²⁴⁹ Network providers and large application providers can conduct fact-intensive investigations, pay lawyers, economists, and other experts to engage in the fight over the correct interpretation and application of the rule at the regulatory agency and, later, in the courts, and employ lobbyists to organize support for their position in Congress or at the White House. End users, low-cost application developers, and start-ups lack these resources. Thus, adjudications will likely be systematically biased against their interests. They are, however, some of the key groups that network neutrality rules are intended to protect.²⁵⁰

Decisions in individual adjudications will often be driven by the specific facts of the case. A sympathetic party or a limited fact pattern that does not illuminate all relevant aspects of the underlying problem may distort the decisionmaker's view of the underlying policy issues in a way that a more general analysis of the issues in the context of a rulemaking proceeding may not.²⁵¹ For example, as in the FCC's investigation of Comcast's blocking of BitTorrent, debates over the reasonableness of network management practices arose first in the context of discriminatory treatment of peer-to-peer file-sharing applications. Most people have heard of BitTorrent and other peer-to-peer file-sharing applications as tools for illegal file sharing. They do not know that peer-to-peer file-sharing applications have many legal and socially valuable uses. For example, at the time of Comcast's blocking of BitTorrent, established content providers such as the BBC, Showtime, the History Channel, MTV

249. See, e.g., Steven P. Croley, *Theories of Regulation: Incorporating the Administrative Process*, 98 COLUM. L. REV. 1, 120-24, 128 (1998); Cass R. Sunstein, *Problems with Rules*, 83 CALIF. L. REV. 953, 977 (1995) ("[C]ase-by-case judgments systematically favor the well-to-do."). In the network neutrality context, see van Schewick, August 2010 Attachment, *supra* note 52, at 5; and Brad Burnham, Op-Ed., *A Threat to Startups*, N.Y. TIMES ROOM FOR DEBATE (Aug. 10, 2010, 12:08 PM), <http://www.nytimes.com/roomfordebate/2010/8/9/who-gets-priority-on-the-web/a-threat-to-startups>.

250. On the importance of low-cost innovators, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 204-13, 300-08, 334-45. On new entrants and start-ups, see *id.* at 319-34. For a short version of the argument, see van Schewick, Open Internet Opening Statement, *supra* note 29, at 3-5.

251. See 1 PIERCE, *supra* note 241, at 496-97; Magill, *supra* note 242, at 1396; see also Kaplow, *supra* note 239, at 609 (discussing this phenomenon with respect to the decisions of courts compared to legislative decisions).

Networks, 20th Century Fox, and Paramount were distributing their video content online through services that utilized the BitTorrent protocol.²⁵² Developers of open source applications such as the Linux operating system or OpenOffice and game providers such as Blizzard Entertainment, the company behind World of Warcraft, employ peer-to-peer file-sharing applications to distribute their software or software updates.²⁵³

Peer-to-peer file-sharing applications foster a more decentralized environment for the creation and distribution of creative works by allowing independent filmmakers to sidestep traditional, more centralized distribution channels and distribute their films directly to the public.²⁵⁴ Internet video applications based on peer-to-peer protocols like the Miro video player let a diverse set of actors distribute their videos on a wide range of subjects, providing an important outlet for free speech.²⁵⁵ Still, based on the inaccurate perception that applications like BitTorrent are primarily used for illegal file sharing, regulators and members of Congress or the White House may be more reluctant to side with complaints against network management practices that single out these applications. After all, who wants to side with “pirates”?

More generally, the question at the core of the debate over reasonable congestion management—who should prioritize among competing uses at times when people most want to use the network—may receive more attention and a more balanced assessment in a general rulemaking than in an adjudication involving peer-to-peer file-sharing applications. Adjudications focused solely on peer-to-peer file-sharing applications foster the general perception that network providers engage in congestion management to protect socially valuable applications from the bandwidth demands of applications that have little social value, providing little reason to question network providers’ role as benevolent stewards of the platform. By contrast, a more general analysis of network management practices would broaden the focus to include attempts to limit the use of other applications, for example of streaming video applications, during times of congestion. In 2009, for example, BT restricted the bandwidth available to the BBC iPlayer and other streaming video applications to 896 kilobits per second in a particular version of BT’s broadband service.²⁵⁶ Many people like to use streaming video applications like Hulu or Netflix in the evening, when the network is most congested. In North America, Netflix traffic now makes up thirty-four percent of downstream traffic on fixed broadband networks during

252. Formal Complaint at 17-18, Formal Complaint of Free Press & Pub. Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications, 23 FCC Rd. 13,028 (2008) (No. EB-08-IH-1518).

253. *Id.* at 18-19; LINUXTRACKER, <http://linuxtracker.org> (last visited Jan. 7, 2015); Legacy OpenOffice.org P2P Downloads, OPENOFFICE, <http://www.openoffice.org/distribution/p2p> (last visited Jan. 7, 2015).

254. Canadian Film Comments, *supra* note 226, at ¶¶ 53-56, 58; Documentary Organization Comments, *supra* note 226, at 1-3, 5.

255. See Law Professor Comcast Amicus Brief, *supra* note 227, at 31-38.

256. Cellan-Jones, *supra* note 101.

peak times.²⁵⁷ As a result, in a generalized rulemaking that also considers limits on applications other than peer-to-peer file-sharing applications, the sympathy of decisionmakers and observers will be more evenly distributed among restricted and unrestricted uses of the network. At the same time, streaming applications, which compete with network providers' traditional video offerings, bring the potential gap between network providers' and users' interests into sharp relief,²⁵⁸ making the argument more convincing that users, not network providers, are in the best position to decide how the network should be used, whether there is congestion or not. For all these reasons, an individual adjudication focused on network management practices singling out peer-to-peer file sharing is more likely than a general rulemaking to result in a decision that grants network providers broad discretion in managing congestion. At the same time, the precedent set by the adjudicatory decision may make it more difficult to limit network providers' discretion when congestion management practices arise that target other uses of the network.

More generally, adjudicators who need to decide whether a certain discriminatory behavior should be allowed as part of an adjudication will be less likely to have access to the full set of relevant facts and arguments than public actors trying to distinguish socially beneficial from socially harmful discrimination as part of a rulemaking.²⁵⁹ In contrast to rulemakings, adjudications are adversarial proceedings, with procedural rules that make it more difficult for other interested actors to participate. This limits the range of actors from which the adjudicator will receive input.²⁶⁰ This is particularly problematic in the context of network neutrality rules, where any decision over the legality of discriminatory behavior is likely to have far-reaching implications for users, application providers, their investors, and network providers who are not directly subject to the discriminatory practice under consideration.

Moreover, network neutrality rules are designed to protect, among others, the interests of users as well as of current and future innovators and entrepreneurs. As large groups with diffuse interests, they face well-documented challenges in organizing and representing their interests, which makes it more difficult for them to participate and be heard in any type of legislative or regulatory

257. SANDVINE, GLOBAL INTERNET PHENOMENA REPORT 1H 2014, at 6 tbl.2 (2014), available at <https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/1h-2014-global-internet-phenomena-report.pdf>.

258. See, e.g., Competitive Impact Statement at 11, 14-20, United States v. Comcast Corp., 808 F. Supp. 2d 145 (D.D.C. 2011) (No. 1:11-cv-00106) [hereinafter Competitive Impact Statement], available at <http://www.justice.gov/atr/cases/f266100/266158.pdf> (discussing the gap and citing “[m]any internal documents” showing that Comcast views online video distributors as a competitive threat to its traditional cable video distribution offerings); Canadian Film Comments, *supra* note 226, ¶¶ 60-67.

259. See generally 1 PIERCE, *supra* note 241, § 6.8, at 496-97, 501; Magill, *supra* note 242, at 1396, 1446.

260. See generally 1 PIERCE, *supra* note 241, § 6.8, at 496-97, 501; Croley, *supra* note 249, at 116-17, 120-24, 128, 148; Magill, *supra* note 242, at 1391, 1396.

proceeding.²⁶¹ Adversarial proceedings increase these challenges.²⁶² For example, entrepreneurs are often reluctant to speak out on network neutrality because they fear retaliation by network providers.²⁶³ They may be even more reluctant to do so in the context of an adjudication that is directed against a specific network provider. Also, it may be easier to mobilize users and entrepreneurs once, in the context of a rulemaking, than again and again for individual adjudications. Users or entrepreneurs may not only find it difficult to understand how a specific adjudication may affect them; like public decisionmakers, they may also be subject to biases or intuitive reactions resulting from an adjudication's specific fact patterns.²⁶⁴ For example, a user who does not use BitTorrent and does not engage in illegal file sharing may fail to grasp the importance of an adjudication focused on network management practices targeting peer-to-peer file sharing. Entrepreneurs offering streaming video applications that do not use peer-to-peer protocols may have the same reaction. For all these reasons, users and entrepreneurs may be less willing to get involved in specific adjudications than in a general rulemaking, depriving the decisionmaker of input from important stakeholders.

In addition, an *ex ante* regime is better suited to the consideration of the very fundamental values at stake than case-by-case adjudications. Network neutrality rules are based on very general trade-offs among competing values.²⁶⁵ Network neutrality rules foster application innovation, protect user choice, and preserve, among other things, the Internet's ability to foster democratic discourse, all of which create social value. They limit the evolution of the network's core to some extent, limit network providers' ability to realize all potential efficiency gains or optimize the network in favor of the applications of the day, reduce network providers' profits, and, like all regulation, need to be administered and enforced, all of which create social costs. Thus, there is a trade-off that regulators need to resolve. An *ex ante* rule that specifies what be-

261. MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS 2, 9-16, 35 (1965); Nicholas Bagley & Richard L. Revesz, *Centralized Oversight of the Regulatory State*, 106 COLUM. L. REV. 1260, 1287-90 (2006); Rachel E. Barkow, *Insulating Agencies: Avoiding Capture Through Institutional Design*, 89 TEX. L. REV. 15, 21-24 (2010); Croley, *supra* note 249, at 126-42.

262. Croley, *supra* note 249, at 120-24, 128 (discussing the costs of participating in rulemaking and adjudication and the impact on relative levels of participation of public interest groups in these types of agency decisionmaking, as well as citing empirical studies to support his analysis).

263. Barbara van Schewick, *Start-Up Video Company Asks FCC to Improve Open Internet Proposal*, INTERNET ARCHITECTURE & INNOVATION (Dec. 12, 2010, 9:47 PM), <http://netarchitecture.org/2010/12/start-up-video-company-files-concerns-about-fcc-open-internet-proposal>.

264. See *supra* notes 251-58 and accompanying text; *infra* notes 268-78, 303-04 and accompanying text.

265. For a detailed discussion of this trade-off, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 355-71. For a short overview, see the discussion in Part I above.

havior is and is not allowed resolves this trade-off for all future cases at once, in favor of the social benefits. If the legality of discriminatory behavior is decided case by case instead, it is more likely that decisions will deviate from this general trade-off and allow discriminatory behavior than under a rule that makes this decision *ex ante*. This is because the adjudicator's decision will be affected by several well-known cognitive limitations and biases.²⁶⁶

While the costs of banning the practice will be immediately apparent (e.g., the network provider cannot manage its network in a certain discriminatory way), the current and future benefits associated with a ban will be less clear. While the discriminatory practice immediately harms the provider and the existing users of the affected application, the value of a specific application often only becomes apparent over time. Thus, the immediate cost of the discriminatory practice (or the immediate benefit of banning it) may be difficult to quantify. Determining the future benefits of banning the discriminatory practice is even more difficult. We do not know which applications will never be developed because innovators and investors are concerned about the threat of discrimination, so their social value cannot be determined, either.²⁶⁷

Moreover, an adjudicator is likely to underestimate other negative consequences of allowing a deviation from the general nondiscrimination rule in the particular case under consideration. Often, it takes a while to recognize the negative consequences of a specific discriminatory practice (beyond any reduction in incentives to innovate due to the threat of discrimination). This problem may be particularly pronounced for an adjudicator who lacks technical expertise.²⁶⁸ For example, network management practices that single out specific applications or classes of applications for negative treatment may motivate the designers of the affected applications to adopt techniques to evade detection²⁶⁹: applications that are the target of discriminatory network management practices and others that want to avoid being targeted in the future often choose to encrypt their communications across the network.²⁷⁰ The increase in encryption has motivated some operators to slow down all encrypted traffic, which in turn

266. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 78 (making the same argument in the context of deviations from the broad version of the end-to-end arguments); see also Lawrence B. Solum & Minn Chung, *The Layers Principle: Internet Architecture and the Law*, 79 NOTRE DAME L. REV. 815, 854-65 (2004) (making a similar argument in a slightly different context).

267. For a more detailed description of the problem with citations to relevant literature, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 77-78, 374-75.

268. *See id.* at 78; Solum & Chung, *supra* note 266, at 859-60.

269. The resulting arms race is described in detail by William H. Lehr et al., *Scenarios for the Network Neutrality Arms Race*, 1 INT'L J. COMM. 607, 607-08, 614-40 (2007).

270. See Blumenthal & Clark, *supra* note 70, at 77-78, 95; Lehr et al., *supra* note 269, at 627-28; Karl Bode, *Which ISPs Throttle BitTorrent Traffic?*, BROADBAND DSLREPORTS.COM (Dec. 22, 2006), <http://www.dslreports.com/shownews/80468>.

hurts legitimate traffic that is encrypted for security reasons.²⁷¹ Widespread use of encryption also complicates network analysis, planning, and security.²⁷²

Similarly, Comcast's old, discriminatory method of managing congestion—sending spoofed RST packets to terminate certain peer-to-peer file-sharing connections—used certain types of TCP packets in a nonstandard way. Once such a practice emerges, programmers can no longer rely on standards to determine how their software should respond to an RST packet, which considerably complicates protocol and application design.²⁷³ Thus, allowing only a single discriminatory network management practice (e.g., one targeting peer-to-peer file-sharing applications) may have significant unintended negative consequences.

Beyond that, several small deviations may quickly add up to create big roadblocks for innovation.²⁷⁴ For example, while application developers may be able to adapt their application to one network provider's idiosyncratic discriminatory network management practice, the costs of adapting their application to the network management practices of more than a few providers will quickly become prohibitive.²⁷⁵ Thus, an adjudicator's focus on a single practice whose exact effects may yet be unknown is likely to lead him to underestimate both the isolated effect of the practice and its interactions with other current or future deviations from nondiscriminatory network management. By

271. For example, in 2007, Canadian cable provider Rogers reportedly throttled all encrypted traffic. Observers suggested that this negatively affected students and professors at the University of Ottawa who were Rogers's customers and were checking their e-mail from off campus; off-campus access to e-mail is encrypted for security reasons. See Michael Geist, Op-Ed., *ISP Must Come Clean on 'Traffic Shaping'*, THESTAR.COM (Apr. 16, 2007), http://www.thestar.com/business/2007/04/16/isp_must_come_clean_on_traffic_shaping.html. In response to the allegations, Rogers declared that it was not degrading encrypted traffic and that its own tests had not shown any performance problems for the most common encrypted applications. See Ken Engelhart, Letter to the Editor, *Cyber Traffic Moving Smoothly*, THESTAR.COM (Apr. 20, 2007, 4:30 AM), <https://web.archive.org/web/20071118123710/http://www.thestar.com/article/205204> (accessed via the Internet Archive index).

272. See Blumenthal & Clark, *supra* note 70, at 77-78, 86; Lehr et al., *supra* note 269, at 635.

273. See, e.g., PETER ECKERSLEY ET AL., ELEC. FRONTIER FOUND., PACKET FORGERY BY ISPS: A REPORT ON THE COMCAST AFFAIR 3-6, 8-9 (2007), available at http://www.eff.org/files/eff_comcast_report.pdf. Applications subject to discriminatory network management may also masquerade as other applications that are not subject to the discriminatory practice, which makes it more likely that these other applications will be inadvertently caught by the discriminatory network management measures.

274. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 78, 374-75; Solum & Chung, *supra* note 266, at 855-56, 859-60.

275. Letter from Lawrence Lessig, Professor of Law, Stanford Law Sch., to Marlene H. Dortch, Sec'y, FCC 2 (Aug. 20, 2008), available at <http://cyberlaw.stanford.edu/files/blogs/LessigFccComcastLetter.pdf>.

contrast, decisionmakers in a general rulemaking can take a broader view that takes account of cumulative effects and generalizes from past experiences.²⁷⁶

Finally, research in behavioral economics suggests that individuals tend to systematically undervalue future benefits, discounting them more than rational discounting would suggest.²⁷⁷ Uncertainty about future benefits aggravates this bias.²⁷⁸ Thus, in weighing the immediate benefits of allowing the discriminatory practice against the future, uncertain benefits of a ban, an adjudicator will disproportionately discount the future benefits.

For all these reasons, deciding whether to allow discrimination on a case-by-case basis makes it more likely that discrimination will be allowed than under an *ex ante* rule that resolves the above trade-off for all future cases at once.

So far, the discussion of the social costs of case-by-case proposals in this Subpart has focused on the costs associated with general or ambiguous nondiscrimination standards. Although case-by-case approaches based on an antitrust framework provide considerably more guidance on how to evaluate discriminatory behavior, the outcome of specific cases under an antitrust framework still depends on the exact interpretation of the framework and on its application to the facts. In addition, the results of cases under an antitrust framework turn on facts (e.g., the network provider's market share in the nationwide market for Internet access services, the existence and size of economies of scale, and the cost disadvantage associated with operating at a less than efficient scale) that are highly specific to individual cases and that are often difficult and costly to prove.²⁷⁹ As a result, an antitrust framework is afflicted with the same social costs as case-by-case proposals based on more general or ambiguous standards. In particular, the uncertainty about the legality of specific discriminatory conduct is not resolved until after the discrimination has occurred. In addition, since the outcome of an adjudication depends on the specific facts of the case, the same practice may be legal for some providers, but not others, or with respect to some applications, but not others. Thus, prior adjudications will not

276. See Solum & Chung, *supra* note 266, at 855-56, 859-60.

277. This bias is known as hyperbolic discounting. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 78, 374 (discussing how hyperbolic discounting affects decisions to deviate from the broad version of the end-to-end arguments). See generally Shane Frederick et al., *Time Discounting and Time Preference: A Critical Review*, 40 J. ECON. LITERATURE 351, 366-67 (2002); George Loewenstein & Drazen Prelec, *Anomalies in Intertemporal Choice: Evidence and an Interpretation*, 107 Q.J. ECON. 573 (1992); Daniel Read, *Intertemporal Choice*, in BLACKWELL HANDBOOK OF JUDGMENT AND DECISION MAKING 424 (Derek J. Koehler & Nigel Harvey eds., 2004).

278. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 78, 374. See generally Read, *supra* note 277, at 431.

279. See 2B PHILLIP E. AREEDA ET AL., ANTITRUST LAW, *supra* note 181, ¶ 408b, at 44-48 (2007) (arguing that precise measurement of economies of scale is very difficult, if not impossible); *id.* ¶ 408d, at 54-58 (arguing that "antitrust rules requiring judicial measurement of scale economies should be avoided" because "[c]ourts are simply not up to the task of deciding *ex jure* . . . that a practice should be condemned because it denies a firm scale economies except in the clearest of cases").

necessarily remove the uncertainty. Finally, like the general or ambiguous non-discrimination rules discussed above, a nondiscrimination standard based on an antitrust framework creates high costs of regulation, tilts the playing field against those who do not have the resources to engage in lengthy and costly fights over the legality of discrimination, and usually limits the ability of interested third parties to participate in the adjudication.

d. *Strategic incentives of policymakers and big stakeholders*

In spite of these considerable social costs associated with general or ambiguous nondiscrimination standards, the strategic incentives of legislators or regulators who consider adopting network neutrality rules and of the big stakeholders on both sides of the debate are aligned in favor of such a scheme.²⁸⁰ Stakeholders cannot agree which discriminatory behavior is acceptable today; it is unlikely that they will be able to do so in the future. There are large, well-financed entities on both sides of the network neutrality debate. Any substantive decision would take on either the large, well-financed, well-organized, and politically influential network providers (e.g., in the United States, AT&T, Verizon, Comcast, and Time Warner) or big providers of Internet applications, content, or services such as Google and Amazon. Under these circumstances, adopting a very general or ambiguous nondiscrimination rule today constitutes an attractive compromise, since the controversial question is not decided one way or the other.²⁸¹

The legislator or regulator can reap any immediate benefits associated with adopting network neutrality rules²⁸² while avoiding the immediate political

280. See, e.g., William N. Eskridge, Jr., *Politics Without Romance: Implications of Public Choice Theory for Statutory Interpretation*, 74 VA. L. REV. 275, 288-89 (1988); Kaplow, *supra* note 239, at 609 nn.141 & 143; Sunstein, *supra* note 249, at 973, 1004-05.

281. See generally Eskridge, *supra* note 280, at 288-89; Sunstein, *supra* note 249, at 1014 (“[S]tandards are more likely to be the basis for decision when opposing interests have roughly equivalent power in the lawmaking body, and when they are equally willing to take their chances with a bureaucracy or a judge.”).

282. For example, by adopting network neutrality rules, the FCC fulfilled a campaign promise by President Obama, who had promised to adopt network neutrality rules if he got elected. *Barack Obama: Connecting and Empowering All Americans Through Technology and Innovation*, OBAMA FOR AM., <http://my.barackobama.com/page/-/HQpress/111307%20Innovation%20fact%20sheet.pdf> (last visited Jan. 7, 2015) [hereinafter *Barack Obama*]. Likewise, the FCC’s adoption of network neutrality rules satisfied the Democratic leadership in Congress, which also had supported network neutrality regulation. Marvin Ammori, *All the Political Cover the FCC Could Ever Want*, HUFFINGTON POST (Sept. 30, 2010, 11:30 AM), http://www.huffingtonpost.com/marvin-ammori/all-the-political-cover-t_b_745243.html; Harold Feld, *Genachowski’s Fast Fading Star—And How He Can Still Salvage His Term as Chairman*, WETMACHINE (Aug. 3, 2010), <http://tales-of-the-sausage-factory.wetmachine.com/content/genachowskis-fast-fading-star-and-how-he-can-still-salvage-his-term-as-chairman>. The adoption of network neutrality rules in the United States was also supported by large Internet companies (e.g., Amazon, eBay, Facebook, and Google), entrepreneurs, and investors, Open Internet Coalition Comments, *supra* note 36, at 76; Letter

costs of taking on powerful interests on one side of the debate.²⁸³ While an ambiguous or general nondiscrimination rule that is applied case by case is more difficult and costly to apply and enforce in the future, these costs will not be borne by the entity adopting the rule.²⁸⁴ If the nondiscrimination rule is adopted through legislation, it will most likely be enforced by a regulatory agency (e.g., in the United States, by the FCC). Even if the nondiscrimination rule is adopted by a regulatory agency such as the FCC through administrative rulemaking, it may be enforced by future members of the agency (e.g., in the case of the FCC, by future Commissioners) or by another entity within the agency (e.g., the FCC's Enforcement Bureau). The social costs of this type of rule will not be borne by the entity adopting the nondiscrimination rule, either.²⁸⁵

Big stakeholders support this type of nondiscrimination rule because each side can claim a win (or at least a nonloss) and gets a second chance to influence the ultimate decision over the legality of specific practices in the context of individual adjudications in the future. While adjudications are costly, big stakeholders have the resources to play the case-by-case game and prevail in future adjudications. Given these incentives, it is not surprising that the proposals for a general or ambiguous nondiscrimination rule described above emerged from industry negotiations at the FCC²⁸⁶ and in Congress,²⁸⁷ or, as in

from Immad Akhund et al. to Julius Genachowski, Chairman, FCC (Oct. 21, 2009), Open Internet Coalition Comments, *supra* note 36, app. B at 96-97; public interest groups, Letter from Helen Soule et al. to Julius Genachowski, Chairman, FCC (Oct. 21, 2009), available at <https://www.publicknowledge.org/pdf/pubint-nn-letter-20091021.pdf>; and a large grassroots movement, Timothy Karr, *Netroots to Obama FCC: Inaction Is Not an Option*, HUFFINGTON POST (July 4, 2010, 5:12 AM EDT), http://www.huffingtonpost.com/timothy-karr/netroots-to-obama-fcc-ina_b_562564.html.

283. See, e.g., Kaplow, *supra* note 239, at 609 nn.141 & 143 (discussing the cost-benefit calculus described in the text in the context of a legislature's choice between rules and standards); Sunstein, *supra* note 249, at 973, 1004, 1013 (discussing the same issue).

284. See, e.g., Sunstein, *supra* note 249, at 973, 1004, 1013 ("When lawmaking is separate from law-interpretation and law-enforcement, many of the costs of producing clarity *ex ante* will be faced by lawmakers themselves, whereas many of the costs of producing clarity *ex post* will be faced by others.").

285. See, e.g., *id.* at 973.

286. The FCC-led industry negotiations included Google, Skype, the Open Internet Coalition (which, at the time, represented, among others, Google, Skype, Free Press, Public Knowledge, Amazon, and Sony Electronics), AT&T, Verizon, and the National Cable and Telecommunications Association (NCTA), which represents larger cable operators. See Kang, *FCC Draws Fire*, *supra* note 220.

287. The FCC Chairman's draft Open Internet Rules were based on a proposal for a network neutrality bill that had been negotiated by Representative Waxman, the Chairman of the House Committee on Energy and Commerce, and Representative Boucher, the Chairman of the House Subcommittee on Communications, Technology and the Internet, with the large phone and cable network providers, Internet companies, consumer groups, and open Internet groups in the fall of 2010. Not all participants in the negotiations backed the final proposal. See *supra* note 230. On the influence of the draft bill on the Chairman's draft rules, see notes 546, 558-60 and accompanying text below.

the Verizon-Google legislative framework proposal, from direct negotiations between two big stakeholders on opposite sides of the debate.²⁸⁸

D. More Nuanced Rules

A final group of proposals would adopt more nuanced rules that specify in advance which differential treatment is and is not allowed. Like the standards-based approaches discussed above, these proposals recognize that some forms of discrimination are socially beneficial, while others are socially harmful. Contrary to the standards-based approaches, however, these proposals define in advance what constitutes acceptable and unacceptable discrimination to avoid the social costs associated with leaving the decision about specific discriminatory conduct to future case-by-case adjudications.

Out of the three proposals in this category, only one—ban application-specific discrimination, but allow application-agnostic discrimination (Part II.D.2.b)—accurately distinguishes socially beneficial from socially harmful discrimination. This is the rule that policymakers should adopt. By contrast, the other two proposals—ban discrimination that is not disclosed (Part II.D.1) and ban discrimination that does not treat like traffic alike (Part II.D.2.a)—do not adequately protect the values that network neutrality rules are intended to protect and should be rejected.

1. Formal approaches: ban discrimination that is not disclosed

The first set of approaches in this group bans discrimination that is not disclosed, distinguishing between socially beneficial and socially harmful practices using the formal criterion of whether the network provider disclosed the differential treatment. Alternatively, a network neutrality regime might allow blocking or discrimination but require Internet service providers to disclose any blocking or discrimination that occurs.²⁸⁹ In January 2014, the Court of Appeals for the D.C. Circuit struck down the Open Internet Order’s rules against

288. At the end of the third quarter in 2011, Verizon was the fourth-largest broadband Internet access service provider, the second-largest telephone broadband Internet access provider, and the largest wireless carrier in the United States. Press Release, Leichtman Research Grp., Over 635,000 Add Broadband in the Third Quarter of 2011 (Nov. 18, 2011), <http://www.leichtmanresearch.com/press/111811release.html>; see also *Market Share of Wireless Subscriptions Held by Carriers in the U.S. from 1st Quarter 2011 to 2nd Quarter 2014*, STATISTA, <http://www.statista.com/statistics/199359/market-share-of-wireless-carriers-in-the-us-by-subscriptions> (last visited Jan. 7, 2015) [hereinafter *Wireless Market Share 2011-2014*].

289. See, e.g., Gerald R. Faulhaber, *A National Broadband Plan for Our Future: A Customer-Centric Framework*, 3 INT’L J. COMM. 742, 762-66 (2009); Faulhaber & Farber, *supra* note 45, at 315-16, 327-33, 336; John W. Mayo et al., Op-Ed., *How to Regulate the Internet Tap*, N.Y. TIMES (Apr. 20, 2010), <http://www.nytimes.com/2010/04/21/opinion/21mayo.html>; Cave et al., *supra* note 22, at 2-3; AT&T et al., *supra* note 22, at 1, 3.

blocking and discrimination but upheld the disclosure rule.²⁹⁰ Thus, until the FCC adopts new network neutrality rules, the current network neutrality regime in the United States constitutes an example of this approach.

In 2009, the European Union adopted this approach following the review of its regulatory framework for telecommunications services.²⁹¹ The European Universal Service Directive neither requires network providers to impose restrictions on users' use of applications nor prevents them from doing so.²⁹² It does, however, require Internet access service providers to inform their customers about any limits on access to or the use of services and applications, and about any traffic management measures and their impact on service quality. This information must be disclosed in the terms of the contract and when practices change.

290. *Verizon v. FCC*, 740 F.3d 623, 659 (D.C. Cir. 2014).

291. See Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 (Universal Service Directive), arts. 20-21, 2002 O.J. (L 108) 51, 64-65, as amended by Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009, 2009 O.J. (L 337) 11.

292. See Directive 2009/136/EC, *supra* note 291, pmlb. ¶ 29, at 14 ("Directive 2002/22/EC (Universal Service Directive) neither mandates nor prohibits conditions imposed by providers, in accordance with national law, limiting end-users' access to and/or use of services and applications, but lays down an obligation to provide information regarding such conditions.").

Instead, the Directive leaves it to the member states to implement further rules in this respect:

Member States wishing to implement measures regarding end-users' access to and/or use of services and applications must respect the fundamental rights of citizens, including in relation to privacy and due process, and any such measures should take full account of policy goals defined at Community level, such as furthering the development of the Community information society.

Id. At the same time, the Universal Service Directive, like the Framework Directive, stresses that users should be able to choose how they want to use the Internet:

End-users should be able to decide what content they want to send and receive, and which services, applications, hardware and software they want to use for such purposes, without prejudice to the need to preserve the integrity and security of networks and services. A competitive market will provide users with a wide choice of content, applications and services. National regulatory authorities should promote users' ability to access and distribute information and to run applications and services of their choice, as provided for in Article 8 of Directive 2002/21/EC (Framework Directive).

Id. pmlb. ¶ 28, at 14.

The Framework Directive explicitly requires national regulatory authorities to promote this goal:

The national regulatory authorities shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services by *inter alia*: . . . ensuring that there is no distortion or restriction of competition in the electronic communications sector, including the transmission of content . . . The national regulatory authorities shall promote the interests of the citizens of the European Union by *inter alia*: . . . promoting the ability of end-users to access and distribute information or run applications and services of their choice . . .

Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 (Framework Directive), art. 8, 2002 O.J. (L 108) 33, 41-42, as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009, art. 1(8), 2009 O.J. (L 337) 37, 50-51.

This approach is based on the idea that if a network provider discriminates against an application that users would like to use, users can switch to another network provider that does not discriminate against the affected application. The threat of switching, proponents of this approach assume, will discipline providers.²⁹³

In line with this reasoning, participants in the network neutrality debate often assume that the viability of disclosure rules as a substitute for substantive regulation solely depends on the amount of competition in the market for Internet access services. After all, if there is no competition, there will be no other providers that consumers can switch to in response to discriminatory conduct, making it impossible for them to discipline providers. Based on this reasoning, participants in the debate often assume that mandatory disclosure alone will be sufficient to discipline wireline providers in Europe or in countries like Canada, where the market for wireline Internet access is generally more competitive than in the United States.²⁹⁴ Similar arguments are often made for mobile Internet access, where users often have a choice between three or more competitors.²⁹⁵

These arguments fail to recognize that the market for Internet services is characterized by a number of factors—incomplete customer information, product differentiation in the market for Internet access and for wireline and wireless bundles, and switching costs—that limit the effectiveness of competition and reduce consumers’ willingness to switch. Rules that require network providers to disclose whether and how they interfere with applications and content on their networks reduce the problem of incomplete customer information, though only to some extent. They do not remove any of the other problems. As a result, they still leave the network provider with a substantial degree of market power over its customers, enabling it to restrict some applications and content on its network without losing too many Internet service customers.²⁹⁶ They also do not affect the cognitive biases, cognitive limitations, and externality problems that lead users to underestimate the benefits of switching providers compared to what would be in the public interest. Thus, even if there is compe-

293. See, e.g., *Commission Staff Working Document: Impact Assessment*, at 92, SEC (2007) 1472 (Nov. 13, 2007) [hereinafter *Impact Assessment*], available at http://www.europarl.europa.eu/registre/docs autres_institutions/commission_europeenne/sec/2007/1472/COM_SEC%282007%291472_EN.pdf; European Commission, *The Open Internet and Net Neutrality in Europe*, at 4, COM (2011) 222 final (Apr. 19, 2011), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0222:FIN:EN:PDF>.

294. See *Impact Assessment*, *supra* note 293, at 91-92; KENNETH R. CARTER ET AL., NETWORK NEUTRALITY: IMPLICATIONS FOR EUROPE, at v-vi, 56-57 (WIK Diskussionsbeitrag, No. 314, 2008); William J. Baumol et al., *Economists’ Statement on Network Neutrality Policy* 2 (AEI-Brookings Joint Ctr. for Regulatory Studies, Related Publication 07-08, 2007), available at <http://ssrn.com/abstract=976889>.

295. See generally Gerald R. Faulhaber & David J. Farber, *Innovation in the Wireless Ecosystem: A Customer-Centric Framework*, 4 INT’L J. COMM. 73 (2010).

296. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 264; van Schewick, *supra* note 40, at 374-77.

tition in the market for Internet access services, disclosure cannot replace substantive regulation as a tool to discipline providers.²⁹⁷

a. *Problems with disclosure-only network neutrality regimes*

Disclosure can only discipline providers if there is effective competition.²⁹⁸ In order for disclosure to have a disciplining effect, customers need to realize that the network provider is discriminating against an application they want to use. They need to be able to switch to another provider that meets their needs and does not impose a similar restriction, and they need to be able to do so at low cost. Even if there is competition in the market for Internet access services, these conditions will often not be met.

i. *Consumers' incomplete knowledge, cognitive limitations, and cognitive biases*

First, even with disclosure, users' decision to switch will suffer from incomplete knowledge, cognitive limitations, and cognitive biases. Users may not realize that their network provider is interfering with their application.²⁹⁹ An application's bad performance may have many reasons (e.g., bad application design, insufficient server capacity, network congestion, problems on the network of another Internet service provider), and network provider interference

297. Relative to markets in which Internet service providers do not face any competitors, competition in the market for Internet services may even increase Internet service providers' incentives to block or discriminate. See generally VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 255-59. On the impact of competition on Internet service providers' incentives to engage in discriminatory traffic management, see generally Alissa Cooper, How Competition Drives Discrimination: An Analysis of Broadband Traffic Management in the UK (Aug. 2013) (unpublished manuscript) [hereinafter Cooper, Analysis], available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2241562 (basing conclusions on a case study of broadband traffic management in the United Kingdom); and Alissa Cooper, How Regulation and Competition Influence Discrimination in Broadband Traffic Management: A Comparative Study of Net Neutrality in the United States and the United Kingdom ch. 5, at 105-29, ch. 7, at 171-211 (Sept. 2013) (unpublished Ph.D. thesis, University of Oxford) [hereinafter Cooper, Thesis], available at <http://www.alissacooper.com/files/Thesis.pdf> (same).

298. The following discussion focuses on the merits of a nondiscrimination rule that does not impose any substantive limits on network providers' ability to engage in discriminatory conduct and relies solely on disclosure to discipline providers. It does not focus on the merits of mandating disclosure as a complement to substantive regulation. On the benefits of disclosure rules as a complement to substantive network neutrality rules, see Box 11 below.

299. It is well established in the economics literature that customers having imperfect information can provide market power to an economic actor who faces competition in the primary market by enabling the actor to impose restrictions in a complementary market that it would not be able to sustain if the primary market was perfectly competitive. See, e.g., Orren Bar-Gill, *Bundling and Consumer Misperception*, 73 U. CHI. L. REV. 33 (2006); Richard Craswell, *Tying Requirements in Competitive Markets: The Consumer Protection Issues*, 62 B.U. L. REV. 661 (1982).

will not necessarily be the first explanation that comes to mind.³⁰⁰ Even if users consider that possibility, many will lack the expertise to investigate the cause of the bad performance.³⁰¹ While mandatory disclosure of discriminatory practices is intended to address this problem, experience with disclosure requirements in other contexts shows that disclosure is usually less effective at informing consumers than would be necessary for disclosure to have the intended effect.³⁰² Consumers often do not read disclosures, and in many cases, those who read them do not understand them.³⁰³ For those who read and understand the disclosure, knowing which practices their network provider engages in will not necessarily allow them to make an informed decision. Many users lack the technical expertise to understand how the disclosed practices will affect them. This problem will be particularly pronounced with respect to discriminatory network management practices. Even if users understand how the

300. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 260-61; van Schewick, *supra* note 40, at 376-77.

301. For example, while user complaints about problems with BitTorrent on Comcast's network had been circulating for months, the exact method of interference was investigated and documented by Robb Topolski, a Comcast subscriber and network engineer, and later confirmed by the Associated Press and the Electronic Frontier Foundation, who had independently run their own tests upon learning of Topolski's research. See ECKERSLEY ET AL., *supra* note 273, at 1-2. Since the Comcast incident, developers have created a number of tools that allow users to test their Internet connection for various signs of network provider interference. Different tools require different levels of expertise. For a list of measurement tools, see *Test Your ISP*, ELEC. FRONTIER FOUND., <https://www.eff.org/testyourisp> (last visited Jan. 7, 2015). To help foster the creation of tools that consumers can use to monitor their network connections, the FCC in January 2011 announced a challenge to software developers and researchers "to produce research and create apps that empower consumers to monitor and protect Internet openness." *FCC Open Internet Apps Challenge*, CHALLENGEPOST, <http://openinternetapps.challenge.gov> (last visited Jan. 7, 2015). The winners were announced in August 2011. *Chairman Announces Challenge.gov Competition Winners*, CHALLENGEPOST (Aug. 5, 2011), <http://openinternetapps.challengepost.com/updates/57-chairman-announces-challenge-gov-competition-winners>.

302. See Omri Ben-Shahar & Carl E. Schneider, *The Failure of Mandated Disclosure*, 159 U. PA. L. REV. 647, 665-79, 704-29 (2011) (reviewing the experience with disclosure in a variety of contexts); Fred H. Cate, *The Failure of Fair Information Practice Principles*, in CONSUMER PROTECTION IN THE AGE OF THE 'INFORMATION ECONOMY' 341, 341-42 (Jane K. Winn ed., 2006) (privacy); Matthew A. Edwards, *Empirical and Behavioral Critiques of Mandatory Disclosure: Socio-Economics and the Quest for Truth in Lending*, 14 CORNELL J.L. & PUB. POL'Y 199, 204 (2005) (truth in lending); Howard Latin, "*Good*" Warnings, *Bad Products, and Cognitive Limitations*, 41 UCLA L. REV. 1193, 1206-22 (1994) (product warnings); Susanna Kim Ripken, *The Dangers and Drawbacks of the Disclosure Antidote: Toward a More Substantive Approach to Securities Regulation*, 58 BAYLOR L. REV. 139 (2006) (securities regulation).

303. See, e.g., Ben-Shahar & Schneider, *supra* note 302, at 666, 668-69, 671-79, 709-18 (citing studies on disclosures in a variety of contexts); M. Ryan Calo, *Against Notice Skepticism in Privacy (and Elsewhere)*, 87 NOTRE DAME L. REV. 1027, 1050-55 (2012) (summarizing literature on disclosure from a variety of contexts); Cate, *supra* note 302, at 358-62 (citing studies on privacy notices); Edwards, *supra* note 302, at 229-33 (citing studies on disclosures mandated by the Truth in Lending Act).

practice impacts the applications they currently use, they are ill positioned to assess the social, cultural, or political consequences of the disclosed practice, its impact on future application providers' incentives to innovate, or its implications for the Internet's ability to support future applications that have not yet been developed. For example, a user who believes that peer-to-peer file-sharing applications like BitTorrent are primarily used for illegal file sharing and who does not engage in illegal file sharing himself will not feel burdened by a network management practice that targets peer-to-peer file-sharing applications.³⁰⁴ Most likely, he will not know about the various economic, technical, social, cultural, and political implications of allowing this practice that were discussed above. Since they do not know the full costs of the practice, users will underestimate the benefits of switching. Moreover, many of the benefits of disciplining providers engaged in discriminatory practices by switching to another provider (e.g., more and better future applications) are in the future and uncertain, so users give them less weight than would be justified. Finally, users make the decision to switch based on an assessment of the private costs and benefits associated with switching. Since users bear the full costs of switching, but do not internalize all the social benefits of the decision to switch, they will switch less often than would be in the public interest.

ii. Availability of comparable Internet service providers

Second, disclosure cannot discipline providers if there is no comparable provider to switch to who does not interfere with the applications customers want to use. Thus, the effectiveness of disclosure depends at least in part on the level of competition in the market for Internet access services. In the United States, this is a real problem. (See Box 10: Competitiveness of the Market for Broadband Internet Access in the United States below.) According to data published by the FCC in September 2014, 60% of housing units in the United States are in areas served by two wireline, facilities-based broadband Internet access providers, while 19% are in areas where only one such provider offers service.³⁰⁵ This market structure has been characterized as "duopoly+/-."³⁰⁶ While a duopoly is often better than a monopoly, duopolists enjoy a degree of market power that enables them to impose restrictions on their customers that

304. On this and the following, see the discussion in the text accompanying notes 251-78 above.

305. Fifteen percent of housing units are in areas that are served by three wireline, facilities-based broadband Internet access providers (usually a DSL or fiber provider, a cable company, and a cable overbuilder). Six percent are in areas with no wireline provider. The FCC currently defines broadband as 4 Mbps download speed and 1 Mbps upload speed. *FCC Chairman Tom Wheeler: More Competition Needed in High-Speed Broadband Marketplace*, FCC (Sept. 4, 2014), https://apps.fcc.gov/edocs_public/attachmatch/DOC-329160A1.pdf [hereinafter *More Competition Needed*].

306. Farrell, *supra* note 211, at 201-02.

they would not be able to impose in a competitive market.³⁰⁷ According to the FCC's National Broadband Plan, which was published in 2010, mobile Internet users in the United States have somewhat more options: 77% of the population lives in census tracts with three or more 3G mobile providers, 12% in areas with two providers, and 9% in areas with one.³⁰⁸ In the European Union, consumers usually have more providers of fixed wireline broadband service to choose from, since the regulatory framework allows unaffiliated Internet service providers to offer their services over the incumbent's network infrastructure.³⁰⁹

BOX 10

COMPETITIVENESS OF THE MARKET FOR BROADBAND INTERNET ACCESS IN THE UNITED STATES

Opponents of network neutrality regulation usually have a more optimistic view of the actual amount of competition in the United States than the one taken by this Article.³¹⁰ In particular, they use older FCC data based on Internet service availability by zip code,³¹¹ which overstates the amount of competition;³¹² treat mobile broadband Internet service as a substitute for rather than a complement to wireline Internet services;³¹³ and ignore or downplay the im-

307. See, e.g., *id.* at 202-05.

308. FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 39-40 (2010), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf>. But see *id.* at 39 ("These [numbers] likely overstate the coverage actually experienced by consumers, since American Roamer [the source of the data] reports *advertised* coverage as reported by many carriers who all use different definitions of coverage."). On the market structure for mobile broadband in Europe, see, for example, J. Scott Marcus, *Network Neutrality: The Roots of the Debate in the United States*, 43 INTERECONOMICS 30, 34-36 (2008).

309. Cave & Crocioni, *supra* note 184, at 58; see also, e.g., *Impact Assessment*, *supra* note 293, at 91-93 (discussing the European Union's existing regulatory framework); Network Neutrality: Challenges and Responses in the EU and in the U.S., EUR. PARL. DOC. (IP/AIMCO/ST/2011-02) 49-50 (2011), available at <http://www.europarl.europa.eu/document/activities/cont/201108/20110825ATT25266/20110825ATT25266EN.pdf>.

310. See, e.g., Becker et al., *supra* note 45, at 502-06.

311. See, e.g., *id.* at 503.

312. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-06-426, TELECOMMUNICATIONS: BROADBAND DEPLOYMENT IS EXTENSIVE THROUGHOUT THE UNITED STATES, BUT IT IS DIFFICULT TO ASSESS THE EXTENT OF DEPLOYMENT GAPS IN RURAL AREAS 14-18 (2006), available at <http://www.gao.gov/new.items/d06426.pdf>.

313. See, e.g., Becker et al., *supra* note 45, at 504-05 (treating mobile broadband Internet service as a substitute for wireline Internet service). But see Reply Comments of Free Press at 45-47, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Apr. 26, 2014) [hereinafter Free Press Open Internet Reply Comments], available at <http://apps.fcc.gov/ecfs/document/view?id=7020437465> (arguing that mobile broadband Internet service is currently a complement to, *not* a substitute for, wireline Internet service); Comments of Free Press at 46 n.109, Inquiry Concerning the De-

pact of switching costs,³¹⁴ bundling, and differentiation in the market for Internet services on the effectiveness of competition.

Focusing solely on the number of providers, however, will often overestimate the number of viable alternatives available to a consumer who is willing to switch in response to discriminatory conduct. The Internet service offerings of various providers differ substantially in price, performance, and other characteristics on which providers compete.³¹⁵ As a result, even if there is another provider, switching in response to the discrimination may require a customer to switch from her most preferred Internet access offering to another offering that may meet fewer of her needs, creating an ongoing cost that will reduce the customer's willingness to switch. In the worst case, the other providers do not meet the needs of the customer at all, making it impossible for her to switch. For example, cellular providers compete on many factors, such as price, coverage, devices, roaming agreements, services, and, more recently, bandwidth usage caps on data plans.³¹⁶ If the other providers that do not discriminate against the application do not offer the coverage a customer needs, switching is not a realistic option. Similarly, cable networks that have been upgraded to DOCSIS 3.0 and networks offering fiber to the premises (FTTP) are able to offer peak download speeds of more than 50 Mbps. By contrast, the peak download speeds feasible on networks offering fiber to the node (FTTN) or on traditional digital subscriber line (DSL) networks are significantly lower.³¹⁷ In the United States, cable providers have generally upgraded their networks to DOCSIS 3.0, while DSL providers have been slow to upgrade their networks to FTTP.³¹⁸ As a result, 61% of homes in the United States have only one service provider—the cable provider—that can offer peak speeds of more than 50 Mbps down and 3 Mbps up. Only 16% have access to two such providers, and 21% do not have

ployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 09-137, A National Broadband Plan for Our Future, GN Docket No. 09-51 (Sept. 4, 2009), available at <http://apps.fcc.gov/ecfs/document/view?id=7020037663> (same); Comments of Free Press at 40-44, 104-05, A National Broadband Plan for Our Future, GN Docket No. 09-51 (June 8, 2009), available at <http://apps.fcc.gov/ecfs/document/view?id=6520219926> (same); FCC, *supra* note 308, at 40-42 (treating substitutability of mobile broadband Internet service for wireline Internet service as open to debate).

314. See, e.g., Becker et al., *supra* note 45, at 502-03.

315. The following discussion draws in part on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 262.

316. See FCC, *supra* note 308, at 39-40; see also Reply Comments of AT&T Services, Inc. at 60-63, Protecting and Promoting the Open Internet, GN Docket No. 14-28, Framework for Broadband Internet Services, GN Docket No. 10-127 (Sept. 15, 2014), available at <http://apps.fcc.gov/ecfs/document/view?id=7522634753>.

317. See FCC, *supra* note 308, at 42; see also Susan P. Crawford, *The Communications Crisis in America*, 5 HARV. L. & POL'Y REV. 245, 247-48 (2011).

318. Crawford, *supra* note 317, at 246-49.

access to such service at all.³¹⁹ Thus, for most users interested in the highest available peak download speeds, switching providers in response to discriminatory conduct will not be a viable option.³²⁰

The trend towards bundling differentiates the market further, giving providers additional market power.³²¹ Cellular providers bundle voice, text messaging, and mobile Internet access service. Wireline providers bundle telephony, television, and wireline Internet access. Cable customers may not think of the digital or satellite television service offered by phone networks as a perfect substitute for their cable television; on the other hand, customers of a conventional telephony provider may not trust the digital telephony offered by cable companies.³²² Though it is possible to switch only the Internet service and keep the other offerings, this will significantly reduce the bundle discount. The problem is exacerbated if the network provider offers exclusive content or exclusive devices that are valuable to the customer.³²³ For example, while AT&T was the exclusive provider of the iPhone, AT&T Wireless customers may have hesitated to switch to another cellular provider that did not offer or support the iPhone.³²⁴ Thus, product differentiation in the market for Internet services and in the market for wireline or cellular bundles makes switching to a different provider that meets fewer of their needs less attractive to customers and gives network providers an additional degree of market power over their Internet service

319. A mere 1.6% have access to three or more such providers. See *More Competition Needed*, *supra* note 305, at 1.

320. Susan Crawford has called this “the looming cable monopoly.” Susan P. Crawford, *The Looming Cable Monopoly*, YALE L. & POL’Y REV. INTER ALIA (June 1, 2010, 2:30 PM), http://ylpr.yale.edu/inter_alia/looming-cable-monopoly.

321. The following discussion draws heavily on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 263.

322. In a survey of broadband users in the United States, the FCC found that thirty-nine percent of broadband service customers with a choice of more than one broadband provider “said that having to change their current bundle of Internet, TV, and phone service was a major reason for keeping service.” *Broadband Decisions: What Drives Consumers to Switch—or Stick with—Their Broadband Internet Provider* 3 (FCC, Working Paper, 2010) [hereinafter *Broadband Decisions*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf.

323. For example, an empirical study of competition between cable television and direct broadcast satellite (DBS) multichannel services showed that, while customers generally tend to switch from cable to DBS when the quality-adjusted price of cable increases substantially, the exclusive availability on cable of regional sports channels reduced DBS penetration, either because it raised consumers’ switching costs or because it increased product differentiation between the two types of services. Andrew Stewart Wise & Kiran Duwadi, *Competition Between Cable Television and Direct Broadcast Satellite: The Importance of Switching Costs and Regional Sports Networks*, 1 J. COMPETITION L. & ECON. 679, 695-702 (2005).

324. In September 2011, Sprint’s CEO, Dan Hesse, noted that the fact that Sprint wasn’t offering the iPhone was “the No. 1 reason customers leave or switch.” Joann S. Lublin & Spencer E. Ante, *Inside Sprint’s Bet on iPhone*, WALL ST. J. (Oct. 4, 2011), <http://online.wsj.com/article/SB10001424052970203405504576603053795839250.html> (internal quotation marks omitted).

customers, which allows them to impose restrictions they would not be able to impose in a perfectly competitive market.³²⁵

Even if there is more than one provider that can meet a user's needs, switching is not an option if all providers in this group engage in the discriminatory conduct.³²⁶ For example, in 2008 and 2009, all mobile providers in France and Germany contractually banned the use of Internet telephony applications over mobile Internet connections.³²⁷ Similarly, the CRTC's review of the network management practices of Internet access service providers in Canada, where users have considerably more options for Internet access than users in the United States, showed that many providers were engaging in discriminatory traffic management practices that targeted peer-to-peer file-sharing applications.³²⁸ Moreover, once discrimination is generally allowed as long as it is disclosed, different providers may discriminate against different combinations of applications, making it difficult to find a provider that meets the customer's needs and does not interfere with any of the applications the customer wants to use.

iii. *Switching costs*

Third, the market for Internet services is characterized by significant switching costs that reduce consumers' willingness to switch and limit the effectiveness of competition.³²⁹ Switching costs are the costs a customer incurs when switching to a competitor.³³⁰ Switching costs make consumers' demand

325. That product differentiation may provide sellers with some degree of market power is well established in the literature. See, e.g., DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 203-05 (4th ed. 2005).

326. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 259.

327. This statement is based on the author's review of the terms of service of mobile Internet service providers in France (November 3, 2008) and Germany (July 19, 2009).

328. For a summary of Internet service providers' responses in that proceeding, see PARSONS, *supra* note 100, at 23-31.

329. The following six paragraphs draw heavily on VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 261-64. For an attempt to calculate the costs of switching broadband providers in France, see Jackie Krafft & Evens Salies, *The Diffusion of ADSL and Costs of Switching Internet Providers in the Broadband Industry: Evidence from the French Case*, 37 RES. POL'Y 706, 715-17 (2008); and Jackie Krafft & Evens Salies, *Why and How Should New Industries with High Consumer Switching Costs Be Regulated?: The Case of Broadband Internet in France*, in REGULATION, DEREGULATION, REREGULATION: INSTITUTIONAL PERSPECTIVES 327, 333-41 (Claude Ménard & Michel Ghertman eds., 2009). See also Joseph Cullen & Oleksandr Shcherbakov, Measuring Consumer Switching Costs in the Wireless Industry, Attachment to Reply Comments of the Open Internet Coalition, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Apr. 26, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020438577> (estimating the explicit and implicit switching costs in the U.S. wireless industry at approximately \$230).

330. For an in-depth overview of the economic literature on switching costs, see Joseph Farrell & Paul Klempner, *Coordination and Lock-in: Competition with Switching Costs and*

less elastic, enabling a provider to charge a higher price.³³¹ They also allow a provider to impose other restrictions that it could not impose in a perfectly competitive market. Whether these costs will prevent a customer from switching depends on the value the customer places on the excluded application and on the magnitude of the switching costs. Thus, discrimination against popular applications like Google or Facebook that users view as essential will be more likely to motivate users to switch than discrimination against a newly launched application.

Switching costs in the market for Internet services are substantial. Consider first the obvious financial expenses that may be associated with switching providers. A customer who cancels a long-term contract with his provider before the end of the term will be charged an early termination fee.³³² When switching from a broadband-over-cable service to a DSL service, a consumer will be charged for installation and will have to buy a DSL modem and other new equipment.³³³ If Internet service is bundled with television and telephony (as is common in the United States), cancellation of the Internet service portion of the bundle may result in a loss, or a reduction, of the bundle discount, and the loss of that discount may then be a significant ongoing financial cost for the consumer.³³⁴

Network Effects, in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 1967 (Mark Armstrong & Robert H. Porter eds., 2007). For a treatment of switching costs in the context of information goods, see CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY chs. 5-6, at 103-72 (1999).

331. HAL R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 604-05 (5th ed. 1999); accord Jerry A. Hausman et al., *Residential Demand for Broadband Telecommunications and Consumer Access to Unaffiliated Internet Content Providers*, 18 YALE J. ON REG. 129, 164 (2001).

332. For example, HearUsNow.org, a project of the Consumers Union, found that a number of the top broadband providers in the United States charged early termination fees. At the time of a survey conducted in March 2007, Qwest charged a \$200 early termination fee on a two-year contract for high-speed Internet service, EarthLink charged a \$149 early termination fee on a one-year contract for DSL service, and AT&T (including SBC and BellSouth) charged a \$99 early termination fee. See John Dunbar, *Pulling Plug on Net Service Not Easy*, USA TODAY (Apr. 9, 2007, 12:39 PM), http://www.usatoday.com/tech/technovator/industry/2007-04-09-net-fees_N.htm?POE=TECISVA; Bob Williams, *The Next Big Thing in Broadband: Early Termination Penalties*, HEARUSNOW.ORG (Apr. 9, 2007, 12:18 PM), http://hearusnow.org/posts/126-the_next_big_thing_in_broadband_early_termination_penalties. In a survey of broadband users in the United States, the FCC found that 32% of broadband service customers with a choice of more than one broadband provider “said paying termination fees to their current ISP was a *major* reason for keeping service.” *Broadband Decisions*, *supra* note 322, at 3.

333. In a survey of broadband users in the United States, the FCC found that fifty percent of broadband service customers with a choice of more than one broadband provider “said paying set-up or installation fees were *major* factors in keeping service.” *Broadband Decisions*, *supra* note 322, at 3.

334. The customer may switch his whole bundle to the new provider, but that creates other problems. For example, it may make the decision to switch more complex or result in the loss of the preferred service offering, for example in television or telephony. In a survey

Further, switching providers may require a customer to invest a significant amount of time and effort. She will have to search for and compare alternative offerings to choose a new provider. She will have to open an account with the new provider and close her account with her present provider.³³⁵ If she cannot install the access hardware and software herself (which takes time and expertise), she must stay at home for the installation.³³⁶ A customer who has been using an e-mail address offered by the network provider will have to notify various people of her new e-mail address, perhaps have new stationery and business cards printed, update her resume and her website, and bear the risk of missing e-mail messages sent to the old address.³³⁷ The precise cost of switching e-mail addresses is difficult to measure, but anecdotal evidence indicates that customers view it as substantial. The *New York Times* reported in 2005 that AOL had about five million customers who paid \$14.95 per month in order to keep using an AOL e-mail address even though they had switched to another broadband access provider and paid Internet service fees to the new provider.³³⁸ Medium and large businesses that switch Internet service providers will

of broadband users in the United States, the FCC found that thirty-nine percent of broadband service customers with a choice of more than one broadband provider “said that having to change their current bundle of Internet, TV, and phone service was a *major* reason for keeping service.” *Id.*

335. Providers have considerable influence over this cost. For example, in 2005, AOL paid \$1.25 million in fines as part of a settlement with the State of New York because AOL’s customer service representatives were incentivized to dissuade customers from switching away from AOL “by either making the cancellation process so painful for the customers that they could not bear to continue, or by simply ignoring their requests.” Randall Stross, *Why Time Warner Has Fallen in Love with AOL, Again*, N.Y. TIMES (Sept. 25, 2005), <http://www.nytimes.com/2005/09/25/business/25digi.html>.

336. In a survey of broadband users in the United States, the FCC found that forty-three percent of broadband service customers with a choice of more than one broadband provider “said dealing with the hassle of getting new service installed was a *major* reason they have kept service.” *Broadband Decisions*, *supra* note 322, at 3.

337. On the use of provider-specific e-mail addresses as a way to increase switching costs in Internet services, see SHAPIRO & VARIAN, *supra* note 330, at 109-10. In other telecommunications markets, such as wireline telephony and mobile telephony, regulation often requires providers to provide number portability, i.e., to enable a customer to keep a phone number when he switches providers. *See, e.g.*, 47 U.S.C. § 251(b)(2) (2013); 47 C.F.R. pt. 52 subpt. C (2014). In 2007, the FCC asked for comments on a petition to require e-mail providers to forward e-mail to a new e-mail address for a limited time. *See Petition for Rulemaking, E-mail Address Portability*, RM No. 11391 (FCC July 20, 2007), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=6519560444>; *see also* Public Notice, Report No. 2832 (FCC Sept. 26, 2007), available at <http://apps.fcc.gov/ecfs/document/view?id=6519739081> (asking for statements and reply comments regarding the petition for rulemaking “In the Matter of E-mail Address Portability”). But it did not take any further steps in this proceeding.

338. Stross, *supra* note 335. In a survey of broadband users in the United States, the FCC found that thirty-four percent of broadband service customers with a choice of more than one broadband provider “said having to give up their current email address from their ISP was a *major* reason for not changing service.” *Broadband Decisions*, *supra* note 322, at 3.

often need to renumber their networks, which is a “costly, tedious and error-prone process.”³³⁹

The exact costs of switching depend on the circumstances. Some customers may use provider-independent e-mail services, such as Hotmail or Gmail; others may not subscribe to a bundle at all. Some customers are not subject to a long-term contract, or their contract does not include early termination fees. Sometimes, the new provider may waive the installation fee. In countries with open-access regulation, where regulation allows independent Internet service providers to offer their services over other providers’ networks, customers may be able to switch to another provider that offers its services over the same physical network; that removes the need to buy new equipment. Also, regulators may adopt policies to reduce switching costs. In the European Union, for example, the Universal Service Directive allows Internet service customers to switch providers in response to a change in disclosed discriminatory practices without incurring early termination fees.³⁴⁰

Thus, a particular Internet customer may face any combination of the switching costs discussed above. Every customer, however, must go through the process of searching for and choosing an alternative provider and installing and setting up the access software. These hurdles alone may deter switching. Moreover, empirical studies show that the decision to switch depends on the perceived costs of switching, which are not necessarily equivalent to the actual costs. Studies of the United Kingdom’s market for fixed-line telephone service have shown that providers were significantly more likely to retain dissatisfied customers who perceived the switching costs as high than dissatisfied customers who perceived them as low.³⁴¹ According to studies of the long distance and credit card industries, the perceived costs of switching are significantly increased if the product is perceived as complex, which may occur when it has a large number of features or when it is bundled with other products.³⁴² This suggests that customers in the market for Internet access services, where services are viewed as complex, are characterized by many features, and are often sold as part of a bundle, will perceive switching costs as high.

Finally, research in behavioral economics indicates that even very small switching costs may prevent customers from switching. Individuals exhibit a “status quo bias”: they are much more likely to keep what they already have

339. B. Carpenter & Y. Rekhter, Internet Eng’g Task Force, RFC 1900, Renumbering Needs Work 2 (Feb. 1996), <https://www.ietf.org/rfc/rfc1900.txt>; B. Carpenter et al., Internet Eng’g Task Force, RFC 5887, Renumbering Still Needs Work 3-5 (May 2010), <https://tools.ietf.org/html/rfc5887>.

340. Universal Service Directive, *supra* note 291, art. 20, § 2.

341. Chatura Ranaweera & Jaideep Prabhu, *The Influence of Satisfaction, Trust and Switching Barriers on Customer Retention in a Continuous Purchasing Setting*, 14 INT’L J. SERVICE INDUSTRY MGMT. 374, 380, 390 (2003).

342. Thomas A. Burnham et al., *Consumer Switching Costs: A Typology, Antecedents, and Consequences*, 31 J. ACAD. MARKETING SCI. 109, 115-19 (2003).

than rational choice theory would predict.³⁴³ For example, this bias is exploited by free trials that automatically convert to a paid subscription at the end of the trial period unless the customer calls or writes to prevent this.³⁴⁴ If, however, the costs of placing a call or writing a letter are sufficient to prevent people from acting, the significantly higher actual (or perceived) costs of switching Internet service providers may prevent many Internet service customers from switching providers, even if their existing Internet service provider excludes applications or content they would like to use.

b. *Lessons from experience with disclosure-only network neutrality regimes*

In sum, even if there is competition in the market for Internet access services, disclosure cannot replace substantive regulation as a tool to discipline providers. The experience in Europe and Canada and in the market for mobile Internet services in the United States supports this view.

The markets for wireline Internet service in Europe and Canada are considerably more competitive than the market for wireline, fixed Internet services in the United States.³⁴⁵ The European legal framework does not prohibit restrictions on end users' use of applications or services, but it requires Internet access service providers to disclose them. Still, as the results of an investigation by the Body of European Regulators for Electronic Communications (BEREC) showed, many Internet service customers in the European Union are subject to restrictions on their fixed or mobile Internet services.³⁴⁶ A recent study showed

343. Status quo bias seems to result from a number of factors. For example, contrary to rational choice theory, consumers often take past sunk costs into account when making consumption decisions. William Samuelson & Richard Zeckhauser, *Status Quo Bias in Decision Making*, 1 J. RISK & UNCERTAINTY 7, 37-38 (1988). Choosing one option and rejecting the other also creates cognitive dissonance, which is reduced by subsequent rationalization that the chosen option is more desirable than it was ex ante. Jack W. Brehm, *Postdecision Changes in the Desirability of Alternatives*, 52 J. ABNORMAL & SOC. PSYCHOL. 384, 389 (1956).

344. Trial subscriptions with a low introductory price that automatically convert to a higher price, or other contracts with automatic renewal, also exploit the cognitive bias that people tend to overestimate their future willingness to incur the then-immediate costs of switching (or terminating the contract) in order to reap the future benefits (i.e., the savings) resulting from switching (or terminating the contract). See Stefano DellaVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119 Q.J. ECON. 353, 381-93 (2004).

345. See *supra* notes 305-08 and accompanying text (describing the U.S. market); *supra* Box 10 (providing additional context about the U.S. market); *supra* note 309 and accompanying text (describing the European market).

346. *A View of Traffic Management and Other Practices Resulting in Restrictions to the Open Internet in Europe: Findings from BEREC's and the European Commission's Joint Investigation*, BoR (12) 30 (May 29, 2012) [hereinafter *BEREC View of Traffic Management*], available at http://berec.europa.eu/eng/document_register/subject_matter/berec/download/0/45-berec-findings-on-traffic-management-pra_0.pdf.

widespread discriminatory network management in the United Kingdom.³⁴⁷ In Canada, the 2009 investigation of the CRTC into Internet service providers' network management practices showed that, at the time, many Canadian providers were singling out peer-to-peer file-sharing applications for special treatment, throttling the bandwidth available to them or interfering with these applications in other ways.³⁴⁸

Under the FCC's Open Internet Order, providers of mobile Internet services in the United States were subject to limited restrictions on their ability to block applications and were free to discriminate, but were required to disclose, among other things, blocking of or discrimination against applications.³⁴⁹ Since the adoption of the Open Internet Order, wireless carriers have engaged in various forms of discriminatory conduct, even though the market for mobile Internet services in the United States is considerably more competitive than the market for wireline Internet services.³⁵⁰ Examples are Verizon Wireless's conduct towards tethering applications;³⁵¹ Verizon Wireless's, AT&T's, and T-Mobile's actions towards Google Wallet;³⁵² and AT&T's actions towards FaceTime.³⁵³ These examples suggest that—at least in the market for wireline Internet service in Europe and Canada and in the market for mobile Internet services in the United States—competition does not prevent Internet service

347. Cooper, Analysis, *supra* note 297; Cooper, Thesis, *supra* note 297, ch. 6, at 131-70.

348. For an overview of Canadian providers' network management practices as disclosed during the proceeding, see PARSONS, *supra* note 100, at 15-31. Since then, most of the larger Canadian Internet service providers, most recently Bell Canada and Bell Aliant, have changed their practices in response to the regulations regarding network management that the CRTC adopted following its investigation. In January 2012, Rogers remained the only larger Canadian provider that was still engaging in discriminatory network management. See Sarah Schmidt, *Complaints About Online Traffic Delays Accelerating, Says CRTC*, CANADA.COM (Jan. 12, 2012), <http://www.canada.com/life/Complaints+about+online+traffic+delays+accelerating+says+CRTC/5986923/story.html>; see also Geist, *supra* note 271 (describing Rogers's traffic-management practices).

349. 47 C.F.R. § 8.3 (2014); *id.* § 8.5(a), invalidated by *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014); see also *Open Internet Order*, 25 FCC Rcd. 17,905, 17,938-39 (2010) (report and order) (describing the obligation to disclose “[a]pplication-[s]pecific [b]ehavior” under 47 C.F.R. § 8.3 (italics omitted)), vacated in part, *Verizon*, 740 F.3d 623.

350. See *supra* notes 305-08 and accompanying text.

351. Barbara van Schewick, *Public Interest Requires Public Input: Verizon/Android Tethering*, INTERNET ARCHITECTURE & INNOVATION (June 30, 2011), <https://netarchitecture.org/2011/06/public-interest-requires-public-input-verizonandroid-tethering>.

352. Barbara van Schewick, *Is Verizon Wireless Illegally Blocking Google Wallet? It's Time for the FCC to Investigate*, INTERNET ARCHITECTURE & INNOVATION (Dec. 19, 2011), <https://netarchitecture.org/2011/12/is-verizon-wireless-illegally-blocking-google-wallet-its-time-for-the-fcc-to-investigate>.

353. Cecilia Kang, *AT&T Faces Complaint over iPhone FaceTime Blocking*, WASH. POST POST TECH (Sept. 18, 2012, 9:08 AM ET), <http://wapo.st/1yRD4ql>; Chris Ziegler, *AT&T Only Allowing FaceTime over Cellular on Mobile Share Plans, No Extra Charge*, VERGE (Aug. 17, 2012, 4:29 PM), <http://www.theverge.com/2012/8/17/3250228/att-facetime-over-cellular-ios-6-mobile-share>.

providers from interfering with applications, content, or services on their networks, even if, as in the United States and the European Union, network providers are required to disclose any discriminatory conduct that occurs.³⁵⁴

While mandatory disclosure alone does not sufficiently protect against discriminatory conduct, it serves many other valuable functions. Thus, it is an important complement to substantive nondiscrimination rules.³⁵⁵ (See Box 11: The Benefits of Disclosure Rules.)

BOX 11
THE BENEFITS OF DISCLOSURE RULES³⁵⁶

While mandatory disclosure cannot replace substantive network neutrality rules, it is an important complement to such rules.

Disclosure improves competition by providing customers with information that can help them make informed decisions when choosing providers. Disclosure of traffic management practices also enables competitors to differentiate themselves along new dimensions. Today, network providers in the United States compete based on maximum upload and download speeds and price. If, however, customers are unable to note the differences between the offerings along other dimensions (e.g., how oversubscribed the network is, how often traffic management is used, how traffic is prioritized), they cannot take these factors into account when making a decision, and network providers will not have an incentive to compete on these factors. Thus, disclosing these characteristics along with more detailed performance measures would not only help con-

354. One could argue that the existence of restricted offerings is less problematic if there are unrestricted offerings available that users can switch to. As I have explained elsewhere, this argument is not correct. The restricted offerings harm users and reduce application innovation, even if unrestricted offerings are available. See Barbara van Schewick, Comments on the European Commission's Public Consultation on Specific Aspects of Transparency, Traffic Management and Switching in an Open Internet at 19-21 (Oct. 15, 2012), available at http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3168.

355. Network neutrality proponents generally support adopting disclosure rules as a complement to substantive regulations. See, e.g., *id.*; see also Free Press Open Internet Reply Comments, *supra* note 313, at 17-21; Open Internet Coalition Comments, *supra* note 36, at 86-92; Public Interest Comments, *supra* note 36, at 63-67. In the United States, network providers have generally argued against any mandatory disclosure rules, whether as a substitute or a complement to substantive network neutrality regulation. See, e.g., Comments of AT&T Inc. at 188-96, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter AT&T Open Internet Comments], <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020377217>; Verizon Open Internet Comments, *supra* note 34, at 132.

356. The text in Box 11 draws directly on van Schewick, Official Testimony, *supra* note 68, at 1-2.

sumers make more informed choices, but also motivate Internet service providers to compete along these previously hidden dimensions.³⁵⁷ More detailed disclosure of traffic management measures may also help alleviate congestion by enabling customers to adjust their behavior.

Finally, disclosure provides visibility to regulators, competitors, and industry observers and saves costs by removing the need for difficult and costly private investigations into a specific provider's network management practices. For example, in 2007, complaints about problems with BitTorrent and other peer-to-peer file-sharing applications on Comcast's network had circulated on user forums. When asked by a reporter and later by the Electronic Frontier Foundation, Comcast denied that it was interfering with BitTorrent.³⁵⁸ As a result, users, public interest organizations, and reporters had to expend considerable technical effort to understand what Comcast was doing and trace BitTorrent's unusual behavior back to Comcast's intervention.³⁵⁹

2. Substantive approaches

The second set of approaches in this group relies on substantive criteria to specify in advance which forms of differential treatment should be allowed. These approaches share a common goal: they seek to preserve the beneficial

357. See, e.g., Report of Bill St. Arnaud ¶¶ 40-42, 49-51, Initial Comments of Campaign for Democratic Media, Attachment C, Part 1, Review of the Internet Traffic Management Practices of Internet Service Providers, CRTC 2008-19 (Feb. 23, 2009) (Can.) [hereinafter St. Arnaud CRTC Report], available at http://www.crtc.gc.ca/public/partvii/2008/8646/c12_200815400/1029987.zip (arguing in favor of requiring network providers to disclose oversubscription ratios); Benjamin Lennett, *Dis-Empowering Users vs. Maintaining Internet Freedom: Network Management and Quality of Service (QoS)*, 18 COMMLAW CONSPECTUS 97, 140-43 (2009) (same); see also COMM. ON COMM'NS POLICY, IEEE-USA, NETWORK TRAFFIC MANAGEMENT AND THE EVOLVING INTERNET 12-18, 24 (2010) [hereinafter NETWORK TRAFFIC MANAGEMENT] (arguing in favor of standardization and disclosure of more detailed performance measures, including metrics for "bandwidth, latency, jitter, packet loss and availability"); IEEE-USA, POSITION STATEMENT: NETWORK TRAFFIC MANAGEMENT 1-3 (2010) [hereinafter IEEE POSITION STATEMENT] (same).

358. Marguerite Reardon, *Comcast Denies Monkeying with BitTorrent Traffic*, CNET (Aug. 21, 2007, 4:52 PM PDT), <http://www.cnet.com/news/comcast-denies-monkeying-with-bitTorrent-traffic/>; Seth Schoen, *Comcast and BitTorrent*, ELEC. FRONTIER FOUND. (Sept. 13, 2007), <http://www.eff.org/deeplinks/2007/09/comcast-and-bitTorrent>. This sentence and the next sentence are adapted from VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 261.

359. Comcast's method of interfering with BitTorrent was first investigated by Comcast subscriber and network engineer Robb Topolski, who detected the spoofed RST packets that Comcast was using to reset BitTorrent connections. Upon learning of Topolski's research, the Associated Press and the Electronic Frontier Foundation independently ran their own tests and documented the practice. See ECKERSLEY ET AL., *supra* note 273, at 1-2; Peter Svensson, *Comcast Blocks Some Internet Traffic*, WASH. POST (Oct. 19, 2007, 6:32 PM), <http://wapo.st/1Kx9KZM>.

environment for application innovation and network use that the Internet's original architecture created in the past.

The Internet's original architecture was based on the layering principle and on the broad version of the end-to-end arguments. As a consequence of that design, the Internet was application-blind—it was unable to distinguish among the applications on the network—and, as a result, it was unable to make distinctions among data packets based on this information.³⁶⁰

As I have explained in detail elsewhere, this architecture created an environment for application innovation and network use that was application-agnostic, supported innovation without permission and user choice, and kept the costs of application innovation low. These factors, in turn, allowed the Internet to foster application innovation, improve democratic discourse, facilitate political organization and action, and create a decentralized environment for cultural and political interaction in which anybody can participate.³⁶¹

Today, technologies such as deep packet inspection have removed the application-blindness of the network. They allow network providers to identify the applications and content on their networks and to control their execution.³⁶²

In response, the two nondiscrimination rules in this Subpart try to preserve through law the environment for application innovation and network use—an environment characterized by application-agnosticism, user choice, innovation without permission, and low costs of application innovation—that the Internet's original architecture created by virtue of its architectural design. Put differently, the rules in this Subpart seek to preserve the Internet's ability to function as a general-purpose platform over which applications, content, services, and uses compete on a level playing field, with users choosing which applications become successful and how the network can be used. They differ, however, in their assessment of which behavior needs to be banned in order to realize this goal, as shown in Table 1: Similarities and Differences Between the Approaches below.³⁶³

360. *See supra* notes 2, 61.

361. On these factors and their economic, social, cultural, and political impact, see Boxes 3 and 4 and notes 56-65 and accompanying text above.

362. See note 3 above for background on deep packet inspection in general, a specific example, and a discussion of the state of deep packet inspection deployment.

363. As the discussion will show, only the second approach meets this goal.

TABLE 1
Similarities and Differences Between the Approaches

	Discrimination among like applications	Discrimination among like classes of applications	Discrimination among classes of applications that are not alike	Application-agnostic discrimination
First Approach	Banned	Banned	Allowed	Allowed
Second Approach	Banned	Banned	Banned	Allowed

According to the first approach, discussed in Part II.D.2.a, discriminatory conduct distorts competition among applications or classes of applications only if it differentiates among like applications or classes of applications. In line with this assessment, the approach bans discrimination among like applications and among like classes of applications, but allows discrimination among classes of applications that are not alike. In other words, this approach requires network providers to treat like traffic alike. It also allows discrimination that is application-agnostic. (The terms “application” and “class of application” are defined in Box 13: Terminology: “Application” and “Class of Application” below.)

By contrast, the rule proposed by this Article—the second approach, discussed in Part II.D.2.b—is based on the insight that any differential treatment that is application-specific interferes with the values that network neutrality regulation is designed to protect. (Differential treatment is application-specific if it is based on application or class of application, or, put differently, if it is based on criteria that depend on an application’s characteristics.)³⁶⁴ In line with this assessment, the proposed rule bans application-specific discrimination but allows application-agnostic discrimination.

The proposed rule bans all discrimination among applications and classes of applications that is based on application-specific criteria, regardless of whether the applications or classes are alike or not. Thus, the first approach and the rule proposed by this Article differ in how they treat discrimination among classes of applications that are not alike, as shown in Table 1: Similarities and Differences Between the Approaches above.

³⁶⁴. For a more detailed discussion of the terms “application-specific,” “discrimination based on application,” and “discrimination based on class of application,” see notes 384, 443-44, 449-50 and accompanying text below. See also *infra* Box 19.

The proposed rule accurately distinguishes between socially beneficial and socially harmful conduct (avoiding the problems of the all-or-nothing approaches) but does so *ex ante* (avoiding the social costs of the standards-based approaches).

Substantively, the rule balances the public interest in network neutrality with the legitimate interests of network providers. It prevents network providers from interfering with user choice or distorting competition among applications or classes of applications, while giving them broad flexibility to differentiate and price their Internet service offerings and manage their network in application-agnostic ways. The rule allows network providers to offer some forms of user-controlled Quality of Service and provides certainty to market participants. Technically, it reinforces key architectural principles on which the Internet was based without locking in the original architecture of the Internet itself.

By contrast, requiring network providers to treat like traffic alike does not accurately distinguish between socially beneficial and socially harmful differential treatment and creates considerable social costs. Such a rule removes the application-agnosticism of the network, allows network providers to deliberately or inadvertently distort competition among applications or classes of applications, and violates the principles of user choice and innovation without permission that have fostered application innovation in the past. Due to the ambiguities surrounding the definition of “like,” like treatment provides little certainty to the market and creates high costs of regulation.

a. *The first approach: ban discrimination among like applications or classes of applications, but allow discrimination among classes of applications that are not alike and application-agnostic discrimination*

The first approach prohibits only discrimination among like applications or classes of applications, but allows discrimination among classes of applications that are not alike and application-agnostic discrimination.³⁶⁵ (Again, I use “applications” as shorthand for “applications, content, services, and uses.” The terms “application” and “class of application” are defined in Box 13: Terminology: “Application” and “Class of Application” below.) Thus, the approach requires network providers to treat like traffic alike. This requirement is often called “like treatment.”³⁶⁶ The nondiscrimination rule in the merger conditions

365. Application-agnostic discrimination is discrimination that is based on criteria whose application does not depend on an application’s characteristics. The rationale for allowing application-agnostic discrimination is set out in Part II.D.2.b. *See also infra* Box 19.

366. On like treatment, see Wu, *supra* note 205, at 42-43. For criticism of allowing like treatment, see, for example, Free Press Open Internet Reply Comments, *supra* note 313, at 13-14, 101-04 (rejecting calls to allow Internet service providers to prioritize certain classes of traffic in the context of the reasonable network management exception); Center for Democracy & Technology Comments, *supra* note 36, at 29-30, 40 (arguing against allowing like treatment in the nondiscrimination rule and as reasonable network management); and M.

of the AT&T/BellSouth merger has been interpreted as requiring like treatment. (See Box 12: Like Treatment and the AT&T/BellSouth Merger Conditions below.)

This approach assumes that the criterion that distinguishes socially beneficial from socially harmful differential treatment is whether the applications or classes of applications that are being treated differently are alike or not. If they are alike, the differential treatment is socially harmful and should therefore be banned. If they are not alike, the differential treatment is socially beneficial (or at least not socially harmful) and should therefore be allowed.

Although the outcome of the rule turns on whether applications are alike, proposals in this category usually do not specify how network providers or regulators should make this determination.³⁶⁷ Thus, the rule leaves a key term undefined. At the same time, the term “like” can be interpreted in a number of ways. The resulting ambiguity is at the heart of many problems with this rule.³⁶⁸

CHRIS RILEY & ROBB TOPOLSKI, THE HIDDEN HARMS OF APPLICATION BIAS (2009). For support of allowing like treatment, see, for example, AT&T Open Internet Comments, *supra* note 355, at 187-88; Comments of Covad Communications Co. at 7-8, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020373797>; and Comments of Cox Communications, Inc. at 23-30, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010) [hereinafter Cox Comments], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020378714>. See also Scott Jordan & Arijit Ghosh, *A Framework for Classification of Traffic Management Practices as Reasonable or Unreasonable*, 10 ACM TRANSACTIONS ON INTERNET TECH. 12:1, :10-11, :15, :19-20 (2010) (classifying like treatment as a “borderline traffic management practice that could be used for a limited period of time if properly disclosed in the user contract”).

367. See the rules discussed in Box 12 and note 383 below. For an exception in the context of the reasonable network management exception, see the Verizon-Google legislative framework proposal, which included an exception for reasonable network management that allowed network providers “to prioritize general classes or types of Internet traffic, based on latency.” Verizon & Google, *supra* note 218, at 1. Discussions of like treatment usually do not discuss how a network provider or a regulator applying the rule should decide which applications are alike, either. See, e.g., Wu, *supra* note 205, at 42-43; Tim Wu, *The AT&T Network Neutrality Agreement*, WHAT’S NEW WITH WU (Dec. 29, 2006, 2:18 AM), <https://web.archive.org/web/20070115072424/http://www.timwu.org/log/archives/81> (accessed via the Internet Archive index) [hereinafter Wu, *Neutrality Agreement*]. As the literature on like treatment in the context of international trade law shows, deciding whether two applications are alike is a complex problem. See, e.g., PETER VAN DEN BOSSCHE, THE LAW AND POLICY OF THE WORLD TRADE ORGANIZATION: TEXT, CASES AND MATERIALS 320-400 (2d ed. 2008); Julia Ya Qin, *Defining Nondiscrimination Under the Law of the World Trade Organization*, 23 B.U. INT’L L.J. 215 (2005).

368. See *infra* Parts II.D.2.a.ii.B, II.D.2.a.ii.E.

BOX 12

LIKE TREATMENT AND THE AT&T/BELLSOUTH MERGER CONDITIONS

The nondiscrimination rule in the AT&T/BellSouth merger conditions, which prohibited AT&T/BellSouth from “privileg[ing], degrad[ing] or prioritiz[ing] any packet transmitted over AT&T/BellSouth’s wireline broadband Internet access service based on its source, ownership or destination,”³⁶⁹ has been interpreted as requiring like treatment. According to Tim Wu,

While the agreement does not use the word discrimination, it effectively bars discrimination on the basis of source, ownership, or destination. It forbids AT&T from, for example, selling Yahoo or CNN priority access to its customers over its broadband networks, and favoring those content sources over unaffiliated blogs or search engines.

. . . Interestingly, the agreement does not prevent AT&T from treating different media carried on the internet differently, so long as the carrier does not discriminate between who is providing the content. . . In short, AT&T must treat like traffic alike . . .³⁷⁰

Not all observers agree with this characterization of the agreement, though.³⁷¹

BOX 13

TERMINOLOGY: “APPLICATION” AND “CLASS OF APPLICATION”

In this Article, the term “application” refers to a specific instance of a specific type of application. For example, Vonage is an application, as are Skype and Google Voice; each of them is a specific instance of Internet telephony applications. Gmail is one of several e-mail applications. A “class of applications” is a group of individual applications that share some common characteristic. For example, “Internet telephony” or “Internet telephony applications” (i.e., the group of all Internet telephony applications), “latency-sensitive applications” (i.e., the group of all latency-sensitive applications), or the group of all

369. Merger Commitments at 8, Attachment to AT&T’s Notice of Ex Parte Communication, Review of AT&T Inc. & BellSouth Corp. Application for Consent to Transfer of Control, WC Docket No. 06-74 (Dec. 28, 2006), available at <http://apps.fcc.gov/ecfs/document/view?id=6518716381> (“AT&T/BellSouth also commits that it will maintain a neutral network and neutral routing in its wireline broadband Internet access service. This commitment shall be satisfied by AT&T/BellSouth’s agreement not to provide or to sell to Internet content, application, or service providers, including those affiliated with AT&T/BellSouth, any service that privileges, degrades or prioritizes any packet transmitted over AT&T/BellSouth’s wireline broadband Internet access service based on its source, ownership or destination.” (footnote omitted)).

370. Wu, *Neutrality Agreement*, *supra* note 367.

371. Comments of the National Cable & Telecommunications Ass’n, *supra* note 91, at 17-19 (disagreeing with Wu’s interpretation of the merger conditions as allowing like treatment).

applications that use a specific application-layer or transport-layer protocol (e.g., all applications that use the BitTorrent protocol) are all classes of applications.

The nondiscrimination rule described in this Subpart does not restrict how network providers define classes of applications. It only requires that once a network provider has defined different classes of applications, it must treat like classes of applications (and, of course, all applications within a class of like applications) alike. Contrary to the terminology used in this Article, participants in the debate sometimes use the term “application” to denote an application type. For them, e-mail would be an application. By contrast, under the terminology used in this Article, e-mail is a class of applications (the group of all e-mail applications). Others use the term “class of applications” synonymously with application type. Under the terminology in this Article, the term “class of application” is broader than that. In this Article, the group of applications that have the same application type (e.g., all e-mail applications, or “e-mail”) is one potential class of applications, but beyond that, any group of applications that share a common characteristic can be a “class of applications.”

i. *Banning discrimination among like applications or classes of applications*

The first part of the rule bans discrimination among like applications or classes of applications. This prevents network providers from singling out one or more specific applications within a group of like applications (or one or more of several like groups of applications) for differential treatment. For example, Comcast could not treat video streaming from Amazon or video streaming from the Xfinity TV website, Comcast’s own Internet streaming video offering, differently from video streaming from other providers such as Netflix or YouTube.³⁷² Similarly, Comcast would not be allowed to count traffic from other providers’ streaming video applications towards any monthly bandwidth usage cap while exempting traffic from the Xfinity TV website from the cap.³⁷³ This would be discrimination among like applications.³⁷⁴

372. Thus, it does not matter whether the favored application is affiliated with the network provider or not.

373. As explained above, the nondiscrimination rules discussed in this Article apply to all forms of differential treatment that make some applications or classes of applications relatively more attractive, not just to differential handling of packets in the network. See *supra* notes 81-90 and accompanying text.

In the past, Comcast’s Internet service offerings had a monthly usage cap of 250 GB. At the time, data traffic from XfinityTV.com, Comcast’s online streaming video offering, and from other streaming video providers all counted towards that cap. However, data traffic generated by Comcast’s Xfinity TV app for the Xbox, an app that allows users to view video-on-demand content from Comcast on an Xbox connected to the Internet through Comcast’s Internet service, did not count towards the monthly bandwidth cap, while video traffic

With respect to Quality of Service, the ban on discrimination among like applications or classes of applications prevents network providers from offering Quality of Service exclusively to some, but not all, applications within a class of like applications or only to one of several classes of applications that are alike. For example, Comcast would be prohibited from providing an enhanced type of service only to video streaming from the Xfinity TV website, but not to unaffiliated streaming video applications. Under network neutrality regimes that allow a network provider to charge application providers for prioritized or otherwise enhanced access to the network provider's Internet access customers,³⁷⁵ the ban on discrimination among like applications or classes of applications would prohibit a network provider from selling an enhanced service exclusively to one of several videoconferencing providers that are not affiliated with the network provider. Thus, the ban addresses the concern that network providers may use the selective provision of Quality of Service as a tool to distort competition among applications or classes of applications.³⁷⁶

The ban on discrimination among like applications or classes of applications is designed to prevent network providers from discriminating against specific applications within a class of like applications or against like classes of applications as a substitute for blocking them. As has been set out above, discrimination is often an attractive alternative to blocking since it is less costly and potentially more effective.³⁷⁷ Thus, in cases in which a network provider has an incentive to block an application or class of applications—for example, to manage congestion, to block unwanted content, or to give an advantage to another, competing application in a way that increases the network provider's profits³⁷⁸—it often has an incentive to reach the same result by treating the targeted applications relatively worse than others (either by treating the other ap-

generated by other apps (for example, the HBO GO app) for the Xbox did count towards the cap. That behavior would violate the rule described in the text. For sources and additional discussion, see Box 5 above and Box 15 below.

374. In these examples, the group of like applications is the group of all streaming video applications.

375. There is considerable debate over whether a network provider should be allowed to charge application providers who are not its Internet access customers for prioritized or otherwise enhanced access to the network provider's Internet access customers. As I explain elsewhere, network providers should be prohibited from imposing such charges. See sources cited *supra* note 29; *see also supra* Box 2; *supra* notes 29-30 and accompanying text.

376. This concern is discussed by, for example, van Schewick, Innovation Opening Statement, *supra* note 55, at 6; Jordan & Ghosh, *supra* note 366, at 12:14, :20; van Schewick, Open Internet Opening Statement, *supra* note 29, at 3; and the sources cited in note 109 above.

377. See the discussion in the text surrounding notes 97-105 above.

378. On incentives to block, see, for example, van Schewick, Official Testimony, *supra* note 68, at 5-6; and VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 222-70 (discussing increasing profits, managing congestion, and blocking unwanted content).

plications better or the targeted applications worse). The rule is designed to prevent this.³⁷⁹

If a network provider singles out one or more specific applications within a group of like applications (or one or more of several like groups of applications) for differential treatment, the harm to the values that network neutrality regulation is designed to protect is obvious. In this case, the differential treatment—whether it treats the targeted applications better or worse—immediately reduces the relative performance of some applications in the group, making them less attractive to users than the others. Thus, the differential treatment effectively imposes a tax on some applications in the group. Compared with an application-agnostic network, where users choose among applications without interference from network providers, this distorts users' choices among applications and, as a result, tilts the playing field in favor of some applications in the group. The differential treatment distorts competition among the applications in the group and reduces the value of the network for users by manipulating them to use applications that they would not necessarily have chosen otherwise. It also affects application innovation in various ways. In particular, the threat of discrimination reduces application developers' incentives to innovate and their ability to get funding.³⁸⁰ Moreover, letting users, not network providers, pick winners and losers on the Internet is an important part of the mechanism that produces innovation under uncertainty.³⁸¹

ii. *Allowing discrimination among classes of applications that are not alike*

While banning discrimination among like applications or classes of applications, this approach allows network providers to differentiate among classes of applications that are not alike as long as they do not discriminate among applications within each class. With respect to Quality of Service, the approach would allow network providers to offer or apply different types of service to different provider-defined classes of applications as long as they do not discriminate among classes of applications that are alike or discriminate among like applications within a class.

Under an interpretation of the term "like" that considers applications or classes of applications to be "alike" if they have similar requirements with respect to throughput, jitter, or delay, the rule would allow network providers to provide low-delay service to Internet telephony but not to e-mail. Internet telephony is sensitive to delay, while e-mail is not, so this would be discrimina-

379. This Article assumes that the case for a rule against blocking has been made. See *supra* note 28 and accompanying text. Banning blocking but allowing discrimination would make the rule against blocking meaningless, so the arguments in favor of a rule against blocking justify this part of the nondiscrimination rule as well.

380. For a more detailed explanation, see notes 236-37 above.

381. For a more detailed explanation, see notes 51-60 above. See also *supra* Box 3.

tion between two classes of applications that are not alike. Thus, network providers could treat Vonage, an Internet telephony application, differently from Gmail, an e-mail application, but they could not treat Skype, another Internet telephony application, differently from Vonage, or Gmail differently from Hotmail. By contrast, this interpretation of “like” would ban providing low-delay service to online gaming but not to Internet telephony. Online gaming applications and Internet telephony applications are both sensitive to delay, so this would be discrimination among like classes of applications.³⁸²

The rule is agnostic as to who controls (or makes the decision regarding) the actual provision of the different types of service. (See Box 14: Like Treatment and Control over the Provision of Quality of Service below.) Apart from the AT&T/BellSouth merger conditions, several network neutrality bills introduced in Congress would have allowed Internet service providers to offer Quality of Service to applications of the same type as long as they did not discriminate among applications of that type.³⁸³

BOX 14
LIKE TREATMENT AND CONTROL OVER THE PROVISION OF
QUALITY OF SERVICE

The rule described in the text is agnostic as to who controls (or makes the decision regarding) the actual provision of the different types of service. In a *partly provider-controlled system*, the provider defines the classes and decides which type of service, if any, to offer to the different classes, but the user decides whether to take advantage of that possibility for applications for which a special type of service is available. For example, in the example of Shaw Communications described below in Box 17: Defining “Like” Based on Use,

382. Usually, neither proposals for rules requiring like treatment nor discussions of like treatment discuss how a network provider or a regulator applying the rule should decide which applications are alike. *See supra* note 367 and accompanying text. As the literature on like treatment in the context of international trade law shows, deciding whether two applications are alike is a complex problem. *See, e.g.*, VAN DEN BOSSCHE, *supra* note 367, at 320–400; Qin, *supra* note 367. As will be set out in more detail below, the interpretation in the text is not the only possible interpretation. This ambiguity of the term “like” is one of the key problems of this rule. *See infra* Parts II.D.2.a.ii.B, II.D.2.a.ii.E.

383. *See* Internet Freedom and Nondiscrimination Act of 2006, H.R. 5417, 109th Cong. § 3 (2006) (“If a broadband network provider prioritizes or offers enhanced quality of service to data of a particular type, it must prioritize or offer enhanced quality of service to all data of that type (regardless of the origin or ownership of such data) without imposing a surcharge or other consideration for such prioritization or enhanced quality of service.”); *see also* Internet Freedom Preservation Act, S. 215, 110th Cong. § 2 (2007) (“[A] broadband service provider shall . . . only prioritize content, applications, or services accessed by a user that is made available via the Internet within the network of such broadband service provider based on the type of content, applications, or services and the level of service purchased by the user, without charge for such prioritization . . .”).

the Canadian Internet service provider Shaw gave users the option to buy an enhanced type of service for Internet telephony applications. It did not provide the option to buy an enhanced type of service for any other class of applications. Thus, Shaw defined the class of applications (Internet telephony applications) to which it would offer the enhanced type of service, but users decided whether they wanted to actually buy that option. If they did not buy the option, their Internet telephony applications did not receive the enhanced type of service. Whether this offering complies with the rule described in the text depends on whether defining “like” based on use is an acceptable interpretation of like.³⁸⁴

In a *fully provider-controlled system*, the provider defines the classes, determines which class should get which Quality of Service, and provides the actual service without any involvement by the user. The trial of network management practices by Cox Communications described below in Box 16: Defining “Like” Based on Application Requirements is an example of a fully provider-controlled approach. Given the concerns described in Box 16, it is questionable whether that trial correctly classified certain time-sensitive applications. Thus, the Cox system may not comply with the rule described in the text, regardless of whether defining “like” based on application requirements is generally an acceptable interpretation of “like.”

The decision to allow discrimination among applications or classes of applications that are not alike is based on the assumption that this kind of discrimination is socially harmless and does not threaten the values that network neutrality regulation is designed to protect. As will be set out below, this assumption is not correct. In many cases, discrimination among classes of applications hurts some classes of applications even if the classes are not alike.

More generally, rules requiring like treatment create considerable social costs. Like treatment negatively affects several of the factors that have fostered application innovation in the past. It removes the application-agnosticism of the network and gives network providers discretion to decide which applications are alike, which allows network providers to deliberately or inadvertently distort competition among applications or classes of applications. It violates the principle of user choice, resulting in levels of Quality of Service or differential treatment that do not necessarily meet users’ needs. It violates the principle of innovation without permission, reducing the chance that new applications actu-

384. The rule described in the text does not specify how to determine whether different applications or classes of applications are alike. In this case, the question whether a definition of “like” that treats similar uses alike is consistent with the nondiscrimination rule described in text would have to be decided in future adjudications. This question is beyond the scope of this Article. See *supra* notes 367-68; *infra* Parts II.D.2.a.ii.B, II.D.2.a.ii.E; *infra* Box 17.

ally get the type of service they need. Like treatment also creates considerable uncertainty and high costs of regulation.

A. *Impact of discrimination among classes of applications that are not alike*

In some cases, discrimination among classes of application that are not alike does not harm the applications that get relatively worse treatment. For example, e-mail and Internet telephony have different requirements with respect to reliability and delay.³⁸⁵: E-mail requires reliable data transfer but is not sensitive to delay. By contrast, Internet telephony can deal with a certain amount of packet loss but is very sensitive to delay above a certain level. As a result, it does not harm e-mail if a network provider gives low-delay service to Internet telephony but not to e-mail as long as the delay faced by e-mail and other best-effort traffic does not increase above a level at which it negatively affects even applications that generally work well with best-effort service.³⁸⁶ Similarly, during times of congestion, a network provider may want to prioritize applications that are time-sensitive over those that are not. An application that is not time-sensitive does not suffer if it is not prioritized during times of congestion as long as the delay for non-time-sensitive traffic does not rise above a level that would negatively affect even non-time-sensitive traffic. In these examples, the applications that do not receive the “better” treatment are not harmed because they do not need the better treatment anyway. The differential treatment benefits the applications that get better treatment without harming any of the others, so it does not seem to interfere with competition among applications or user choice.³⁸⁷

These cases, however, are only a nonrepresentative subset of the cases in which a network provider has an incentive to discriminate among classes of applications. In many cases, discrimination among classes of applications hurts some classes of applications, even if the classes are not alike.

For example, some Internet applications compete with network provider applications that are sold separately from Internet access and do not run over the Internet access portion of the network provider’s access network. In these cases, discriminating against all applications in that class allows the network

385. See *supra* note 15 and accompanying text.

386. How exactly the provision of an enhanced type of service to some traffic will affect the remaining best-effort traffic depends on the specific mechanism used to provide the differential treatment. For example, priority queuing allows a router’s high-priority queue to starve lower-priority queues for bandwidth. By contrast, fair queuing provides a guaranteed minimum share of bandwidth to the different queues. PETERSON & DAVIE, *supra* note 15, at 494-99.

387. As I explain below, in reality the impact of “like treatment” on users and application providers is more complicated even in the case of these examples. For example, a network provider may deliberately or inadvertently assign an application to the wrong class. See *infra* Part II.D.2.a.ii.B.

provider to favor its own offering without discriminating among applications within the class. A cellular or wireline network provider, for example, may have an incentive to reduce the performance of Internet telephony applications to protect its revenue from its own, separate telephony offering.³⁸⁸ The same incentive applies to Internet video offerings that may motivate users to cancel their subscription to the network provider's traditional video programming services,³⁸⁹ or to Internet messaging applications that threaten cellular carriers' revenue from traditional text messaging services.³⁹⁰ In the future, this incentive will apply to every application that is offered both over the Internet portion of the network provider's access network and over the portion of the access network that is dedicated to "specialized services."³⁹¹ Since the nondiscrimination rule only applies to a network provider's Internet access offering, like treatment only bans discrimination among the Internet telephony offerings (or among any other affected group of applications) that run over the Internet access portion of its network. It does not protect these applications against behavior that applies equally to all of them but puts them at a disadvantage with respect to the network provider's offering that is sold and operated separately from Internet access. The Comcast case illustrates this problem. (See Box 15: Examples of Differential Impact: Comcast's Digital Voice Service and Comcast's Xfinity TV App for the Xbox below.) Thus, applications in a class can be harmed by differential treatment if that treatment puts them at a disadvantage compared to another, competing application that is outside the scope of the nondiscrimination rule.

388. See, e.g., VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 240-43; see also Letter from AT&T to Ruth Milkman, Chief, Wireless Telecommunications Bureau, FCC 6-7 (Aug. 21, 2009), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020036306> (noting a contractual agreement between AT&T and Apple "that Apple would not take affirmative steps to enable an iPhone to use AT&T's wireless service . . . to make VoIP calls" because "both parties required assurances that the revenues from the AT&T voice plans available to iPhone customers would not be reduced by enabling VoIP calling functionality on the iPhone").

389. See, e.g., Competitive Impact Statement, *supra* note 258, at 11, 14-20, 37-39 (citing "[m]any internal documents" showing that Comcast views online video distributors as a competitive threat to its traditional cable video distribution offerings and describing Comcast's incentives to discriminate against unaffiliated online video providers).

390. See Brian X. Chen, *AT&T Chief Regrets Offering Unlimited Data for iPhone*, N.Y. TIMES BITS (May 4, 2012, 4:25 PM), <http://bits.blogs.nytimes.com/2012/05/04/att-randall-stephenson> (discussing the reduction in mobile carriers' text messaging revenues resulting from instant messaging applications); *Social Messaging Apps 'Lost Networks \$13.9bn in 2011'*, BBC NEWS (Feb. 21, 2012, 7:47 PM ET), <http://www.bbc.co.uk/news/technology-17111044> (same); Daniel Thomas, *Texting Revenues Hit by Web Services*, FIN. TIMES (Feb. 21, 2012, 8:19 PM), <http://www.ft.com/intl/cms/s/0/5599fa26-5cb5-11e1-8f1f-00144feabdc0.html> (same).

391. Whether this incentive exists depends on how specialized services are regulated. See, e.g., James B. Speta, *Supervising Managed Services*, 60 DUKE L.J. 1715, 1721-32, 1749-59 (2011).

BOX 15

EXAMPLES OF DIFFERENTIAL IMPACT: COMCAST'S DIGITAL VOICE SERVICE
AND COMCAST'S XFINITY TV APP FOR THE XBOX

Since the nondiscrimination rule only applies to a network provider's Internet service offering, it does not protect a group of like applications against behavior that applies equally to all of them but puts them at a disadvantage with respect to the network provider's offering that is sold and operated separately from Internet access.

The aftermath of the FCC's order against Comcast regarding its treatment of BitTorrent illustrates this problem. Under Comcast's new application-agnostic network management practices, when a part of the network gets close to being congested (as measured by average levels of utilization over a certain number of minutes), the traffic of users that have used a high amount of bandwidth over a certain number of minutes receives relatively less priority than the traffic of other users.³⁹² If the affected users are running an Internet telephony application while their traffic is treated like this, the delays resulting from the traffic management may reduce the performance of the Internet telephony application. By contrast, Comcast's own digital voice service, which is sold separately from its Internet access service, is not affected by this problem. The digital voice traffic is separated from the user's Internet traffic and, therefore, not affected by any traffic management measures that are applied to that traffic. When the FCC asked Comcast to justify the "disparate treatment of its own VoIP service as compared to that offered by other VoIP providers on its network," Comcast argued that the fact that its network management practices apply to unaffiliated Internet telephony applications, but not to its own digital voice offering, does not violate the FCC's order against Comcast, since its digital voice offering is not offered over the public Internet and therefore not subject to the requirements imposed by that order.³⁹³

The controversy over Comcast's Xfinity TV app for the Xbox provides another example of this phenomenon. As explained above, the Xfinity TV app allows users who subscribe to Comcast's Internet access service, Comcast's

392. A user's traffic continues to receive relatively less priority until his bandwidth use has fallen below a predetermined level. For a detailed description of the system, see C. Basstian et al., Internet Eng'g Task Force, RFC 6057, Comcast's Protocol-Agnostic Congestion Management System 23 (Dec. 2010), <https://tools.ietf.org/html/rfc6057>.

393. See Letter from Dana R. Shaffer, Chief, Wireline Competition Bureau, & Matthew Berry, Gen. Counsel, FCC, to Kathryn A. Zudem, Vice President, Regulatory Affairs, Comcast Corp. (Jan. 18, 2009), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=6520213534>; Letter from Kathryn A. Zudem, Vice President, Regulatory Affairs, Comcast Corp., to Dana Shaffer, Chief, Wireline Competition Bureau, & Matthew Berry, Gen. Counsel, FCC 2 (Jan. 30, 2009) [hereinafter Zudem Letter], available at <http://fjallfoss.fcc.gov/ecfs2/document/view.action?id=6520212400>. For a brief description of Comcast's network management system, see Lennett, *supra* note 357, at 119-20.

cable service, and Microsoft's Xbox Live Gold subscription service to watch selected video-on-demand content from Comcast on the Xbox.³⁹⁴ When Comcast introduced the app in the spring of 2012, Comcast's Internet service had a 250 GB monthly bandwidth cap.³⁹⁵ Traffic associated with the Xfinity TV app to the Xbox did not count towards that cap, while traffic of other applications that also allow users to view on-demand video content on the Xbox (e.g., HBO GO or Netflix) did count towards the cap.³⁹⁶ In general, this differential treatment of like applications would violate the nondiscrimination rule described in this Subpart.³⁹⁷ Comcast, however, claimed that in contrast to the other applications, which are delivered over the public Internet and treated in compliance with the FCC's Open Internet Rules, the Xfinity TV app is provided separately from the public Internet and therefore not subject to the FCC's Open Internet Rules.³⁹⁸ If this argument is correct,³⁹⁹ Comcast is able to put applications that deliver online video to the Xbox over the public Internet at a disadvantage compared to Comcast's own competing online video application, even though all online video applications delivered over the public Internet are treated alike.

Moreover, applications in a class can be harmed by differential treatment even if they do not compete directly with applications in other classes that are treated more favorably. As I have explained elsewhere, network providers often have an incentive to single out specific applications or classes of applications for special treatment in order to manage bandwidth on their network.⁴⁰⁰ For example, at the time of the Canadian investigation into Internet service providers' network management practices, many Canadian providers were singling out peer-to-peer file-sharing applications for special treatment, throttling the bandwidth available to them or interfering with these applications in other ways.⁴⁰¹ In the United States, Comcast, RCN, and, most likely, Cox for a while

394. *See supra* Box 5.

395. In May 2012, Comcast suspended enforcement of the 250 GB monthly bandwidth cap and started trialing several different data usage management approaches in selected markets. *See supra* note 83.

396. *FAQs: Xbox 360*, *supra* note 84.

397. *See supra* Box 5; *supra* notes 81-82, 373 and accompanying text.

398. Werner, *supra* note 86.

399. Whether the Open Internet Rules apply to the Xfinity TV app is outside the scope of this Article.

400. van Schewick, Official Testimony, *supra* note 68, at 5-6; VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 264-66.

401. *See* PARSONS, *supra* note 100, at 23-31 (summarizing the filings by Canadian Internet service providers describing their network management practices). Since then, most of the larger Canadian Internet service providers, most recently Bell Canada and Bell Aliant, have changed their practices in response to the regulations regarding network management that the CRTC adopted following its investigation. In January 2012, Rogers remained the only larger Canadian provider that was still engaging in discriminatory network management

managed traffic on their networks by selectively interfering with BitTorrent and other peer-to-peer file-sharing applications but not with other applications.⁴⁰² In 2009, BT throttled streaming video of users subscribing to its “Up to 8 Mbps Option 1” broadband plan to 896 kilobits per second between 5:00 PM and midnight.⁴⁰³ And according to Neelie Kroes, who at the time was Vice President of the European Commission responsible for the Digital Agenda, data published by BEREC in June 2012 show that around twenty percent of fixed Internet service providers (spread across virtually all European Union member states) impose restrictions on peer-to-peer file-sharing applications during peak times. These restrictions can affect up to ninety-five percent of users in a country.⁴⁰⁴

When a network provider singles out a class of like applications for special treatment without discriminating among applications within the class, the resulting harm may be less apparent than in cases in which the network provider discriminates against specific applications within a class. After all, if all applications in the class are treated the same, they still compete with each other on a level playing field. Focusing only on competition among the applications within a class is too narrow. On the Internet, different uses constantly compete for users’ time and attention. Differential treatment that treats a certain class of applications worse than others in a way that harms their usability or attractiveness to users (as opposed to differential treatment that does not harm the affected applications because they do not need the better treatment) imposes a tax on the developers and users of the affected applications that affects user behavior and the applications’ chances in the marketplace. As the cofounders of the online video company Zediva explained in a letter to the FCC,

Discriminatory network management of this type [that singles out specific applications or classes of applications in order to deal with congestion] would

that had not announced an intention to phase out that policy. See Geist, *supra* note 271; Schmidt, *supra* note 348.

402. RCN Letter, *supra* note 103, at 2, 4; Comcast Description, *supra* note 102, at 1, 9. Cox seems to have actively managed peer-to-peer file sharing in 2008 as well. Marcel Dischinger et al., *Detecting BitTorrent Blocking*, 2008 PROC. 8TH ACM SIGCOMM CONF. ON INTERNET MEASUREMENT 3, 7-8 (finding evidence of BitTorrent blocking by Comcast and Cox); Susan Davis, *Cox About to Feel Wrath of Net Neutrality Activists*, WALL ST. J. WASH. WIRE (May 15, 2008, 5:44 PM ET), <http://blogs.wsj.com/washwire/2008/05/15/cox-about-to-feel-wrath-of-net-neutrality-activists> (citing a Cox statement that “Cox allows the use of file-sharing and peer-to-peer services for uploads and downloads, and we allow access to all legal content, but we must manage the traffic impact of peer-to-peer services, as most ISPs do for the benefit of the customer” (internal quotation marks omitted)).

403. Cellan-Jones, *supra* note 101; see also Cooper, Analysis, *supra* note 297, at 21-22; Cooper, Thesis, *supra* note 297, chs. 5-7, at 105-211 (documenting widespread discriminatory network management in the United Kingdom).

404. The text closely paraphrases European Commissioner Neelie Kroes’s description of these findings in her blog. Neelie Kroes, *Next Steps on Net Neutrality—Making Sure You Get Champagne Service if That’s What You’re Paying for*, EUR. COMMISSION NEELIE KROES (May 29, 2012), <http://blogs.ec.europa.eu/neelie-kroes/netneutrality>. For the detailed findings, see BEREC *View of Traffic Management*, *supra* note 346.

put the affected applications at a severe disadvantage. Companies that offer these applications and services will be less able to reach their users during times of congestion, which in turn may affect their success in the market (who wants to use an application or service that is less usable during peak time, when most people actually want to use the Internet?) and their ability to get funding—thus squashing innovation before it has had a chance to prove itself in the marketplace.⁴⁰⁵

Differential treatment that makes a class of applications less usable or attractive to users also harms users whose applications are affected by the differential treatment. It constrains their ability to use the Internet as they see fit either generally or, when the differential treatment is used for congestion management, during peak times when people want to use the Internet most.⁴⁰⁶ Thus, treating classes of applications differently may harm users and applications even if the classes of applications are not alike.

B. *Application-agnosticism and the ambiguity of “like”*

In addition, “like treatment” negatively affects several of the factors that have fostered application innovation in the past.⁴⁰⁷

In order to implement “like treatment,” network providers need to identify the different applications on their network in order to decide which class they belong to and determine the appropriate form of Quality of Service or differential treatment.⁴⁰⁸ Thus, like treatment requires network providers to treat data packets differently based on information about the applications on the network, which removes the application-agnosticism of the network. Since the concept of “like” applications is not well defined, network providers have broad discretion when defining classes of applications or determining which class a specific application should be assigned to. This allows them to deliberately or inadvertently distort competition among applications or classes of applications.⁴⁰⁹

Often, there may be different options for determining which applications are “alike” and should therefore receive the same treatment. For example, one approach may focus on applications’ requirements with respect to throughput, delay, or jitter. (See Box 16: Defining “Like” Based on Application Requirements below.) Another approach may focus on whether the applications are used for similar goals or whether they compete with each other. (See Box 17: Defining “Like” Based on Use below.) Depending on which option is chosen, a

405. Zediva Ex Parte Letter, *supra* note 236, at 3-4. As the Zediva letter and conversations with entrepreneurs and investors show, this is not a theoretical concern. For another publicly documented example, see van Schewick, Oral Testimony, *supra* note 236, at 2.

406. Barbara van Schewick, *The FCC’s Open Internet Proposal—Lessons from Silicon Valley*, INTERNET ARCHITECTURE & INNOVATION (Dec. 13, 2010), <http://netarchitecture.org/2010/12/the-fccs-open-internet-proposal-lessons-from-silicon-valley>.

407. van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 11-13.

408. Center for Democracy & Technology Comments, *supra* note 36, at 29.

409. van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 11-12.

specific application or type of application may receive very different treatment. Thus, a network provider can put certain applications or classes of applications at a disadvantage by choosing a definition of “like” that hurts that application or class of applications. Sometimes, this may happen deliberately; sometimes, it may happen inadvertently.

BOX 16

DEFINING “LIKE” BASED ON APPLICATION REQUIREMENTS

A definition of “like” could focus on whether applications have similar requirements with respect to throughput or delay. For example, the Verizon-Google legislative framework proposal included an exception for reasonable network management that allowed network providers “to prioritize general classes or types of Internet traffic, based on latency.”⁴¹⁰ In 2009, Cox Communications, a cable provider in the United States, trialed a network management system that constitutes an example of such an approach. Cox divided applications into two groups: time-sensitive applications and non-time-sensitive applications. During times of congestion, the system deprioritized applications that Cox had classified as non-time-sensitive to improve the performance of applications that Cox had classified as time-sensitive. Cox performed the classification based on “our network engineering expertise and our customers’ expectations.”⁴¹¹ For example, web, Internet telephony, e-mail, or streaming video were classified as time-sensitive, while file access, software updates, or peer-to-peer protocols were classified as non-time-sensitive.⁴¹²

There are reasons to believe that this system would have violated the non-discrimination rule described in this Subpart: It seems to have classified all applications that use peer-to-peer file-sharing protocols as non-time-sensitive, even though some peer-to-peer file-sharing applications (e.g., Vuze, an application that uses peer-to-peer file-sharing protocols to stream video in real time) are sensitive to delay. Treating some time-sensitive traffic as non-time-sensitive and, therefore, differently from other time-sensitive traffic would have violated the requirement to treat like traffic alike.⁴¹³

410. Verizon & Google, *supra* note 218, at 1.

411. Chloe Albanesius, *Cox Says It Will Delay P2P Traffic, Software Updates*, PC MAG. (Jan. 28, 2009, 1:27 PM EST), www.pcmag.com/article2/0,2817,2339756,00.asp.

412. Cox Comments, *supra* note 366, at 24-30, app. A; Albanesius, *supra* note 411; see also M. CHRIS RILEY & BEN SCOTT, FREE PRESS, DEEP PACKET INSPECTION: THE END OF THE INTERNET AS WE KNOW IT? 6-8 (2009), available at http://www.freepress.net/files/Deep_Packet_Inspection_The_End_of_the_Internet_As_We_Know_It.pdf (criticizing Cox’s approach); *infra* note 423.

413. See *infra* notes 418-23 and accompanying text.

BOX 17
DEFINING “LIKE” BASED ON USE

A definition of “like” could focus on whether the applications are used for similar goals. For example, in the mid-2000s, the Canadian cable provider Shaw Communications allowed its Internet service customers to add a Quality of Service enhancement option to their normal Internet service for ten dollars per month. This option provided enhanced Quality of Service only to Internet telephony applications but not to other latency-sensitive applications.⁴¹⁴ Thus, Shaw defined the class of applications to which it offered an enhanced type of service based on the use of the application (“Internet telephony”), not on the application’s technical needs.

Usually, proponents of nondiscrimination rules that require like treatment do not specify how regulators should determine whether applications are alike. Thus, it is not clear whether regulators would endorse a definition of like based on the functionality provided by the application.⁴¹⁵ Such a definition would allow Internet service providers to discriminate among classes of applications with similar technical requirements (e.g., by providing low-delay service only to online gaming but not to Internet telephony),⁴¹⁶ enabling them to interfere with user choice and distort competition among classes of applications by steering users towards or away from certain classes of applications.⁴¹⁷ Thus, a definition of like based on the functionality provided by the application would allow Internet service providers to engage in exactly the kind of conduct—interfering with user choice and distorting competition among applications or classes of applications—that network neutrality rules are designed to prevent and should therefore be rejected.

Network providers may deliberately or inadvertently define classes in a way that hurts specific applications within a class. The CRTC’s review of the Internet traffic management practices of Internet service providers illustrates how this may happen. The proceeding showed that many Canadian Internet service providers throttled or otherwise interfered with traffic belonging to peer-to-peer file-sharing applications all day or during times of congestion.⁴¹⁸ The Internet service providers argued that this was necessary to protect the performance of real-time applications (such as applications that stream video in

414. Russell Shaw, *Cable Broadband ISP’s QoS Enhancement Surcharge Draws Vonage’s Ire*, ZDNET (Mar. 7, 2006, 6:51 AM GMT), <http://www.zdnet.com/blog/ip-telephony/cable-broadband-isps-qos-enhancement-surcharge-draws-vonages-ire/952>.

415. See *supra* notes 367-68, 384 and accompanying text.

416. For a more detailed discussion of this example, see notes 424-27 and accompanying text below.

417. See *supra* notes 400-06 and accompanying text.

418. For an overview of the practices, see PARSONS, *supra* note 100, at 23-31.

real time) during times of congestion.⁴¹⁹ This raised an interesting question: How did the network providers treat Vuze, an application that, at the time of the proceeding, used the BitTorrent protocol, a peer-to-peer file-sharing protocol, to stream video in real time?⁴²⁰ The answer depended on how network providers decided which applications were sufficiently alike to receive the same treatment. On the one hand, network providers could decide which applications are alike by focusing on the protocols used by the application and treat applications that use peer-to-peer file-sharing protocols differently from applications using other protocols.⁴²¹ In this case, they would treat Vuze like the other peer-to-peer file-sharing applications and slow it down. Alternatively, they could classify applications based on their sensitivity to delay. In this case, Vuze would be treated like other applications that stream video in real time and would not be slowed down. Like all applications that stream video in real time, Vuze is sensitive to delay. Thus, under the first approach, Vuze would perform worse during times of congestion than other video applications like YouTube that also stream video in real time but do not use peer-to-peer file-sharing protocols, putting Vuze at a competitive disadvantage.

The record of the proceeding did not resolve the question.⁴²² The concern that time-sensitive applications that use peer-to-peer file-sharing protocols may

419. See, e.g., Bell Aliant Comments, *supra* note 224, ¶¶ 85-87.

420. Technically, YouTube and Vuze, like many other online video applications, use a technique called progressive download to create a near real-time streaming experience. See JAN OZER, VIDEO COMPRESSION FOR FLASH, APPLE DEVICES AND HTML5 (2011); *Vuze vs Cox the Copyright Cop*, P2PNET.NET (Feb. 2009), <http://www.p2pnet.net/story/18402>. See generally Andrew Odlyzko, The Delusions of Net Neutrality (Aug. 31, 2008) (unpublished manuscript), available at <http://www.dtc.umn.edu/~odlyzko/doc/net.neutrality.delusions.pdf>.

421. It seems that at least one deep packet inspection offering uses this approach. Cisco's protocol classification mechanism classifies peer-to-peer file-sharing applications such as BitTorrent based on the protocols used. It does not distinguish among time-sensitive and non-time-sensitive applications using the protocols. *NBAR2 Protocol Library*, CISCO SYS. 11-14, http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6558/ps6616/product_bulletin_c25-627831.pdf (last updated Jan. 2012).

422. In the CRTC hearings that were part of that proceeding, some network provider representatives, when asked whether their traffic management system distinguished between time-sensitive and non-time-sensitive peer-to-peer applications, testified that they excluded Skype, which has a peer-to-peer architecture, from their traffic management measures because Skype, like all Internet telephony applications, is sensitive to delay. See, e.g., *Review of the Internet Traffic Management Practices of Internet Service Providers: Proceedings on Telecom Public Notice CRTC 2008-19 Before the Can. Radio-Television and Telecomms. Comm'n* ¶¶ 4482-83 (2009) (presentation by Chris MacFarlane, Vice President, Corporate Engineering, Cogeco Cable Canada) (transcript available at <http://www.crtc.gc.ca/eng/transcripts/2009/tt0710.htm>); *id.* ¶¶ 5640, 5953-60 (presentation by Jean Brazeau, Senior Vice President, Regulatory Affairs, and Dennis Steiger, Group Vice President, Engineering, Shaw Communications Inc.) (transcript available at <http://www.crtc.gc.ca/eng/transcripts/2009/tt0713.htm>); *id.* ¶¶ 6253-56 (presentation by Jonathan Daniels, Vice President, Regulatory Law, Bell Canada) (transcript available at <http://www.crtc.gc.ca/eng/transcripts/2009/tt0714.htm>). Unlike Vuze, however, Skype does not use a peer-to-peer file-sharing protocol, so the treatment of Skype does not allow any conclusions regarding the treatment of Vuze.

be harmed by practices that deprioritize peer-to-peer file-sharing applications during times of congestion to improve the performance of time-sensitive applications has come up in other contexts as well.⁴²³ As this example shows, network providers may deliberately or inadvertently choose a definition of “like” that distorts competition among applications within a class.

A network provider could also define classes of applications in a way that distorts competition among classes of applications. Again, this may happen deliberately or inadvertently. For example, network providers usually like the idea of providing low-delay service to online gaming.⁴²⁴ Some online games are sensitive to delay, and charging the gamers for low-delay service would allow network providers to capture some of the value that online gamers realize from gaming.⁴²⁵ By contrast, network providers seem to be less interested in provid-

The responses cited above seemed to imply that traffic management practices apply to all peer-to-peer file-sharing applications without distinguishing between peer-to-peer file-sharing applications that are time-sensitive and those that are not. *See id.* ¶¶ 3938-59 (presentation by Matt Stein, Vice President, Network Services, Primus Canada) (transcript available at <http://www.crtc.gc.ca/eng/transcripts/2009/tt0709.htm>) (explaining that peer-to-peer file-sharing is not time-sensitive).

423. For example, in 2009, Vuze’s General Counsel, Jay Monahan, asked the FCC to investigate the impact of Cox’s trial network management system on peer-to-peer traffic, expressing concern that it would hurt the performance of Vuze. Cox’s trial system deprioritized applications such as peer-to-peer protocols (which, Monahan assumed, would include Vuze) that Cox had classified as non-time-sensitive during times of congestion to improve the performance of applications such as streaming video that Cox had classified as time-sensitive. *See Albanesius, supra* note 411; *Vuze vs Cox the Copyright Cop, supra* note 420; *see also* Comments of Distributel Communications Ltd. Concerning the Part VII Applications by the Consumers Ass’n of Canada et al. (CAIP et al.) & by Vaxination Informatique (Vaxination) Requesting the CRTC to Review & Vary Telecom Decision CRTC 2008-108 ¶¶ 10-16, 40-46 (June 22, 2009) (Can.), available at http://crtc.gc.ca/public/partvii/2009/8662/p8_200907727/1231235.pdf (asking the CRTC to review its decision regarding Bell Canada’s throttling of its wholesale ADSL access service on the grounds that the CRTC based important parts of that decision on the assumption that all peer-to-peer file-sharing applications are not time-sensitive); Application by the Consumers’ Ass’n of Canada et al. to Review & Vary Telecom Decision CRTC 2008-108 ¶¶ 126-30, 156-59, 166 (May 21, 2009) (Can.), available at http://crtc.gc.ca/public/partvii/2009/8662/p8_200907727/1140124.zip (same); Vaxination Informatique Application to Review & Vary Telecom Decision CRTC 2008-108 ¶¶ 95, 141-42 (May 20, 2009) (Can.), available at http://crtc.gc.ca/public/partvii/2009/8662/v42_200907826/1148017.zip (same). But the Commission rejected the applications for review and reiterated the claim that peer-to-peer file-sharing applications are not time-sensitive. *See Canadian Association of Internet Providers et al. & Vaxination Informatique—Application to Review & Vary Certain Determinations in Telecom Decision 2008-108 Related to Bell Canada’s Internet Traffic Management Practices, Telecom Decision CRTC 2009-677 ¶¶ 8-10* (Oct. 29, 2009) (Can.), available at <http://crtc.gc.ca/eng/archive/2009/2009-677.htm>.

424. “Would this proposal allow us to offer Quality of Service to online games?” is usually one of the first questions I am asked when I discuss proposals for nondiscrimination rules with employees of network providers.

425. *See, e.g., SANDVINE, TURNING GAMING INTO REVENUE WITH PACKETCABLETM MULTIMEDIA 1* (2005) (on file with author) (“Once aware of the amounts and types of gam-

ing low-delay service to Internet telephony applications like Skype or Vonage, since this would make these applications more competitive with the network providers' own telephony offerings.⁴²⁶ Thus, a network provider may decide to offer low-delay service only to online gaming but not to Internet telephony, arguing that these are different classes of applications because "gaming" and "telephony" are different uses of the Internet.⁴²⁷ Internet telephony providers would argue that the correct class is "applications that are sensitive to delay," but their view would not matter until they had brought a complaint and succeeded in convincing the regulatory agency.

Finally, it may not be obvious which class an application belongs to, which allows network providers to inadvertently or deliberately hurt specific applications. A network provider may fail to provide the needed type of service to a certain application in a class because it does not realize that the application belongs to this class. For example, the Canadian Internet service providers in the example above may have intended to protect all real-time applications even if those applications used peer-to-peer file-sharing protocols,⁴²⁸ but they may not have realized that there are applications, such as Vuze, that use a peer-to-peer file-sharing protocol but are sensitive to delay. Alternatively, a network provider may argue that an application does not belong to a certain class even if the network provider knows better, which would deprive the application of the

ing traffic on their network, a properly equipped service provider can prioritize it to create a gamer-friendly network. . . [S]ervice providers could perhaps offer their subscribers an optimized gaming tier with guaranteed QoS, while the escalating popularity of online gaming drives demand for exactly that type of service. In this way, an MSO [multiple-system operator, an industry term for cable operators] can profit from an otherwise peripheral market trend.”).

Prices for Internet access service are currently independent of the application for which the service is used. For example, they do not change depending on whether a user is sending an e-mail, placing a call, watching video, or playing an online game. As I explained in my book, if network providers charge a uniform transport price and consumers value different applications differently, network providers will not be able to extract the full consumer surplus associated with each application through the transport price alone. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 273-75. Under these circumstances, offering and charging for low-delay service for online gaming would allow network providers to extract some of the consumer surplus associated with online gaming that cannot be captured through the uniform transport price alone. Of course, network providers could also use this strategy to extract some of the consumer surplus associated with Internet telephony, but the trade-off would be more complicated: they would gain revenue from offering low-delay service to Internet telephony but would lose revenue from their own telephony offering because low-delay service increases the quality of Internet telephony relative to the network providers' offering, which makes Internet telephony relatively more attractive.

426. This observation is based on conversations with network provider employees.

427. For a real-world example of such an offering, see *Success Story: Service Innovation with Third Party Partnerships*, SANDVINE (Aug. 16, 2013), <https://www.sandvine.com/downloads/general/success-stories/success-story-vox-telecom-service-innovation-with-third-party-partnerships.pdf> (describing an Internet access plan by a South African DSL provider that prioritizes all ports used for online gaming but not other ports or applications).

428. See the responses of network provider representatives discussed above in note 422.

needed type of service until the application provider has filed a complaint with the regulatory agency and succeeded.

Thus, even under rules that require like treatment, network providers have ample discretion when defining classes of applications and assigning applications to classes. This allows network providers to use the provision of Quality of Service or other forms of differential treatment to deliberately harm certain applications or classes of applications. A benevolent network provider may inadvertently make decisions that have the same effect.

As the above examples show, disputes over which classes of applications are alike, or whether a certain application belongs to a certain class, are likely to be frequent and difficult to resolve, thus creating high costs of regulation.

C. User choice

Apart from removing the application-agnosticism of the network, “like treatment” also violates the principles of user choice and innovation without permission. Like application-agnosticism, these principles have been central to the Internet’s ability to foster application innovation, improve democratic discourse, facilitate political organization and action, and provide a more decentralized environment for social, cultural, and political interaction in which anybody can participate.⁴²⁹

Under “like treatment,” network providers, not users, choose which application should get which Quality of Service or differential treatment, thus violating the principle of user choice.⁴³⁰ As I have explained elsewhere, the incentives of network providers and users are not necessarily aligned.⁴³¹ Network providers’ incentive to offer low-delay service only to online gaming, but not to Internet telephony, or to reduce the performance of applications that may reduce their revenue from applications that are offered and provided separately from Internet access are examples of this phenomenon.⁴³² Thus, network providers do not always want to meet users’ preferences. But even when they do, they may not be able to do so.⁴³³ For example, if a network provider decides whether and when to offer Quality of Service, it is forced to guess what the average user’s priorities may look like, but these priorities may differ among users, and, for the same user, over time. In particular, a specific user’s needs with respect to a particular application are not necessarily fixed.⁴³⁴ A user’s desire

429. See *supra* Part I.

430. van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 12.

431. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 350-51.

432. See *supra* notes 424-27 and accompanying text; see also 388-91 and accompanying text.

433. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 351.

434. van Schewick, Official Testimony, *supra* note 68, at 7; see also Free Press Open Internet Comments, *supra* note 3, at 102-03; RILEY & SCOTT, *supra* note 412, at 8; Lennett, *supra* note 357, at 143-45; Yiannis Yiakoumis et al., *Putting Home Users in Charge of Their Network*, 2012 PROC. 2012 ACM CONF. ON UBIQUITOUS COMPUTING 1114, 1115; B. Briscoe

for Quality of Service may differ considerably depending on the circumstances. For example, I may not care as much about the quality of my VoIP call when I am chatting with a friend as when I am doing a job interview. If I am playing a quick game at night, I may be willing to tolerate a level of latency that I would not be willing to tolerate during an online gaming tournament. Normally, I may want file uploads to happen in the background and may want them to yield to other applications that are more important to me right now. But if I am uploading a large paper to a conference website just before the submission deadline, finishing this upload as quickly as possible will have the highest priority.⁴³⁵ Thus, any Quality of Service system that lets network providers determine whether and when to provide Quality of Service may not be well aligned with users' needs. Network providers' attempts to determine which applications are time-sensitive and should receive special treatment during times of congestion will fail to meet users' needs for the same reasons.⁴³⁶

D. Innovation without permission

Finally, "like treatment" harms application innovation by making it more difficult for new applications to get the type of service they need.⁴³⁷ In order to get Quality of Service, an application developer would have to convince network providers that its application belongs to a new class of applications that requires a certain type of service or that it is "like" an existing type of application that already receives that type of service, thus violating the principle of innovation without permission.⁴³⁸ This introduces considerable transaction costs. Certain types of innovators (e.g., innovators that develop an application at home in their free time, noncommercial innovators, or start-ups) may not have the resources necessary to engage in this type of negotiation with a potentially large number of network providers.⁴³⁹ In addition, even if an innovator manages to contact a network provider, the innovator may not receive the appropriate Quality of Service for its application if the innovator fails to convince the network provider. This is an example of the more general phenomenon that requir-

et al., Internet Eng'g Task Force, Internet-Draft, Problem Statement: Transport Protocols Don't Have to Do Fairness 13-14 (July 14, 2008), <https://tools.ietf.org/html/draft-briscoe-tsvwg-relax-fairness-01>; *supra* note 147 and accompanying text; *infra* notes 484-85 and accompanying text.

435. This example is taken from Yiakoumis et al., *supra* note 434, at 1115.

436. See, e.g., RILEY & SCOTT, *supra* note 412, at 8; Lennett, *supra* note 357, at 143-44.

437. van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 12-13.

438. Center for Democracy & Technology Comments, *supra* note 36, at 29.

439. Throughout the history of the Internet, many important innovations (including eBay, Facebook, Yahoo, Google, Apache Web Server, the World Wide Web, Flickr, and Blogger) have been developed by innovators of this type. See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 204-13, 310-14, 318-28, 334-45 (discussing the importance of different types of low-cost innovators and including many examples); van Schewick, Open Internet Opening Statement, *supra* note 29, at 3-5.

ing cooperation or support from the network provider reduces the likelihood that innovative applications can be realized or successfully deployed.⁴⁴⁰ Thus, requiring network providers to take action before an application can get the Quality of Service or differential treatment it needs violates the principle of innovation without permission and reduces the chance that new applications actually get the type of service they need.

E. *Certainty and costs of regulation*

In general, this rule—ban discrimination among like applications and classes of applications, but allow discrimination among classes of applications that are not alike—is a lot clearer about which behavior is and is not allowed than the standards-based proposals discussed above. It clearly allows certain forms of Quality of Service while banning others. In particular, the rule allows network providers to provide different types of service to different classes of applications that are not alike, as long as they do not discriminate among classes of applications that are alike or discriminate among like applications within a class. The rule does, however, prohibit network providers from offering a certain type of service only to some applications within a class. Thus, the rule restricts the evolution of the network more than approaches that allow all discrimination but less than approaches that ban all discrimination.

With respect to specific instances of differential treatment among classes of applications, the rule provides less certainty than a more abstract reading of the provision may suggest. In particular, the ambiguities surrounding the definition of “like” make it difficult for network providers to predict whether their chosen definition will withstand regulatory scrutiny in case of a complaint. For the same reasons, application developers and their investors will not necessarily know in advance how far the rule’s protections reach.⁴⁴¹ If adjudicators clarify the interpretation of “like” in the context of individual adjudications, this uncertainty may be reduced over time.⁴⁴² Until then, the rule will suffer from many of the problems associated with and will create similar social costs as the standards-based approaches discussed above, including high costs of regulation.

* * *

In sum, this rule is based on the assumption that discrimination among classes of applications that are not alike is socially harmless and should there-

440. See *supra* note 57 and accompanying text.

441. On the importance of certainty for network providers and application developers, see notes 234-37 and accompanying text above.

442. For a number of reasons, adjudicators may not necessarily have an incentive to clarify the meaning of key terminology beyond what is required to resolve the specific case under consideration. See *supra* notes 238-40 and accompanying text.

fore be allowed. This assumption is not correct. In many cases, discrimination among classes of applications hurts some classes of applications even if the classes are not alike. Like treatment removes the application-agnosticism of the network and violates the principles of user choice and innovation without permission. It allows network providers to deliberately or inadvertently distort competition among applications or classes of applications and interfere with user choice. Due to the ambiguities surrounding the definition of “like,” the rule creates considerable uncertainty that will need to be resolved in case-by-case adjudications, resulting in social costs similar to the social costs of the standards-based approaches described above. Thus, like treatment creates considerable social costs and does not adequately protect the values that network neutrality rules are designed to protect.

b. *The best approach: ban application-specific discrimination, but allow application-agnostic discrimination*

Instead, regulators or legislators should adopt a nondiscrimination rule that clearly bans application-specific discrimination, but allows application-agnostic discrimination.⁴⁴³ (Again, I use “applications” as shorthand for “applications,

443. See van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 13-16; van Schewick, August 2010 Attachment, *supra* note 52, at 6-8; see also VAN SCHEWICK, *supra* note 79, at 52. In the Open Internet proceeding, this proposal was supported by, for example, networking experts, e.g., Ex Parte Letter of NYSERNet, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 13, 2010) [hereinafter NYSERNet Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020923371>; Reed, *supra* note 2; venture capitalists, e.g., John Borthwick, *Neutrality or Bust*, TECHCRUNCH (Dec. 19, 2010), <http://techcrunch.com/2010/12/19/neutrality>; Brad Burnham, *Internet Access Should Be Application-Agnostic*, HUFFINGTON POST (Dec. 20, 2010, 9:44 AM ET), http://www.huffingtonpost.com/brad-burnham/internet-access-should-be_b_799028.html; *Regulation Strangulation*, AVC (Aug. 12, 2010), http://www.avc.com/a_vc/2010/08/regulation-strangulation.html; entrepreneurs, e.g., Zediva Ex Parte Letter, *supra* note 236; and nonprofit organizations, e.g., Ex Parte Letter of Council of Scientific Society Presidents, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 13, 2010) [hereinafter Council of Scientific Society Presidents Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020923181>; Ex Parte Letter of North American Benthological Society, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 13, 2010) [hereinafter Benthological Society Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020923349>; Ex Parte Letter of Botanical Society of America, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Dec. 8, 2010) [hereinafter Botanical Society Ex Parte Letter], available at <http://apps.fcc.gov/ecfs/document/view?id=7020922879>.

Many network neutrality proponents would couple a strict nondiscrimination rule that bans all discrimination with a reasonable network management exception that requires network management to be as application-agnostic as possible. For example, the Open Internet Coalition stated that to qualify as reasonable network management, the practice must be narrowly tailored to address a legitimate network management purpose. Open Internet Coalition Comments, *supra* note 36, at 15-17, 49-50. In addition to other criteria, the practice must “result[] in as little discrimination or preference as reasonably possible.” *Id.* at 49. The Cen-

content, services, and uses.”) Discrimination is application-specific if it is based on a particular application or class of applications, or, in other words, if it is based on criteria that depend on an application’s characteristics (“application-specific criteria”).⁴⁴⁴ Application-specific criteria include what this Article calls “application”—the specific instance of an application a user is using (e.g., Vonage vs. Skype), application type (e.g., e-mail vs. Internet telephony), the application-layer protocol or transport-layer protocol the application is using (e.g., Session Initiation Protocol (SIP) vs. Skype’s proprietary protocol, or TCP vs. User Datagram Protocol (UDP)), or the application’s technical requirements (e.g., latency-sensitive vs. non-latency-sensitive applications). (See also Box 19: A Technical Perspective on Application-Specific vs. Application-Agnostic Discrimination below.) Since the term “applications” stands for applications, content, services, and uses, the ban on application-specific discrimination ap-

ter for Media Justice and other public interest commenters similarly agreed that to qualify as reasonable network management, the practice must be narrowly tailored to address a legitimate network management purpose. Public Interest Comments, *supra* note 36, at 31-32, 35-41. These two proposals would allow application-agnostic differential treatment only as long as it is narrowly tailored to serve a legitimate network management purpose. The proposal described in the text goes beyond these proposals by allowing differential treatment based on application-agnostic criteria in general, not just when it is narrowly tailored to address a legitimate network management purpose.

444. The two definitions of application-specific discrimination used in the text—“discrimination based on application or class of application” and “discrimination based on criteria that depend on an application’s characteristics”—describe the same concept. In this Article, “application” refers to a specific instance of a specific type of application. See *supra* Box 13. Thus, “discrimination based on application” is differential treatment of different instances of the same application type depending on which instance the user is using (e.g., Skype vs. Vonage). The specific instance of an application a user is using is also a characteristic of the application (i.e., it is a characteristic of the application whether it is Vonage or Skype).

A “class of applications” is a group of individual applications that share some common characteristic. *See id.* Thus, there are many different potential classes of applications based on which a network provider could discriminate, each defined by the criteria that are used to allocate the applications to the classes. For example, a class of applications may be the group of all applications of the same application type (e.g., Internet telephony, e-mail), all applications that use the same application-layer protocol (e.g., all applications that use Session Initiation Protocol (SIP), all applications that use Hypertext Transfer Protocol (HTTP)) or transport-layer protocol (e.g., all applications that use TCP, all applications that use User Datagram Protocol (UDP)), or all applications that have similar technical requirements (e.g., all latency-sensitive applications, all latency-insensitive applications). A network provider discriminates “based on class of application” if it treats the application differently depending on whether it belongs to the class or not. Since classes are defined by a common characteristic that the applications in the class share, discrimination based on class of application is the same as discrimination based on a characteristic of an application. For example, assume that a network provider discriminates against all applications that use the BitTorrent protocol. In this case, the criteria that is used to discriminate is “uses the BitTorrent protocol,” which is a characteristic of an application. At the same time, the class is “all applications that use the BitTorrent protocol,” and the network provider discriminates among applications based on whether they belong to this class or not.

plies equally to discrimination based on criteria that depend on characteristics of content or of a service or use. Thus, discrimination against certain content based on, for example, publisher, author, content type, subject matter, or viewpoint would also all be prohibited by this rule.

The rule should be coupled with an exception for reasonable network management that requires reasonable network management to be as application-agnostic as possible and allows the use of narrowly tailored application-specific measures only if a problem cannot be solved in an application-agnostic manner. (See Box 18: The Exception for Reasonable Network Management below.)

This rule plays an important role in the FCC's Open Internet Order. The Order's nondiscrimination rule for fixed broadband access banned discrimination that is unreasonable. Whether discriminatory behavior complies with the rule proposed by this Article and described in this Subpart (i.e., whether it is application-agnostic) is one of the factors the FCC proposed to use to determine the reasonableness of discriminatory conduct under the Open Internet Order's nondiscrimination rule and exception for reasonable network management.

BOX 18

THE EXCEPTION FOR REASONABLE NETWORK MANAGEMENT

Network neutrality rules usually include an exception for reasonable network management. Behavior that would otherwise violate the rule against blocking or the nondiscrimination rule is allowed if it constitutes "reasonable network management" as defined by that exception.

The rule proposed in the text should be coupled with an exception for reasonable network management that requires reasonable network management to be as application-agnostic as possible and allows the use of narrowly tailored application-specific measures only if a problem cannot be solved in an application-agnostic manner.⁴⁴⁵

More formally, to qualify as reasonable network management, the practice would have to further a legitimate network management purpose and be narrowly tailored to address that purpose. In the context of network neutrality rules, the term "network management" refers to technical measures whose pur-

445. See, e.g., van Schewick, Notice of Ex Parte Meetings, *supra* note 53, at 5; van Schewick, Official Testimony, *supra* note 68, at 4-8; van Schewick, Oral Testimony, *supra* note 236; van Schewick, *supra* note 406; van Schewick, *supra* note 263. During the Open Internet proceeding, the proposed exception was supported by, for example, networking experts, e.g., NYSERNet Ex Parte Letter, *supra* note 443, at 2; venture capitalists, e.g., Borthwick, *supra* note 443; Burnham, *supra* note 443; *Regulation Strangulation*, *supra* note 443; entrepreneurs, e.g., Zediva Ex Parte Letter, *supra* note 236; and nonprofit organizations, e.g., Council of Scientific Society Presidents Ex Parte Letter, *supra* note 443; Bentological Society Ex Parte Letter, *supra* note 443; Botanical Society Ex Parte Letter, *supra* note 443.

pose is “to maintain, protect, and ensure the efficient operation of a network.”⁴⁴⁶ Network management includes, for example, managing congestion or protecting the security of a network.⁴⁴⁷ To qualify as narrowly tailored, the practice would have to, among other things, be as application-agnostic as possible and result in as little discrimination or preference as reasonably possible.⁴⁴⁸ The treatment of network management practices under the proposed rule is described in more detail in Part II.D.2.b.i.B below.

The rule described in this Subpart bans all discrimination among applications and classes of applications that is based on application-specific criteria, regardless of whether the applications or classes are alike or not. Thus, contrary to some nondiscrimination rules in other areas of law, this approach does not require an analysis of whether the applications or classes of applications that are treated differently based on application-specific criteria are “alike” or “similarly situated.” Nor is there an inquiry into whether the differential treatment of like applications or classes of applications is somehow justified. Instead, the rule strictly bans all discrimination based on application-specific criteria. The only way to justify instances of application-specific discrimination would be through the reasonable network management exception or any other exception that applies to the nondiscrimination rule.

Under this approach, a network provider would not be allowed to treat Vonage differently from Skype, or Comcast’s XfinityTV.com differently from Hulu. That would be discrimination based on application.⁴⁴⁹ Nor would a network provider be allowed to treat online video differently from e-mail, treat applications that use the BitTorrent protocol differently from applications that do not use this protocol, or treat latency-sensitive applications differently from latency-insensitive applications. That would be discrimination based on class of application.⁴⁵⁰ But it would be allowed to treat data packets differently based on application-agnostic criteria—criteria that have nothing to do with the application or class of application. (See Box 19: A Technical Perspective on Application-Specific vs. Application-Agnostic Discrimination below.) For example, a network provider could give one person a larger share of the available bandwidth if that person has paid for a higher tier of Internet service (e.g., if that person has paid for the “Up to 6 Mbps” Internet service packet instead of the

446. Public Interest Comments, *supra* note 36, at 37.

447. On the definition of network management, see Center for Democracy & Technology Comments, *supra* note 36, at 41-43; and Public Interest Comments, *supra* note 36, at 37-41.

448. This formulation mirrors proposals by many network neutrality proponents. See, e.g., Open Internet Coalition Comments, *supra* note 36, at 48-50; Public Interest Comments, *supra* note 36, at 35-41.

449. On the meaning of “discrimination based on application,” see note 444 above.

450. On the meaning of “discrimination based on class of application,” see note 444 above.

“Up to 3 Mbps” Internet service packet).⁴⁵¹ During times of congestion, a network provider could give one person a larger share of the available bandwidth than another, for example, because this person pays more for Internet access or has used the Internet less over a certain period of time.⁴⁵² That would be application-agnostic discrimination. But it could not throttle the bandwidth available to a specific online video application such as Hulu in particular or to online video in general. That would be application-specific discrimination.

BOX 19

A TECHNICAL PERSPECTIVE ON APPLICATION-SPECIFIC VS. APPLICATION-AGNOSTIC DISCRIMINATION

As David Reed has pointed out, thinking about the proposed rule in the context of the Internet’s original architecture may help clarify the functioning of the rule.⁴⁵³ The Internet’s original architecture was based on the layering principle and the broad version of the end-to-end arguments. The layering principle, as applied to networking, prescribes that a lower-layer protocol may not make any assumptions about the content or meaning of the message (or, more technically, protocol data unit) passed to it by a higher-layer protocol for delivery to its higher-layer protocol peer.⁴⁵⁴ The lower-layer protocol may neither access nor act on the information contained in a higher-layer protocol data unit. This constraint preserves the central feature of layering: the independence of lower layers from higher layers. Thus, applied to the Internet Protocol (IP)—the protocol at the Internet layer—the layering principle prescribes that the Internet Protocol may not make any assumptions about the content or the meaning of the messages it is transporting on behalf of higher-layer protocols and may neither access nor act on the information contained in these messages. In

451. See Center for Democracy & Technology Comments, *supra* note 36, at 25-26.

452. See Reply Comments of the Center for Democracy & Technology at 19-20, 22, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Apr. 26, 2010) [hereinafter Reply Comments of the Center for Democracy & Technology], available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020437353> (arguing in favor of a strict nondiscrimination rule but asking the FCC to clarify that “the nondiscrimination rule shall not be interpreted to bar or restrict broadband providers from differentiating or prioritizing among Internet traffic based on the usage volumes, usage patterns, or subscription plans of the individual subscribers sending or receiving such traffic”); Center for Democracy & Technology Comments, *supra* note 36, at 25-26.

453. See Reed, *supra* note 2. David Reed is one of the network engineers involved in the design of the Internet’s original architecture and one of the authors of a famous paper that first identified and described the “end-to-end arguments,” a key design principle of the Internet. On the end-to-end arguments, see notes 2, 56, and 61 above.

454. For a detailed explanation and references to the literature, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 52, 56-57.

other words, in the Internet's original architecture, the layering principle forced the network to be application-blind and application-agnostic.⁴⁵⁵

The proposed rule is not identical with the constraints imposed by the layering principle. In particular, the rule does not ban any violations of the layering principle as such. For example, the rule does not prevent network providers from using deep packet inspection in the network to access and analyze the higher-layer protocol data units transported by the Internet Protocol on behalf of higher-layer protocols; nor does it prohibit network providers from making assumptions about the meaning of these higher-layer protocol data units. But if network providers have somehow acquired information about the content or meaning of the payload of the Internet Protocol packets, the ban on application-specific discrimination prevents them from discriminating based on that information. Thus, with respect to network providers' ability to discriminate among applications based on application-specific criteria, the nondiscrimination rule creates the same effect that compliance with the layering principle would have created.⁴⁵⁶ Translated into the less technical terminology used throughout this Article, while the rule creates the same effect as an application-blind network, the rule does not actually require the network to fully comply with the layering

455. See Reed, *supra* note 2 (arguing that the Internet's original architecture forced the Internet to be application-agnostic).

An application-blind network is unable to distinguish among the applications on the network, and, as a result, it is unable to make distinctions among data packets based on this information. An application-agnostic network may have information about the applications on the network, but does not make distinctions among data packets based on this information. Since the layering principle prevented the Internet layer from accessing higher-layer protocol data units or from making assumptions about their content and meaning, the Internet was unable to distinguish among the applications on the network and therefore was unable to make distinctions among applications. Thus, it was application-blind and, like all application-blind networks, necessarily application-agnostic. *See supra* Box 4.

456. See Reed, *supra* note 2. Reed argues that the rule proposed by this Article and described in this Subpart effectively requires by law what the original design of the Internet required by code. He then proposes to replace the proposed rule with one that "requir[es] those who offer Internet service to implement the Internet design as it was intended." *Id.* Reed goes on to say that,

[i]n particular: We don't need a complex rule defining "applications" in order to implement an application agnostic Internet. We have the basis of that rule—it's in the "code" of the Internet. What we need from the "law" is merely a rule that says a network operator is not supposed to make routing decisions, packet delivery decisions, etc. based on contents of the packet. Only the source and destination addresses and the labels on the packet put there to tell the network about special handling, priority, etc. need to be understood by the network transport, and that is how things should stay, if we believe that Barbara [van Schewick] is correct that only application-agnostic discrimination makes sense.

Id.

principle and be application-blind. It only requires the network to be application-agnostic.⁴⁵⁷ (For an explanation of the rationale behind this decision, see Box 4: Application-Agnostic vs. Application-Blind above.)

Thinking about the rule in this way may help clarify the distinction between application-specific and application-agnostic discrimination. In particular, in the current Internet, a practice that requires knowledge about the content and meaning of the payload of the Internet Protocol packets traveling through the network would not be application-agnostic.⁴⁵⁸ Note, though, that the classification of a practice as application-specific does not depend on how the knowledge about the content and meaning of the payload is acquired. For example, identifying encrypted Internet telephony applications or encrypted peer-to-peer file-sharing applications based on their traffic patterns and using that information as the basis for differential treatment constitutes application-specific discrimination. Similarly, identifying applications based on the port numbers typically used by that application and using that information as the basis for differential treatment constitutes application-specific discrimination as well.

Application-specific discrimination requires knowledge about the application or class of application that the user is using—knowledge that a network provider in an application-blind network (e.g., in the original Internet) would not have. A network provider in an application-blind network would, however, be able to engage in differential treatment that does not require knowledge about the application or class of application, and the rule maintains that ability. In sum, the rule bans all forms of discrimination that would not be possible in an application-blind network and allows all forms of discrimination that would be available in such a network. Thus, the rule recreates through law the environment for application innovation and network use that an application-blind network such as the original Internet would create by virtue of its architectural design.⁴⁵⁹

A network provider in an application-blind network cannot engage in application-specific discrimination because it does not have the information necessary to do so. By contrast, the nondiscrimination rule proposed here does not prevent network providers from collecting application-specific information. It only prevents them from using this information to, for example, discriminate

457. The decision to require only application-agnosticism in the context of network neutrality rules is not meant to imply that network providers should have the unlimited right to collect information about applications or user behavior. In particular, concerns about user privacy may justify limiting network providers' ability to collect information through privacy law. For further discussion, see Box 4 above.

458. See Reed, *supra* note 2.

459. See also *id.* (arguing that the rule proposed in the text effectively requires by law what the original design of the Internet required by code); *supra* Box 19.

among data packets or charge differently based on application-specific criteria.⁴⁶⁰ Thus, while the rule creates the same environment for application innovation and network use as an application-blind network, it does not require the network to be “blind.” It only requires the network to be application-agnostic.⁴⁶¹ (The rationale behind this decision is explained in Box 4: Application-Agnostic vs. Application-Blind above. See also Box 19: A Technical Perspective on Application-Specific vs. Application-Agnostic Discrimination above.)

Contrary to proposals based on an antitrust framework, the rule applies to all network providers, regardless of their market share in the market for Internet services,⁴⁶² and to all application-specific discriminatory conduct, regardless of whether the conduct is capable of monopolizing the market for the affected applications.⁴⁶³ Any measure that singles out an application or class of applications for differential treatment tilts the playing field against some applications or classes of application and interferes with users’ decisions about how to use the network, creating significant social costs.⁴⁶⁴ The fact that the application-specific practice may serve a network provider’s “legitimate business interest” as understood by the antitrust laws (e.g., if the goal of the practice is to manage congestion or to engage in price discrimination to recover the fixed costs of network infrastructure) is not sufficient to overcome the ban.⁴⁶⁵ The social costs of application-specific discrimination result from the discriminatory conduct as such and are independent of the network provider’s motivation.

Even application-specific discrimination that does not seem to have the potential to harm any applications (e.g., providing different types of service (“Quality of Service”) to different classes of applications according to their needs, or prioritizing time-sensitive applications over non-time-sensitive applications during times of congestion) creates considerable social costs.⁴⁶⁶ At the same time, network providers can usually realize their legitimate goals using application-agnostic means that are not similarly harmful to application innovation, user choice, or the Internet’s ability to reach its social, cultural, or political

460. For a full discussion of the kind of differential treatment subject to the rule, see Part II.A above.

461. The decision to require only application-agnosticism in the context of network neutrality rules is not meant to imply that network providers should have the unlimited right to collect information about applications or user behavior. In particular, concerns about user privacy may justify limiting network providers’ ability to collect information through privacy law. For further discussion, see Box 4 above.

462. See the discussion of the disclosure rule in Part II.D.1 above. For a full analysis, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 255-64. *See also supra* notes 204-05.

463. *See supra* notes 188-203 and accompanying text.

464. *See VAN SCHEWICK, ARCHITECTURE AND INNOVATION, supra* note 2, chs. 6-9, at 215-375; *see also supra* notes 198-203, 372-81, 383-442 and accompanying text.

465. *See supra* notes 206-17 and accompanying text.

466. *See supra* notes 366-440 and accompanying text.

potential. Network providers can, for example, manage their networks in application-agnostic ways, price discriminate based on application-agnostic criteria, or differentiate their services by offering Quality of Service in line with the rule.⁴⁶⁷ In the rare cases in which a network management problem cannot be solved in an application-agnostic manner, the reasonable network management exception allows network providers to deviate from the nondiscrimination rule in narrowly tailored ways.⁴⁶⁸

These rules are necessary because network providers' decisions about whether, when, and how to engage in discrimination will not necessarily result in socially desired outcomes.⁴⁶⁹ Network providers are not beneficial stewards of the Internet platform. They are private actors that pursue their private interests. Network providers' private interests often differ from users' interests, and even if they do not, network providers do not know exactly what users want.⁴⁷⁰ Network providers' private interests and the public's interests with respect to the evolution of the Internet diverge as well. It is this market failure that network neutrality rules are designed to address.⁴⁷¹ For a variety of reasons, network providers capture only a small part of the social value resulting from an open Internet. For example, they capture only some of the social benefits associated with application innovation or resulting from improved democratic discourse.⁴⁷² Moreover, most of the gains they are able to capture are uncertain and will be realized in the future, which leads network providers to discount them even more.⁴⁷³

Compared with other proposals for nondiscrimination rules, this rule strikes the best balance between social benefits and social costs. The rule preserves the application-agnosticism of the network and the principle of user choice, two factors that have been central to the Internet's ability to foster innovation in the past.⁴⁷⁴ By prohibiting application-specific discrimination, the proposed rule makes it impossible for network providers to distort competition among applications or classes of applications. The rule allows users, not network providers, to choose how they want to use the network and which applications will be successful. Letting users make this choice not only increases the

467. On network management, see Part II.D.2.b.i.B below. On Quality of Service, see Part II.D.2.b.i.A below.

468. *See supra* Box 18.

469. This Subpart summarizes arguments that I have developed in detail elsewhere. *See* sources cited *infra* notes 470-74.

470. *See supra* notes 431-36 and accompanying text.

471. For a detailed discussion, see VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 355-71 (describing the public interest); *id.* at 371-75 (describing network providers' private interests and why they diverge from the public interest).

472. *Id.* at 373-74; *see also* Frischmann, *supra* note 32, at 1009-12; Frischmann & van Schewick, *supra* note 36, at 400-03, 424-25; Hogendorf, *supra* note 205, 195-203.

473. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 374-75.

474. On these factors and their economic, social, cultural, and political impact, see notes 56-65 and accompanying text above. *See also supra* Boxes 3-4.

value of the Internet for users and for society, but also is an important part of the mechanism that enables application-level innovation to function effectively. In addition, maintaining application-agnosticism and user choice is crucial to allowing the Internet to realize its social, cultural, and political potential.

i. *Allowing the network to evolve*

The proposed rule does not constrain the evolution of the network infrastructure more than is necessary to reach the goals of network neutrality regulation. It provides room for networks to evolve.⁴⁷⁵

A. *Quality of Service*

The rule allows network providers to offer certain (though not all) forms of Quality of Service. In particular, it allows network providers to offer different classes of service if they meet the following conditions: (1) the different classes of service are available equally to all applications and classes of applications; (2) the user is able to choose whether, when, and for which application to use which class of service,⁴⁷⁶ and (3) the network provider is allowed to charge only its own Internet service customers for the use of the different classes of service.⁴⁷⁷

475. For early versions of the arguments in this Subpart, see generally van Schewick, December 2010 Ex Parte Letter, *supra* note 52, at 14-15; van Schewick, August 2010 Attachment, *supra* note 52, at 7.

476. Although the exact details vary (some would allow user-controlled Quality of Service only during times of congestion), many network neutrality proponents would allow the type of user-controlled Quality of Service described in the text. See Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 20-21, 23 (stating that the FCC should clarify that “the nondiscrimination rule shall not be interpreted to bar or restrict broadband providers from enabling individual subscribers to designate certain traffic streams for prioritized or differentiated treatment”); Reply Comments of Google Inc. at 36, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Apr. 26, 2010), *available at* <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020438889>; Center for Democracy & Technology Comments, *supra* note 36, at 26-27; Free Press Open Internet Comments, *supra* note 3, at 103-04 (stating that if there is a demonstrated need for priority, users should make the choice); Open Internet Coalition Comments, *supra* note 36, at 50-51 (discussing some of the potential options for user-controlled Quality of Service); Comments of Skype Communications S.A.R.L. at 16-20, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (Jan. 14, 2010), *available at* <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020377906>; van Schewick, Official Testimony, *supra* note 68, at 7-8 (discussing the question in the context of the reasonable network management exception); NETWORK TRAFFIC MANAGEMENT, *supra* note 357, at 16-18, 23 (supporting the model of user-controlled Quality of Service described in the text); IEEE POSITION STATEMENT, *supra* note 357, at 2-3; Jordan & Ghosh, *supra* note 366, at 12:14, :21-:22; Lennett, *supra* note 357, at 143-45.

477. This condition prohibits a provider of last-mile Internet access from charging the end user at the other end of the connection (e.g., an application provider) as well as from charging interconnecting networks, content delivery networks, or application providers that

For example, a network provider could offer a low-delay service, a best-effort service, a less-than-best-effort service, and a guaranteed-bandwidth service. The decision of whether and when to use which service would be left to the user. For example, one user might use the low-delay service for Internet telephony, another might use it for online gaming, and a third might use it for e-mail, if that is what that user wants. This type of user-controlled Quality of Service is technically feasible.⁴⁷⁸ (The technical feasibility of this type of Quality of Service and other questions regarding the impact of the proposed rule on Quality of Service are discussed in Part II.D.2.b.iii below.)

While the first two conditions directly follow from the proposed nondiscrimination rule,⁴⁷⁹ the third condition is based on additional considerations and would need to be encoded separately.⁴⁸⁰

directly interconnect with a last-mile Internet service provider. See Question 3 in Part III.D.2.b.iii below.

I explain the rationale for this criterion elsewhere. *See* sources cited *supra* note 29. The question of whether and, if so, whom network providers should be allowed to charge for Quality of Service or other forms of preferential treatment is outside the scope of this Article. For a short overview of the options, see Box 2 and notes 29-30 and accompanying text above.

478. This statement is based on many conversations with networking experts. *See also* Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 20-21; Center for Democracy & Technology Comments, *supra* note 36, at 27; Jordan & Ghosh, *supra* note 366, at 12:21. Network providers sell business customers the option to choose the level of Quality of Service for their packets today. For example, customers of Verizon's Private IP Enhanced Traffic Management offering can mark their data packets for the desired class of service, which is then delivered by Verizon's network. Verizon Presentation, *supra* note 171, at 25, 29. For a prototype targeting home users, see Yiakoumis et al., *supra* note 434, at 1116-18, which won the Grand Prize at the Imagine App Challenge at the Cable Show 2012. *See* Mari Silbey, *Stanford Team Wins Cable Show App Challenge*, SMARTPLANET (May 24, 2012, 7:55 AM PDT), <http://www.smartplanet.com/blog/thinking-tech/stanford-team-wins-cable-show-app-challenge/11743>; Todd Spangler, *Cable Show 2012: Stanford Team Wins 'App Challenge' with Bandwidth-Priority System*, MULTICHANNEL NEWS (May 23, 2012), <http://www.multichannel.com/news/mobile/cable-show-2012-stanford-team-wins-app-challenge-bandwidth-priority-system/306206>. For a more detailed discussion, see the response to Question 9 in Part II.D.2.b.iii below.

The form of user-controlled Quality of Service described in the text does not violate the broad version of the end-to-end arguments. VAN SCHEWICK, ARCHITECTURE AND INNOVATION, *supra* note 2, at 106-07. On the broad version of the end-to-end arguments, see note 2 above.

479. Deviating from the first condition by making a specific type of service available only to some applications or classes of applications (e.g., only to the provider's own online video application, or only to online gaming, but not Internet telephony) would make distinctions among applications and classes of applications based on application-specific criteria (here, application or application type) and would thus violate the requirement that differential treatment must be application-agnostic. The second condition ensures that the differential treatment associated with the actual provision of the different types of services in the network happens based on an application-agnostic criterion (here, the type of service chosen by the user for that particular packet).

A network provider that is allowed to charge for Quality of Service has an incentive to degrade the quality of the baseline, best-effort service to motivate users to pay for an enhanced type of service. The existence of this incentive is well documented in the economic literature on price discrimination and is one of the main motivations behind proposals to ban Quality of Service.⁴⁸¹ To mitigate this problem, the rules should require the regulatory agency in charge of enforcing the network neutrality rules to monitor the quality of the baseline service and set minimum quality standards if the quality of the baseline service drops below appropriate levels.⁴⁸²

This type of user-controlled Quality of Service offers the same potential social benefits as other, discriminatory or provider-controlled forms of Quality of Service without the social costs. In particular, it does not raise any of the problems associated with “like treatment.” Contrary to like treatment, it preserves the application-agnosticism of the network, the principle of user choice, and the principle of innovation without permission.

First, the proposal maintains the application-agnosticism of the network. The provision of Quality of Service is dependent not on which applications users are using but on the Quality of Service-related choices that users make. Thus, the network provider does not need to know anything about which applications are using its network in order for this scheme to work. The network provider only makes different classes of service available but does not have any

480. Under the network neutrality regime that I propose, the restrictions on charging application providers that are not an Internet service provider’s Internet access customers would be captured by a prohibition on all forms of access fees. I explain the rationale for a ban on access fees elsewhere. See sources cited *supra* notes 29-30. My network neutrality regime would also include a rule that prohibits last-mile Internet service providers from charging interconnecting networks, content delivery networks, or application providers that interconnect directly with last-mile Internet service providers for the termination and transport of their traffic to and from that Internet service provider’s subscribers. On access fees, see note 62 (defining the term) above as well as Box 2 and notes 29-30 and accompanying text above. On interconnection, see the response to Question 3 in Part II.D.2.b.iii below. These questions are outside the scope of this Article.

481. See *supra* notes 110-11 and accompanying text.

482. How to best address this incentive is an important question that deserves further discussion. The incentive to degrade the quality of the baseline service arises only if network providers are allowed to charge for Quality of Service. If they are not allowed to charge for it, they do not benefit from users’ increased use of better-than-best-effort services and, therefore, do not have an incentive to degrade the quality of the baseline, best-effort service to motivate users to use more enhanced services. Thus, instead of adopting the solution proposed in the main text of this Article, regulators could mitigate this problem by prohibiting network providers from charging for the provision of Quality of Service. Such a ban creates its own social costs, though. Like all issues related to charging for Quality of Service, these questions are outside the scope of this Article. For a discussion of the problem and of potential solutions, see van Schewick, Background Paper, *supra* note 29, at 10-11. The European Union has adopted a similar rule following its review of the regulatory framework for telecommunications services. See Directive 2009/136/EC, *supra* note 292, art. 22(3), at 25; *Impact Assessment*, *supra* note 293, at 92, 95-97, 101.

role in deciding which application gets which Quality of Service; this choice is for users to make. As a result, network providers cannot use the provision of Quality of Service as a mechanism to deliberately or inadvertently distort competition among applications or classes of applications.⁴⁸³

Second, since users choose when and for which applications to use a given type of service (in line with the principle of user choice), they can get exactly the Quality of Service that meets their needs.⁴⁸⁴ As discussed repeatedly throughout this Article,⁴⁸⁵ users' preferences with respect to Quality of Service will often differ across users and, for the same user, over time. Network providers may not always want to meet users' preferences, and even if they do, they lack the information necessary to infer a specific user's preferences, which are often highly context specific. As a result, Quality of Service systems that let network providers determine whether and when to provide Quality of Service will often fail to meet user needs. Letting users make the choice removes this problem.

Third, in line with the principle of "innovation without permission," an innovator does not need support from the network provider in order for his application to get the Quality of Service it needs. The only actors who need to be convinced that the application needs Quality of Service are the innovator, who needs to communicate this to the user, and the user, who wants to use the application.⁴⁸⁶ This greatly increases the chance that an application can get the type of service it needs.

User-controlled Quality of Service is not without costs. In particular, asking users to decide whether, when, and for which applications to use Quality of Service imposes a burden on them. Users do not necessarily know enough to decide which class of service would be suitable for which application, so they may not be able to make "good" choices. Others may not want to bother with such technical details.

These problems can be mitigated, though. Applications know which type of service they would benefit from and could communicate this to the user. Applications that really benefit from a special type of service have an incentive to make it as easy as possible for their users to request that service. For example, if the network supports service discovery, the application could check whether the network offers potentially useful classes of service, monitor the performance of the application, and ask for the user's permission to request an appropriate class of service, if the need arose. User interfaces can be designed to mask the technical details and make the selection of Quality of Service easy

483. See Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 27.

484. van Schewick, Official Testimony, *supra* note 68, at 7 (discussing the question in the context of the reasonable network management exception); RILEY & SCOTT, *supra* note 412, at 8; Lennett, *supra* note 357, at 143-45.

485. See *supra* notes 147, 430-36 and accompanying text.

486. See Center for Democracy & Technology Comments, *supra* note 36, at 26-27.

and intuitive.⁴⁸⁷ For example, Skype could offer a simple button through which users could request high quality. The user would only need to understand that the button exists and that clicking on it results in a high-quality call. What the application does to make this happen (e.g., which type of service Skype requests from the network) can be hidden behind the interface. In addition to applications, other entities like end hosts or home routers could offer their own user interfaces that allow users to make Quality of Service-related choices and could even offer different interfaces to support users with varying levels of sophistication.⁴⁸⁸

Users who are not interested in making their own Quality of Service choices could outsource this task to a trusted third party. Home networks, which often support multiple devices potentially operated by different users and running applications with diverse needs, have become quite complex, making them more difficult to manage and secure. Today, companies like Meraki, PowerCloud, and Aruba offer remote network management for small enterprises, and residential users may similarly benefit from the option to outsource the management of their home network to an outside provider.⁴⁸⁹ Managing the user's Quality of Service needs by dynamically selecting appropriate classes of service for the various devices, applications, and members of the user's household based on occasional or more frequent high-level input from the user might become part of such offerings.⁴⁹⁰

Thus, the increase in complexity can be mitigated, and any remaining costs are more than offset by the benefits that accrue to users and to society as a whole.

B. Network management

The proposed nondiscrimination rule allows any differential treatment that is application-agnostic. This includes any network management practices that treat traffic differently based on application-agnostic criteria.⁴⁹¹ In addition, the

487. For a more detailed discussion of the role of user agents who bridge the gap between users and the network and a description of three prototypes for user agents with easy and intuitive user interfaces, see Yiakoumis et al., *supra* note 434.

488. See *infra* Part II.D.2.b.iii, Question 9.

489. See, e.g., Nick Feamster, *Outsourcing Home Network Security*, 2010 PROC. 2010 ACM SIGCOMM WORKSHOP ON HOME NETWORKS 37 (proposing an approach for outsourcing home network security); Yiannis Yiakoumis et al., *Slicing Home Networks*, 2011 PROC. 2ND ACM SIGCOMM WORKSHOP ON HOME NETWORKS 1 (proposing a mechanism for outsourcing home network management more generally and describing an initial prototype that has been deployed).

490. See Yiakoumis et al., *supra* note 489, at 3 (explicitly discussing this possibility).

491. Network management practices that treat traffic differently based on application-agnostic criteria would be allowed under the proposed nondiscrimination rule as such, since that rule allows any differential treatment that is application-agnostic. Thus, under the proposed rule, such application-agnostic network management practices would not need to meet the requirements of the reasonable network management exception. See *supra* note 443. On

proposed reasonable network management exception requires network management to be as application-agnostic as possible. The exception allows the use of narrowly tailored application-specific measures only if a problem cannot be solved in an application-agnostic manner.⁴⁹²

This proposal gives network providers the tools they need to manage their networks and maintain the quality of the Internet experience for all users, while preserving the application-agnosticism of the network and the principle of user choice as much as possible.⁴⁹³ Network providers can enforce fairness among users and prevent aggressive users from overwhelming the network by allocating bandwidth among users in application-agnostic ways. During times of congestion (i.e., during times when a link's average utilization is high),⁴⁹⁴ network providers may limit the amount of capacity available to users of that link based on application-agnostic criteria. A network provider could give one person a larger share of the available bandwidth than another, for example, because this person pays more for Internet access or has used the Internet less over a certain period of time.⁴⁹⁵ Even during times of congestion, network providers cannot, however, interfere with how users use the (limited) capacity available to them, for example, by selectively blocking or discriminating against specific applications or classes of applications. Such application-specific traffic management practices would violate the rule's ban on application-specific discrimination and the reasonable network management exception. Thus, while the amount of bandwidth available to a user during times of congestion may be limited, users still get to decide how to use that bandwidth without interference from network providers.

To the extent that applications benefit from relative prioritization or other forms of differentiated treatment during times of congestion (i.e., during times

the definition of network management, see Box 18 above. For a longer discussion of the policy arguments driving the treatment of network management measures proposed in the text, see van Schewick, Official Testimony, *supra* note 68, at 4-8; van Schewick Oral Testimony, *supra* note 236; and van Schewick, *supra* note 406. See also *supra* notes 213-16, 251-58, 268-75 and accompanying text.

492. For a more detailed description of the reasonable network management exception proposed by this Article, see Box 18 above.

493. Application-agnostic network management preserves application-agnosticism and user choice. These principles are compromised only if application-agnostic network management is impossible.

494. In discussions of the reasonable network management exception, the term "congestion" is generally used according to the definition of congestion used by network providers. Under that definition, congestion occurs if the average utilization of a link over a certain time period exceeds a certain threshold. See *supra* Box 7.

495. See Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 19-20, 22 (arguing in favor of a strict nondiscrimination rule, but asking the FCC to clarify that "the nondiscrimination rule shall not be interpreted to bar or restrict broadband providers from differentiating or prioritizing among Internet traffic based on the usage volumes, usage patterns, or subscription plans of the individual subscribers sending or receiving such traffic"); Center for Democracy & Technology Comments, *supra* note 36, at 25-26.

when a link's average utilization is high),⁴⁹⁶ network providers could allow users to choose which applications to prioritize or otherwise treat differently during these times.⁴⁹⁷ As long as the option to be prioritized or be treated differently is offered equally to all applications or classes of applications (i.e., not tied or restricted to specific applications or classes of applications) and the choice of which applications to prioritize or treat differently is left to the user, this form of network management would be consistent with the nondiscrimination rule and reasonable network management exception proposed above.⁴⁹⁸

Tools for application-agnostic congestion management are available today. For example, Comcast, the largest provider of broadband Internet access services in the United States,⁴⁹⁹ adopted an application-agnostic congestion management system in response to the FCC's order against Comcast in 2008.⁵⁰⁰ According to Comcast, "Comcast's trials and subsequent national deployment indicate that this new congestion management system ensures a quality online experience for all of Comcast's HSI [High Speed Internet] customers."⁵⁰¹ Thus, it is possible to protect the quality of the Internet experience of all Internet service customers in application-agnostic ways. Beyond Comcast's approach, vendors have developed network management solutions that allow the network provider to allocate bandwidth among users in an application-agnostic manner, while letting users choose the relative priority of applications within the bandwidth allocated to them.

The proposed rule is also compatible with new standards that are currently being developed by the Congestion Exposure Working Group in the Internet Engineering Task Force.⁵⁰² These standards would evolve the existing standards for the TCP/IP protocol suite in a way that allows the network provider to determine how much a user's traffic is contributing to congestion at any point in time. This information would allow network providers to manage their networks based on a user's contribution to congestion.⁵⁰³ Network providers could

496. On the use of the term "congestion," see note 494 above.

497. van Schewick, Official Testimony, *supra* note 68, at 7-8; Jordan & Ghosh, *supra* note 366, at 12:17-20.

498. See the discussion of Quality of Service in the previous Subpart.

499. Press Release, Leichtman Research Grp., *supra* note 194.

500. For descriptions of Comcast's application-agnostic network management system, see Comcast Corp. Description of Planned Network Management Practices to be Deployed Following the Termination of Current Practices, Letter from Kathryn Zachem, *supra* note 102, Attachment B; Zachem Letter, *supra* note 393, at 1-3; and Bastian et al., *supra* note 392.

501. Bastian et al., *supra* note 392, at 23.

502. See *Congestion Exposure (CONEX): Charter for Working Group*, INTERNET ENGINEERING TASK FORCE, <https://datatracker.ietf.org/wg/conex/charter> (last visited Jan. 7, 2015).

503. For an overview, see generally Arnaud Jacquet et al., *Policing Freedom to Use the Internet Resource Pool*, 2008 PROC. 2008 ACM CoNEXT CONF.; and B. Briscoe et al., Internet Eng'g Task Force, RFC 6789, Congestion Exposure (ConEx) Concepts and Use Cases (Dec. 2012), <https://tools.ietf.org/html/rfc6789>.

use this information, for example, to allocate bandwidth among users during times of congestion based on their contribution to congestion, charge users based on their contribution to congestion, or count only traffic that contributes to congestion towards a user's monthly usage cap. Since a user's contribution to congestion is an application-agnostic criterion, all of these forms of differential treatment would be allowed under the proposed rule.

From a technical perspective, application-agnostic network management has the added advantage of ending the arms race between application developers, users, and network providers that often develops in networks that use application-specific network management practices. Network management practices that single out specific applications or classes of applications for special treatment often motivate application developers to masquerade their applications to evade performance-reducing practices targeting their applications or to take advantage of performance-enhancing treatment provided to other applications, resulting in a cat-and-mouse game between network providers on the one hand and application developers and users on the other hand.⁵⁰⁴ Application-agnostic network management practices remove this incentive, freeing resources for network providers, application developers, and users.

In sum, network providers will often be able to manage their networks in application-agnostic ways, which maintains the application-agnosticism of the network and the principle of user choice. In the rare cases in which a problem cannot be solved in an application-agnostic manner, the reasonable network management exception provides a safety valve by allowing network providers to use narrowly tailored application-specific measures.⁵⁰⁵

ii. *Certainty and costs of regulation*

The proposed rule does not suffer from the same definitional ambiguities and does not offer similar possibilities to game the system as a rule that requires like treatment, resulting in lower costs of regulation. Since the rule clearly specifies in advance which behavior is and is not acceptable, it is also easier and less expensive to enforce than the standards-based approaches discussed above.⁵⁰⁶ Contrary to those approaches, the rule is immediately applicable to all industry participants. This not only removes the need to readjudicate similar cases again and again;⁵⁰⁷ it also avoids the intertemporal inconsistencies across

504. See *supra* notes 269-72 and accompanying text.

505. For a more detailed description of the reasonable network management exception proposed by this Article, see Box 18 above.

506. See generally 1 PIERCE, *supra* note 241, § 6.8, at 497-98, 500 (describing how rulemaking is more efficient and fairer than standards-based approaches). For a more detailed discussion, see Parts II.C.3 and II.C.4 above.

507. See generally 1 PIERCE, *supra* note 241, § 6.8, at 497-500.

industry actors and across different decisionmakers that are unavoidable under a standards-based approach.⁵⁰⁸

Of the approaches discussed in this Article, only the all-or-nothing approaches and the disclosure rule have lower costs of regulation. They, however, either are too restrictive, prohibiting socially beneficial forms of discrimination and restricting the evolution of the network more than necessary to protect the values that network neutrality regulation is designed to protect (like the approaches that ban all discrimination), or do not sufficiently protect the values that network neutrality regulation is designed to protect (like the approaches that allow all discrimination or the disclosure rule).

By clearly specifying acceptable and unacceptable behavior in advance, the rule provides certainty to all industry participants and avoids the many problems associated with determining the legality of specific discriminatory conduct after the fact in case-by-case adjudications outlined above. In particular, it does not tilt the playing field against those—end users, low-cost innovators, or start-ups, nonprofits, independent artists, and members of underserved communities—who do not have the resources to fight over the correct interpretation and application of the rule in the future. Network providers know how they can manage their networks. Application developers and their investors know that they will have a fair chance in the marketplace—that they will be able to reach users and compete with other applications on the merits, without interference from network providers.⁵⁰⁹

In addition to the costs of the nondiscrimination rule itself, there will be costs from the proposed exception for reasonable network management and the proposal to require the regulatory agency in charge of enforcing the network neutrality rules to monitor the quality of the baseline service and set minimum quality standards if the quality of the baseline service drops below appropriate levels.

The reasonable network management exception may require case-by-case adjudications to determine whether application-agnostic ways of solving the network management problem in question are available and, if not, whether the chosen application-specific measure is narrowly tailored. All proposals for network neutrality rules include an exception for reasonable network management to ensure that network neutrality rules do not unduly interfere with network providers’ ability to manage their networks. Thus, all network neutrality regimes will be afflicted with the costs of adjudications under that exception. Contrary to some alternative proposals for a reasonable network management exception that would allow network management as long as it is “reasonable” without further specifying the term,⁵¹⁰ the proposed exception clearly specifies

508. See generally *id.* § 6.8, at 500-01.

509. On the importance of certainty for network providers and application developers, see Part II.C.4.a above.

510. For example, neither the FCC’s Internet Policy Statement nor the FCC’s Notice of Proposed Rulemaking in the Open Internet proceeding further defined the term “reasonable.”

the standard that will be used to determine whether a specific measure constitutes reasonable network management. Thus, the exception provides more certainty to industry participants and will be easier and less expensive to enforce than exceptions that leave both the development of the standard and the application of the standard to case-by-case adjudication.⁵¹¹

The proposal to task the regulatory agency with monitoring the quality of the baseline service and to set minimum quality standards, if necessary, is designed to address network providers' incentive to degrade the quality of the baseline, best-effort service in order to motivate users to pay for an enhanced type of service. This incentive exists in all network neutrality regimes that allow network providers to charge for the provision of Quality of Service,⁵¹² so all network neutrality regimes that allow charging for Quality of Service will have to find a way to mitigate that incentive and incur the costs of implementing the chosen solution. Thus, the costs of administering and enforcing this rule are not a consequence of the proposed nondiscrimination rule as such, but of the decision to allow charging for Quality of Service, and are therefore better discussed in the context of that decision.⁵¹³

In sum, the rule restricts the evolution of the network to some degree, but only to the extent necessary to realize the goals of network neutrality regulation. The costs of administering and enforcing the nondiscrimination rule are considerably lower than those of most of the other proposed nondiscrimination rules. And while the rule reduces network providers' profits and, potentially, incentives to invest in more and better broadband networks to some degree by preventing network providers from freely engaging in discriminatory conduct and from charging application and content providers for Quality of Service-enhanced access to their Internet service customers, it allows network providers to profit in ways (for example, by charging end users for Quality of Service or by engaging in application-agnostic forms of price discrimination) that other proposals would forbid. Thus, the rule does not impose more social costs than necessary to protect the values that network neutrality regulation is designed to protect.

Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 20 FCC Rcd. 14,986, 14,988 n.15 (2005); Preserving the Open Internet, 24 FCC Rcd. 13,064, 13,113 (proposed Oct. 22, 2009).

511. These exceptions are afflicted with the same problems as nondiscrimination rules that use ambiguous or undefined terms to describe which discriminatory behavior is banned. *See supra* Parts II.C.3, II.C.4.

512. *See supra* note 482 and accompanying text.

513. A network neutrality regime could avoid this problem by allowing network providers to offer Quality of Service but prohibiting them from charging for it. This solution has its own costs and benefits. *See* van Schewick, Background Paper, *supra* note 29, at 10-11. Like all questions related to charging for Quality of Service, this question is outside the scope of this Article.

iii. *The proposed rule in practice: questions and answers*

In the past four years, I have presented the proposed nondiscrimination rule in many different forums.⁵¹⁴ A number of questions regarding the rule's relationship with Quality of Service have come up again and again, so I answer them here.

1. Does the proposed rule require Internet service providers to offer Quality of Service?

The proposed rule does not require Internet service providers to offer Quality of Service; it only gives them the option to do so. But if a network provider wants to offer Quality of Service, it needs to offer it in compliance with the conditions described above.⁵¹⁵

2. Does the proposed rule require Internet service providers to offer Quality of Service end-to-end—that is, between the original source and ultimate destination of data—across the networks of different providers (“end-to-end, interprovider Quality of Service”)?

The rule does not require Internet service providers to offer Quality of Service end-to-end.⁵¹⁶ Network neutrality rules usually have a limited scope, and the obligations imposed by the nondiscrimination rule, including any constraints on the provision of Quality of Service, do not go beyond the scope of the rules. For example, the FCC's Open Internet Rules only apply to providers of broadband Internet access service as specified by the Rules.⁵¹⁷ According to the text of the Open Internet Order, the Open Internet Rules do not apply to “Internet backbone services (if those services are separate from broadband Internet access service),”⁵¹⁸ and the “rules apply only as far as the limits of a broadband provider’s control over the transmission of data to or from its broadband customers.”⁵¹⁹

3. How does the proposed rule constrain the provision of end-to-end, interprovider Quality of Service?

Although network neutrality rules may not cover the entire path of traffic between two endpoints and therefore cannot influence network providers' ac-

514. A number of them are listed in the acknowledgements.

515. See text accompanying notes 475-82.

516. The rule does not require Internet service providers to offer Quality of Service at all, but if they offer it, they do not have to offer it end-to-end across multiple networks.

517. 47 C.F.R. § 8.11 (2014); *Open Internet Order*, 25 FCC Rcd. 17,905, 17,932-36 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

518. 25 FCC Rcd. at 17,933.

519. *Id.* at 17,933 n.150.

tions along the entire path, network neutrality rules constrain the provision of end-to-end, interprovider Quality of Service along the part of the path that is subject to the rules. Thus, an Internet service provider subject to network neutrality rules that implemented my proposal would have to comply with the restrictions on the provision of Quality of Service outlined in the text on the portion of the path that is subject to the rules, regardless of whether the provision of Quality of Service was restricted to the Internet service provider's network or whether the provision of Quality of Service was part of an end-to-end, interprovider offering.

Although end-to-end, interprovider Quality of Service has not been widely deployed in the public Internet for technical and commercial reasons,⁵²⁰ any network neutrality nondiscrimination rule should not prevent a migration to end-to-end, interprovider Quality of Service in the future. My proposal reflects this goal. While it constrains the ability of a provider of last-mile Internet access to charge for the provision of Quality of Service, it does not affect payments among interconnecting networks that are not last-mile networks. If a subscriber ("user *A*") requests a certain class of service for particular traffic (whether upstream or downstream), my proposed rules would allow its Internet service provider ("ISP *A*") to charge only its own subscriber, user *A*, for the provision of that class of service on ISP *A*'s network. ISP *A* is not allowed to charge the end user at the other end of the connection (e.g., an application or content provider that is not a customer of ISP *A*'s Internet access service) for the provision of Quality of Service on ISP *A*'s network.⁵²¹ To prevent last-mile Internet service providers from exploiting their terminating access monopoly over access to their subscribers, last-mile Internet service providers are not allowed to charge interconnecting networks, content delivery networks, or application providers that would like to interconnect directly with a last-mile Internet service provider for interconnection regarding the transport of upstream and downstream traffic to their subscribers, either, regardless of whether that inter-

520. For an analysis of the reasons end-to-end, interprovider Quality of Service has not been widely deployed, see, for example, Grenville J. Armitage, *Revisiting IP QoS: Why Do We Care, What Have We Learned?*, 33 ACM SIGCOMM COMPUTER COMMS. REV. 81, 81-88 (2003); Bell, *supra* note 166; L. Burgstahler et al., *Beyond Technology: The Missing Pieces for QoS Success*, 2003 PROC. ACM SIGCOMM 2003 WORKSHOPS 121; Huston, *supra* note 124.

Large carriers such as Verizon or Deutsche Telekom offer business customers private IP services that provide different classes of service end-to-end between a customer's corporate networks in different countries. In these cases, the carrier controls the provision of different classes of service either directly (if the customer's networks are attached to networks directly controlled by the carrier) or indirectly (if the customer's networks are attached to networks of a different carrier with which the first carrier (e.g., Verizon or Deutsche Telekom) has interconnection agreements that include service-level agreements for different classes of service). See, e.g., VON BORNSTAEDT, *supra* note 171; Verizon Presentation, *supra* note 171, at 41-44; *Verizon Private IP Service Differentiators*, VERIZON (2010), <http://www22.verizon.com/wholesale/attachments/solutions/W5036.pdf>.

521. See *supra* note 477 and accompanying text.

connection involves the provision of Quality of Service or not. However, my proposed rules would allow, but not require, last-mile Internet service providers to pay interconnecting networks for interconnection (e.g., to buy transit), including for the provision of Quality of Service. Those networks do not have a terminating access monopoly, so payments by last-mile Internet service providers to them do not create the same problems as payments by them to last-mile Internet service providers.⁵²²

4. If the proposed rule does not require Internet service providers to offer end-to-end, interprovider Quality of Service, and end-to-end, interprovider Quality of Service is not currently widely deployed in the public Internet, what, if anything, is the benefit of Quality of Service offerings that are limited to an Internet service provider's network?

Naturally, a Quality of Service offering that is limited to an Internet service provider's network cannot provide the desired class of service for the whole path of traffic between a subscriber's end host and the other end host involved in the connection if the other end host connects to the Internet through another Internet service provider.

A limited offering may nevertheless provide benefits in two cases. First, a limited offering is equivalent to an end-to-end offering if the traffic does not leave the Internet service provider's network. Second, providing Quality of Service only on the Internet service provider's network can be beneficial if the main points of congestion are on that network. In the United States and Europe, the access networks are the main sources of congestion, while the backbone is not congested.⁵²³ Thus, two users who are talking to each other via an Internet telephony application and subscribe to different Internet service providers may encounter congestion on both access networks but not on the backbone. Assume that each of the two Internet service providers is offering low-delay ser-

522. As explained in note 480 and accompanying text above, the restrictions on charging for Quality of Service do not flow from the nondiscrimination rule and would have to be encoded separately. Under the network neutrality regime that I propose, the restrictions on charging application providers that are not an Internet service provider's Internet access customers would be captured by a prohibition on all forms of access fees. My network neutrality regime would also include a rule that prohibits last-mile Internet service providers from charging interconnecting networks, content delivery networks, or application providers that interconnect directly with last-mile Internet service providers for the termination and transport of their traffic to and from that Internet service provider's subscribers. On access fees, see note 62 (defining the term) above as well as Box 2 and notes 29-30 and accompanying text above. These questions are outside the scope of this Article.

523. Bauer et al., *supra* note 133, at 16 (arguing that "we expect that, at least for the near term, the access networks will remain the dominant constraint on achievable throughput" given the "relative economics" of adding capacity in the backbone versus in the access networks).

There may be other points of congestion. For example, the links that connect interconnecting networks are often congested, too.

vice for upstream traffic (from the user to the Internet) and for downstream traffic (from the Internet to the user) between the user's end host and the edge of the Internet service provider's access network.⁵²⁴ Under these conditions, each user could protect the call from the impact of potential congestion on the network of its own Internet service provider by choosing low-delay service for the corresponding traffic: User *A*'s choice of low-delay service would protect the upstream and downstream portions of the call on user *A*'s access network, while user *B*'s choice of low-delay service would protect the upstream and downstream portion of the call on user *B*'s access network. If there is no congestion on the backbone network, the lack of low-delay service on the backbone would not affect the quality of the call in any way. Thus, if the main points of congestion are on the access networks, Quality of Service offerings that are limited to the access networks will improve the quality of applications that benefit from the offered classes of service even if these classes of service are not offered end-to-end.

Providing Quality of Service over a limited domain only is also in line with standards of the Internet Engineering Task Force. DiffServ, one of two architectures for the provision of Quality of Service standardized by the Internet Engineering Task Force, was explicitly designed to allow the provision of Quality of Service within a particular network or set of networks only.⁵²⁵ Adjacent DiffServ-enabled networks can then be combined to provide Quality of Service across larger parts of the Internet until so many networks are DiffServ-enabled that it is possible to provide Quality of Service end-to-end.⁵²⁶

5. Under the proposed rule, what prevents an individual user from marking all of his packets as low-delay traffic?

Nothing in the rule requires network providers to allow their Internet service customers to use an unlimited amount of a specific class of service. Under the proposed rule, network providers can impose limits on the use of a specific class of service as long as the limit is application-agnostic. For example, they might sell subscribers the right to use up to *x* megabits of low-delay service over a certain period of time (e.g., per second).⁵²⁷ When a subscriber's traffic that is marked for low-delay service enters the network provider's network, the network checks whether the amount exceeds the contractually specified limit

524. On providing Quality of Service for upstream and downstream traffic, see Question 9 below.

525. Carpenter & Nichols, *supra* note 138, at 1481; Steven Blake et al., Internet Eng'g Task Force, RFC 2475, An Architecture for Differentiated Services (Aug. 1998), <https://tools.ietf.org/html/draft-ietf-diffserv-arch-01>.

526. Carpenter & Nichols, *supra* note 138, at 1484, 1487-88.

527. In real life, the contract may specify traffic profiles in more detail. For example, a contract that allows a user to mark packets for a specific class of service may specify the maximum average rate, peak rate, and burst size at which traffic marked for that class of service is allowed to enter the network. See KUROSE & ROSS, *supra* note 15, at 657-59.

on low-delay traffic for that subscriber and re-marks any excess packets according to an agreed upon scheme. For example, the provider may re-mark packets that exceed the maximum limit on low-delay traffic as best-effort service.⁵²⁸ Under such a scheme, an individual subscriber would not be able to send more than the specified maximum amount of low-delay traffic into the network. Imposing a maximum limit on the amount of traffic of a specific type of service without tying it to the use of a specific application or class of application is application-agnostic and thus compliant with the proposed rule.

By contrast, network providers are not allowed to specify maximum limits for a certain class of service that differ depending on which application is using the class of service (e.g., the subscriber is allowed to use up to x megabits of low-delay service per second for Internet telephony, but only y megabits of low-delay service per second for online gaming). Such application-specific limits on the use of a specific class of service would violate the proposed rule.

6. What happens if all users want to use their contractually specified maximum amount of low-delay service at the same time?

Today's access networks are built on the assumption that not all subscribers use the contractually specified maximum amount of bandwidth at the same time.⁵²⁹ It is possible that the provisioning of capacity for certain classes of service would share this characteristic. In such a network, the total amount of traffic desiring, for example, low-delay service may exceed the capacity available for that service if too many subscribers simultaneously send the maximum amount of traffic marked for low-delay service into the network. In this situation, the rule allows network providers to allocate the available capacity for low-delay traffic using application-agnostic criteria. For example, the network could give a relatively higher share of the available capacity to users who have used the low-delay service less over a certain period of time, or the provider could sell users the right to use relatively more low-delay capacity during times of congestion. These would be application-agnostic criteria.

By contrast, network providers would not be allowed to give a smaller share of the overall capacity for low-delay service to users who use the low-delay service for online video than to users who use the low-delay service for Internet telephony or online gaming. These would be application-specific criteria for allocating capacity during times of congestion, which would violate the proposed rule.

528. For example, Verizon's private IP offerings for companies allow Verizon's customers to mark each packet with the class of service desired for that packet. When the traffic enters Verizon's network, the network polices the traffic to ensure it conforms to the contractually specified traffic profile for the relevant class of service. See Verizon Presentation, *supra* note 171, at 29. On policing and Quality of Service more generally, see KUROSE & ROSS, *supra* note 15, at 650-52, 657-59, 663; and PETERSON & DAVIE, *supra* note 15, at 550.

529. This practice is called oversubscription. For a short explanation of the practice, see St. Arnaud CRTC Report, *supra* note 357, ¶¶ 8-15.

7. Would the proposed rule allow admission control as part of the provision of Quality of Service?

Many Quality of Service architectures include admission control: When a new data flow requests a particular class of service, the network checks whether it has the resources necessary to provide that class of service. If it does have the necessary resources, it admits the flow. If it does not have them, it rejects it. Admission control prevents situations in which all flows are admitted to the network but none receives the amount of resources necessary to perform adequately.⁵³⁰

Admission control would not violate the proposed rule as long as the decision to admit a new flow is based on application-agnostic criteria. By contrast, a network could not use application-specific criteria. For example, it could not base admission of competing flows on the applications that the flows belong to.

8. Under the proposed rule, can the provision of Quality of Service ever be based on application-specific criteria?

The proposed nondiscrimination rule is subject to a reasonable network management exception and to any other exceptions specified in the actual rules. Thus, an Internet service provider could use application-specific criteria for the provision of Quality of Service or for admission control if the conditions underlying one of these exceptions are met. For example, a network provider could give network management traffic and routing traffic precedence over other traffic if the conditions of the reasonable network management exception are met. Similarly, the FCC's Open Internet Rules allow Internet service providers to prioritize emergency communications.⁵³¹

9. Is the type of user-controlled Quality of Service you describe in the text technically feasible?

This type of user-controlled Quality of Service is technically feasible.⁵³² Network providers sell business customers the option to choose the level of

530. On admission control in Quality of Service architectures, see KUROSE & ROSS, *supra* note 15, at 665-69; and PETERSON & DAVIE, *supra* note 15, at 539, 542-43.

531. 47 C.F.R. § 8.9(a) (2014) ("Nothing in this part supersedes any obligation or authorization a provider of broadband Internet access service may have to address the needs of emergency communications or law enforcement, public safety, or national security authorities, consistent with or as permitted by applicable law, or limits the provider's ability to do so."); *Open Internet Order*, 25 FCC Rcd. 17,905, 17,963-64 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

532. This statement is based on many conversations with networking experts. See also Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 20-21; Center for Democracy & Technology Comments, *supra* note 36, at 27; Jordan & Ghosh, *supra* note 366, at 12:21.

Quality of Service for their packets today. For example, customers of Verizon's Private IP Enhanced Traffic Management offering can mark their data packets with the desired class of service, which is then delivered by Verizon's network.⁵³³

If an Internet service provider offers Quality of Service in compliance with the proposed rule, the network offers different classes of service, while the user decides whether, when, and for which application it would like to use a specific class of service. The network then treats the user's traffic according to the user's choices within the constraints (e.g., contractually specified limits on the use of specific types of service or admission control), described in Questions 5-7 above.

For this to work, (1) the user must be able to express his Quality of Service-related choices through an appropriate user interface, and (2) these choices must be signaled to the network so that the network can treat the affected traffic accordingly. To provide maximum flexibility for innovation, the proposed rule deliberately does not prescribe how the user interface or the signaling should be implemented.

Technically, the user interface and the signaling could be implemented in a number of ways. For example, Internet service providers (in their offerings for business customers) or corporate intranets often use DiffServ to provide different classes of service. Under the DiffServ standard, each IP data packet carries information that indicates the class of service requested by that packet.⁵³⁴ On the user's side, different entities—e.g., applications, the user's end host, or a home router—could expose a user interface that allows the user to select the desired class of service for specific applications or data flows.⁵³⁵

For upstream traffic (i.e., traffic from the user's end host into the Internet), the entity that offers a user interface for selecting the classes of service—for example, the application, the user's end host, or a home router—could directly

533. Verizon Presentation, *supra* note 171, at 25, 29, 56. For a prototype targeting home users, see Yiakoumis et al., *supra* note 434, at 1116-18, which won the Grand Prize at the Imagine App Challenge at the Cable Show 2012. See Silbey, *supra* note 478; Spangler, *supra* note 478.

534. The information about the requested class of service is called Differentiated Services Code Point (DSCP) and is encoded in the Differentiated Services Field. See Blake et al., *supra* note 525, at 2-5; K. Nichols et al., Internet Eng'g Task Force, RFC 2474, Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers (Dec. 1998), <https://www.ietf.org/rfc/rfc2474.txt>.

535. As explained in the main text of the Article, such entities could offer different user interfaces for users with varying levels of sophistication. Interfaces could be designed to make the choice intuitive and easy for average users or offer more granular control for users with more expertise. For an exploration of the design space for user agents (i.e., entities that translate the user's intent into technical requests to the network), see Yiakoumis et al., *supra* note 434.

set the Quality of Service-related bits in affected packets in line with the user's choice as expressed through that interface.⁵³⁶

For downstream traffic (i.e., traffic from the Internet to the user), the user (or, more precisely, the entity responsible for signaling the user's Quality of Service-related choices to the network) cannot directly set the Quality of Service-related bits in affected packets since it does not control the router at which the packets enter the domain over which the user's Internet service provider offers Quality of Service.⁵³⁷ Thus, there needs to be a mechanism that allows the user or the entity acting on the user's behalf to signal the class of service desired for particular inbound traffic (e.g., for the traffic of an Internet telephony connection flowing from the other party towards the user or for online gaming traffic traveling from the game server to the user) to the device at which the traffic enters the domain over which the user's Internet service provider offers Quality of Service. Again, there are various options for implementing that signaling. For example, the Next Steps in Signaling Framework standardized by the Internet Engineering Task Force could be used to solve this problem.⁵³⁸ The Center for Democracy and Technology described another potential mechanism in its reply comments in the FCC's Open Internet proceeding.⁵³⁹

536. Applications, end hosts, or home routers could all expose an interface for selecting classes of service, and each could set the appropriate QoS-related bits in the affected upstream packets (i.e., packets from the end host to the Internet). While the different options are likely to have different advantages and disadvantages, a discussion is outside the scope of this Article.

537. Data packets traveling from the Internet towards the user (receiver) for which the user desires a certain class of service are unlikely to carry the correct information about the desired class of service when they enter the domain over which the user's Internet service provider offers Quality of Service, even if the sender has marked the packets with the class of service desired by the receiver. To see this, assume that the sender has marked the packet with the class of service desired by the receiver. In today's Internet, a data packet usually traverses a number of networks on its path from its original source to its ultimate destination. If that marking was preserved as the packet traveled across the Internet, it would still be there when the packet entered the receiver's Internet access network. In today's Internet, however, when a packet passes from one network *A* to the next network *B*, network *B* usually overwrites any DSCP marking that might have been present, unless the two networks have an interconnection agreement that includes the provision of different classes of service. Thus, even if the sender marked the packet with the desired class of service when it sent off the packet, the packet is unlikely to carry the correct information about the desired class of service when—after having traversed other networks—it finally enters the domain over which the receiver's Internet service provider offers Quality of Service.

538. See R. Hancock et al., Internet Eng'g Task Force, RFC 4080, Next Steps in Signaling (NSIS): Framework (June 2005), <https://tools.ietf.org/html/rfc4080>; J. Manner et al., Internet Eng'g Task Force, RFC 5974, NSIS Signaling Layer Protocol (NSLP) for Quality-of-Service Signaling (Oct. 2010), <https://tools.ietf.org/html/rfc5974>.

539. Reply Comments of the Center for Democracy & Technology, *supra* note 452, at 21 ("CDT believes that engineers could devise solutions to allow user-directed prioritization of downstream traffic as well. For example, upstream traffic that a user sends to a particular online service could be marked for priority with an encrypted token generated by the broadband provider; the online service, in sending its response, could copy that encrypted token to

Using yet another mechanism, a recent prototype sends a separate signaling message directly to the Internet service provider's network. The signaling message specifies the desired class of service for a specific upstream and/or downstream data flow or set of data flows.⁵⁴⁰

In the examples discussed so far, the user makes her choices through user interfaces exposed by applications, end hosts, or home routers, which are then signaled to the network. Alternatively, an Internet service provider could offer its own user interface (e.g., in the form of a website) that allows the user to choose the desired class of service for its various applications and then treat the user's traffic according to these choices.

10. I like the proposed nondiscrimination rule, but I am not convinced that network neutrality rules should allow Quality of Service. Can I adopt the proposed nondiscrimination rule but ban Quality of Service? And if I do so, would the proposed nondiscrimination rule still be useful?

Nondiscrimination rules apply to any form of differential treatment, not just to the differential conduct necessary to provide Quality of Service.⁵⁴¹ Nondiscrimination rules govern any differential handling of packets within the network, including, for example, the allocation of bandwidth among users during times of congestion or other differential treatment of data packets to manage congestion. Nondiscrimination rules also regulate differential pricing practices directed towards subscribers⁵⁴²; they affect, for example, whether network providers can count only some types of traffic but not others towards users' monthly usage caps, what factors network providers can use to price discrimi-

mark the downstream traffic for priority as well. The broadband provider would recognize the encrypted token as an authentic indication of a user's prioritization request. Other approaches could be possible as well; the point is that providing effective user-directed priority should not pose any insurmountable technical challenge.”).

540. Yiakoumis et al., *supra* note 434, at 1117 (“User-agents communicate with the infrastructure using an out-of-band messaging scheme, through which they define a set of flow to service mapping. On the infrastructure side, the messages are received by an OpenFlow controller which enforces the mappings to appropriate queues.”); E-mail from Yiannis Yiakoumis to author (Mar. 20, 2013) (on file with author) (“I signal the ISP using a separate message, like the following: ‘all traffic to/from IP address 10.10.20.54, port 80 and me requires type of service X.’ This is directly mapped to a simple configuration to the ISPs router(s).”).

541. For a more detailed description of the scope of nondiscrimination rules, see Part II.A above.

542. The nondiscrimination rules discussed in this Article do not address a network provider's pricing practices with respect to application providers that are not its Internet service customers. Whether an Internet service provider can charge application providers who are not its subscribers an “access fee” for access or for prioritized or otherwise enhanced access to its subscribers is governed by a network neutrality regime's rules about access fees. For a definition of the term “access fees,” see note 62 above. A discussion of access fees is outside the scope of this Article. For a short overview of the debate, see Box 2 and notes 29–30 above.

nate, and whether they can charge different Internet access prices depending on the application used, independent of the traffic created by the application. Thus, the choice of nondiscrimination rule has important implications for many questions other than whether and under which conditions to allow Quality of Service.

The nondiscrimination rule proposed in the text allows certain forms of user-controlled Quality of Service. Regulators who like the rule but disagree with the Article's arguments regarding Quality of Service could adopt the nondiscrimination rule proposed here and couple it with an explicit ban on Quality of Service. In this case, the nondiscrimination rule would apply to any form of differential treatment except for Quality of Service. Thus, the choice of nondiscrimination rule can be separated from the decision whether to allow Quality of Service if that is desired.

III. THE OPEN INTERNET ORDER'S NONDISCRIMINATION RULE

In October 2009, the FCC started the Open Internet proceeding by publishing a Notice of Proposed Rulemaking that proposed a set of network neutrality rules and asked for comment. The proposed rules included a strict nondiscrimination rule that would have required network providers to treat every packet the same, subject to reasonable network management.⁵⁴³

Over the course of the proceeding, the FCC held several public workshops, organized a technical advisory process, and received more than 100,000 written comments.⁵⁴⁴ All of the proposals for nondiscrimination rules discussed in this Article were supported by some commenters.⁵⁴⁵

In December 2010, FCC Chairman Genachowski circulated draft Open Internet Rules to the other Commissioners. The proposed rules were based on a proposal for a network neutrality bill that had been negotiated by Representative Waxman, Chairman of the House Committee on Energy and Commerce, and Representative Boucher, Chairman of the House Subcommittee on Communications, Technology and the Internet, with the large phone and cable network providers, Internet companies, consumer groups, and open Internet groups in the fall of 2010.⁵⁴⁶ Not all participants in the negotiations supported

543. See *supra* note 107.

544. *Open Internet Order*, 25 FCC Rcd. 17,905, 17,906 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

545. See the sources cited in support of the different proposals above.

546. See Kim Hart, *Sources: FCC Chief to Move on Net Neutrality*, POLITICO (Nov. 18, 2010, 4:54 PM EST), <http://www.politico.com/news/stories/1110/45371.html>. In a number of meetings and conversations with FCC officials in November 2010, AT&T representatives argued the Waxman bill should be a model for the FCC's Open Internet Rules. AT&T, Notice of Ex Parte Conversations, Preserving the Open Internet, GN Docket No. 09-191, Framework for Broadband Internet Service, GN Docket No. 10-127 (Nov. 22, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020921306>; Todd Shields, *AT&T Gains FCC's Ear as Regulators Near Decision on Net Neutrality Rules*, BLOOMBERG (Nov. 30,

the final proposal.⁵⁴⁷ The proposal was never introduced. Representative Waxman and Representative Boucher abandoned the effort when the Republican members of the House Committee on Energy and Commerce refused to support the bill.⁵⁴⁸

The rules proposed by the Chairman included a nondiscrimination rule that applied to fixed, but not mobile, Internet access service. Like the nondiscrimination rule in the Waxman proposal, the rule banned “unreasonable” discrimination without specifying how to interpret the term and left it to later case-by-case adjudication to decide whether specific discriminatory conduct meets this criterion.⁵⁴⁹

While the strategic interests of regulators or legislators considering the adoption of network neutrality rules and of the big stakeholders on both sides of the network neutrality debate are aligned in favor of such a rule,⁵⁵⁰ that rule does not adequately protect the values that network neutrality regulations are designed to protect.⁵⁵¹ Thus, from the perspective of network neutrality proponents, this proposal was highly unsatisfactory.⁵⁵²

2010), <http://www.bloomberg.com/news/2010-11-30/at-t-gains-fcc-s-seat-as-regulators-near-decision-on-net-neutrality-rules.html>.

The Open Internet Rules regarding blocking, nondiscrimination, and disclosure, as well as the definitions of broadband Internet access service and of reasonable network management adopted by the FCC in December 2010, closely follow the corresponding provisions of the Waxman bill. *Compare Open Internet Order*, 25 FCC Rcd. at 17,992-93, with Draft Bill, *supra* note 230. For more on the Waxman proposal, see note 230 above.

547. In particular, Free Press and the Open Internet Coalition did not support the compromise proposal. *See* Eggerton, *supra* note 230; Jerome, *OIC*, *supra* note 230. Even consumer groups, organizations, and firms that had supported the Waxman proposal as a legislative measure during the negotiations in Congress in September 2010 later opposed adopting it as agency rules. *See* Public Knowledge & Media Access Project, Notice of Oral Ex Parte Presentation, Broadband Industry Practices, WC Docket No. 07-52, Preserving the Open Internet, GN Docket No. 09-191, Framework for Broadband Internet Service, GN Docket No. 10-127 (Dec. 10, 2010), available at <http://apps.fcc.gov/ecfs/document/view?id=7020923323> (disclosing a meeting in which representatives of the Consumers Union, Free Press, Media Access Project, New America Foundation, Public Knowledge, Writers Guild West, Amazon.com, Dish Network, Netflix, and Skype expressed their opposition to adopting the Waxman proposal as agency rules).

548. Hart, *supra* note 230; *see also* Press Release, Henry A. Waxman, *supra* note 230.

549. The draft rules were not released publicly, but they were described by the Chairman in public remarks when he circulated the draft rules: “And so the proposed framework includes a bar on unreasonable discrimination in transmitting lawful network traffic.” Genachowski, *supra* note 229. For the nondiscrimination rule in Waxman’s proposal, see Draft Bill, *supra* note 230, § 2, at 2 (proposing to add § 12(a)(1)(B)). The nondiscrimination rule in the Waxman proposal applied to wireline broadband Internet access service and would have left the decision whether to treat fixed wireless and satellite Internet access service like wireline or wireless Internet access to the FCC. *See id.* § 2, at 4 (proposing to add § 12(c)).

550. *See supra* notes 280-88 and accompanying text.

551. *See supra* Parts II.C.3, II.C.4.

552. Network neutrality proponents also opposed other aspects of the proposal. For an overview, see van Schewick, *supra* note 406; and van Schewick, *supra* note 263.

The two Republican Commissioners, Commissioner Robert M. McDowell and Commissioner Meredith Atwell Baker, had made clear that they would not support any network neutrality rules, so the Chairman needed the votes of the two other Democratic Commissioners, Commissioner Michael J. Copps and Commissioner Mignon L. Clyburn. Both supported considerably stronger network neutrality rules than the ones that the Chairman was proposing.⁵⁵³ Commissioner Copps publicly threatened to vote against the draft rules in the form proposed by the Chairman. A no from either of them would have killed the proposal.⁵⁵⁴

This put the Chairman in a difficult position. During his presidential campaign, President Obama had promised to enact network neutrality rules.⁵⁵⁵ Attempts to enact network neutrality rules in Congress had failed.⁵⁵⁶ The Democrats had lost the House in November 2010, and with the Republicans in the majority, it was clear that the House would not support any network neutrality-related action in the future.⁵⁵⁷

At the same time, the Chairman felt he needed AT&T's support to deflect Republican criticism in Congress in the future, and AT&T strongly supported using the Waxman proposal as a basis for the Commission's network neutrality rules.⁵⁵⁸ The Chairman and the two Democratic Commissioners negotiated

553. For a summary of their criticisms, see *Open Internet Order*, 25 FCC Rcd. 17,905, 18,046 (2010) (Copps, Comm'r, concurring); *id.* at 18,082-83 (Clyburn, Comm'r, approving in part and concurring part); and David Hatch, *FCC's Copps Isn't Committed on Net Neutrality*, NAT'L J. DAILY (Dec. 9, 2010, 3:30 PM), <http://www.nationaljournal.com/member/daily/fcc-s-copps-isn-t-committed-on-net-neutrality-20101209>.

554. Hatch, *supra* note 553.

555. Barack Obama, *supra* note 282.

556. The last such attempt had failed in September 2010, when the Republican leadership in Congress refused to support the compromise proposal negotiated by Representative Waxman and Representative Boucher. Hart, *supra* note 230; *see also* Press Release, Henry A. Waxman, *supra* note 230.

557. See *Despite Seat at Table, AT&T Outed Delicate Net-Neutrality Talks*, HILL (Nov. 25, 2010, 9:52 PM ET), <http://thehill.com/policy/technology/130737-despite-seat-at-the-table-atat-outed-delicate-net-neutrality-talks-sparking-gop-backlash> [hereinafter *Seat at Table*]; Hart, *supra* note 546.

558. At the time, AT&T was the second-largest provider of wireline Internet access in the United States, the largest DSL provider in the United States, and the second-largest wireless provider in the United States. See Press Release, Leichtman Research Grp., Over 800,000 Add Broadband in the Third Quarter of 2010 (Nov. 15, 2010), <http://www.leichtmanresearch.com/press/111510release.html>; *see also* *Market Share of Mobile Wireless Telecommunication Subscribers by Selected Service Providers in the United States at the End of 2008 and 2009*, STATISTA, <http://www.statista.com/statistics/184755/market-share-of-mobile-wireless-subscribers-by-providers-in-the-us> (last visited Jan. 7, 2015); *Wireless Market Share 2011-2014*, *supra* note 288. AT&T, which has consistently outspent every other corporation in donations to congressional campaigns in the past, has considerable influence in Washington. See, e.g., AT&T, Notice of Ex Parte Conversations, *supra* note 546 (disclosing two conversations between Jim Cicconi, Senior Executive Vice President of External and Legislative Affairs at AT&T and head of AT&T's public policy organization, and Edward Lazarus, the Chairman's Chief of Staff, in which "Mr. Cicconi discussed the merits

over improvements to the Order up to the day before the Commission's open meeting on December 21.⁵⁵⁹ In the end, they agreed on the following compromise⁵⁶⁰: They did not change the text of the nondiscrimination rule. They agreed, however, to change the text of the Order to provide more clarity to industry participants and to provide guidance to future adjudications.

The Open Internet Rules were adopted at the FCC's open meeting in December 2010 and went into effect in November 2011.⁵⁶¹ The Rules were appealed by Verizon, Free Press, and others and, except for the disclosure rule, vacated by the Court of Appeals for the D.C. Circuit in January 2014.⁵⁶²

In the final Open Internet Report and Order, the FCC adopted a nondiscrimination rule that banned providers of fixed broadband Internet access service from "unreasonably discriminat[ing] in transmitting lawful network traffic

of the proposed Waxman legislation and why it should be a model for a substantive resolution of the issues raised in these proceedings"); *Seat at Table*, *supra* note 557 ("Public advocates are concerned about how much Genachowski appears to be listening to AT&T, with one saying he has practically given them 'veto powers.'"); Cecilia Kang, *AT&T, Carriers Fund Democratic Reps Against Net Neutrality*, WASH. POST POST TECH (Oct. 19, 2009, 9:00 AM ET), http://voices.washingtonpost.com/posttech/2009/10/all_but_two_of_the.html (discussing data showing that 70 of the 72 Democratic members of Congress who sent a letter to Chairman Genachowski in October 2009 cautioning against adopting network neutrality rules had received contributions from Internet service providers, with AT&T donating the most and donating to 52 out of the 72); Matthew Lasar, *AT&T and Astroturf: Is "Following the Money" Enough?*, ARS TECHNICA (Oct. 26, 2009, 7:30 PM PDT), <http://arstechnica.com/tech-policy/2009/10/the-anti-net-neutrality-movement-is-it-just-about-att-money>; Matthew Lasar, *Hey, Capitol Hill: Who's Your Daddy? AT&T*, ARS TECHNICA (Sept. 14, 2010, 4:30 AM PDT), <http://arstechnica.com/tech-policy/2010/09/hey-capitol-hill-whose-your-daddy-att>; Lindsay Renick Mayer, *Big Donors Ramp Up to Fight FCC Net Neutrality Decision*, OPENSECRETS.ORG (Oct. 28, 2009, 7:26 PM), <http://www.opensecrets.org/news/2009/10/the-federal-communications-com.html>; Editorial, *The Price of Broadband Politics*, N.Y. TIMES (June 29, 2010), <http://www.nytimes.com/2010/06/30/opinion/30wed2.html>; Shields, *supra* note 546 (discussing a large number of conversations between Cicconi and Lazarus in November 2011 and citing a number of network neutrality proponents interpreting the Chairman's efforts to get AT&T's approval as an attempt to minimize opposition to the rules and protect the Commission against Republican criticism).

559. Grant Gross, *Net Neutrality Plan Has the Votes at FCC*, COMPUTERWORLD (Dec. 20, 2010, 5:14 PM PT), http://www.computerworld.com/s/article/9201818/Net_neutrality_plan_has_the_votes_at_FCC.html; Arik Hesseldahl, *Breaking: FCC's Copps Voting "Yes" on Net Neutrality Plan*, ALL THINGS DIGITAL (Dec. 20, 2010, 1:45 PM PT), <http://allthingsd.com/20101220/breaking-fcc-commissioner-copps-says-hell-vote-yes>.

560. This Article focuses on nondiscrimination rules. For an overview of the other parts of the compromise, see Barbara van Schewick, *The FCC's Open Internet Rules—Stronger than You Think*, INTERNET ARCHITECTURE & INNOVATION (Dec. 27, 2010), <http://netarchitecture.org/2010/12/the-fcc's-open-internet-rules---stronger-than-you-think>.

561. Preserving the Open Internet, 76 Fed. Reg. 59,192, 59,223 (Sept. 23, 2011) (codified at 47 C.F.R. pts. 0, 8).

562. *Verizon v. FCC*, 740 F.3d 623, 659 (D.C. Cir. 2014); Notice of Multicircuit Petitions for Review, Preserving the Open Internet, GN Docket No. 09-191, Broadband Industry Practices, WC Docket No. 07-52 (J.P.M.L. Oct. 5, 2011), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-310240A1.pdf.

over a consumer's broadband Internet access service" and stipulated that "[r]easonable network management shall not constitute unreasonable discrimination."⁵⁶³ The FCC was to determine whether certain discriminatory conduct qualified as unreasonable in case-by-case adjudications.

The text of the Order specifies the factors that the FCC would have used to determine whether certain discriminatory conduct constitutes unreasonable discrimination⁵⁶⁴: transparency (i.e., whether differential treatment is disclosed), end-user control and end-user choice, use-agnostic discrimination, and conformity of the practice with "best practices and technical standards adopted by open, broadly representative, and independent Internet engineering, governance initiatives, or standards-setting organizations."⁵⁶⁵

Use-agnostic discrimination (or "application-agnostic" discrimination), the Order explains, is "[d]ifferential treatment that does not discriminate among specific uses of the network or classes of uses."⁵⁶⁶ According to the Order, use-agnostic discrimination is likely to be reasonable, which suggests, in turn, that differential treatment that discriminates among specific uses of the network or classes of uses is likely to be unreasonable.⁵⁶⁷ This is the same substantive standard as the one used by the nondiscrimination rule proposed by this Article. (See Table 2: The Open Internet Order's Nondiscrimination Rule and the Rule Proposed by This Article below.) As explained above, allowing use-agnostic discrimination but banning discrimination among uses or classes of uses preserves the application-agnosticism of the network.⁵⁶⁸

TABLE 2
The Open Internet Order's Nondiscrimination Rule and
the Rule Proposed by This Article

	Application-Agnostic Discrimination	Application-Specific Discrimination
FCC's Nondiscrimination Rule	Likely to be reasonable	Likely to be unreasonable
Nondiscrimination Rule Proposed by This Article	Allowed	Banned

563. *Open Internet Order*, 25 FCC Rcd. 17,905, 17,992 (2010) (report and order), vacated in part, *Verizon*, 740 F.3d 623.

564. *Id.* at 17,944-46. The following paragraphs are based in part on van Schewick, *supra* note 560.

565. 25 FCC Rcd. at 17,946.

566. *Id.* at 17,945.

567. *Id.* at 17,945-46.

568. See *supra* Box 19; *supra* note 459 and accompanying text.

Thus, in evaluating whether discriminatory conduct is reasonable, the FCC was to consider how well the conduct preserves two of the four factors—application-agnosticism and user choice—that have fostered application innovation and allowed the Internet to serve as a platform for social, political, and cultural interaction in the past.⁵⁶⁹ As Commissioner Copps explained in his concurring statement, this was a deliberate decision: “In discussing the ‘no unreasonable discrimination’ standard, we put particular emphasis on keeping control in the hands of users and preserving an application-blind network—a key part of making the Internet the innovative platform it is today.”⁵⁷⁰ In addition, the first section of the Open Internet Rules lists preserving end-user control, end-user choice, and the freedom to innovate without permission (the third of the four factors that have fostered application innovation in the past) as explicit purposes of the Rules.⁵⁷¹

As this Article has shown, using these factors—application-agnosticism, user choice, and innovation without permission⁵⁷²—as guidelines for evaluating behavior provides clear answers regarding which types of discriminatory behavior should and should not be allowed. For example, while the Order does not discuss how the different forms of Quality of Service discussed in this Article would be evaluated under the “no unreasonable discrimination” standard, the analysis in this Article suggests which results the FCC would reach if it takes these factors seriously. (See Table 3: Evaluating Different Forms of Quality of Service Under the Open Internet Order’s Nondiscrimination Rule below.) In particular, under the FCC’s standard as clarified by the Order, user-controlled Quality of Service where (1) the different classes of service are offered equally to all applications and classes of applications, (2) the user is able to choose whether and when to use which class of service, and (3) the network

569. On these factors (the other two being innovation without permission and low cost of application innovation), see Boxes 3 and 4 and notes 59-62 and accompanying text above.

570. 25 FCC Rcd. at 18,046 (Copps, Comm'r, concurring); *see also id.* at 17,944-45 (report and order) (“Maximizing end-user control is a policy goal Congress recognized in Section 230(b) of the Communications Act, and end-user choice and control are touchstones in evaluating the reasonableness of discrimination. As one commenter observes, ‘letting users choose how they want to use the network enables them to use the Internet in a way that creates more value for them (and for society) than if network providers made this choice,’ and ‘is an important part of the mechanism that produces innovation under uncertainty.’” (footnote omitted)); *id.* at 17,946 (“Use-agnostic discrimination (sometimes referred to as application-agnostic discrimination) is consistent with Internet openness because it does not interfere with end users’ choices about which content, applications, services, or devices to use. Nor does it distort competition among edge providers.”).

571. 47 C.F.R. § 8.1 (2014) (“The purpose of this part is to preserve the Internet as an open platform enabling consumer choice, freedom of expression, end-user control, competition, and the freedom to innovate without permission.”). For a discussion of the importance of innovation without permission in the Order, see 25 FCC Rcd. at 17,907-10.

572. Since preserving the freedom to innovate without permission is an explicit purpose of the Open Internet Rules, this factor can be used to interpret any provision of the rules, including the nondiscrimination rule.

provider is allowed to charge only its own Internet service customers for the use of the different classes of service⁵⁷³ is likely to be reasonable.⁵⁷⁴ By contrast, offering Quality of Service exclusively to one or more applications within a class of “like” applications is unlikely to be reasonable.⁵⁷⁵ Offering different types of service to different provider-defined classes of applications is also likely to be unreasonable, even if the network provider treats like traffic alike (that is, even if it does not discriminate among classes of applications that are alike and does not discriminate among applications within a class of like applications).⁵⁷⁶

In addition to specifying which factors should be used in evaluating discriminatory conduct under the FCC’s “no unreasonable discrimination” standard, the Order explicitly rejects some alternative interpretations. Some commenters had supported using an antitrust framework to distinguish socially beneficial from socially harmful discrimination.⁵⁷⁷ The Order explicitly rejects the view that the nondiscrimination rule should only prohibit discrimination that is “anticompetitive.”⁵⁷⁸ As explained above, such a rule (or an interpreta-

573. According to the Open Internet Order, charging application or content providers who are not the network provider’s Internet access service customers for prioritized or otherwise enhanced access to its Internet access service customers is unlikely to be reasonable under the Order’s nondiscrimination rule. While the Open Internet Rules do not directly address this question, the text of the Order discusses it in detail: the Order explicitly endorses the concerns about these arrangements, 25 FCC Rcd. at 17,919-25, 17,947-48, unequivocally rejects the main arguments in favor of them, *id.* at 17,921-22, 17,928-29, and concludes that “as a general matter,” arrangements of this kind are “unlikely” to be considered reasonable under the nondiscrimination rule, *id.* at 17,947-48. Thus, under the Open Internet Rules, network providers (most likely) would have been allowed to charge only their own Internet access service customers for any differential treatment allowed by the nondiscrimination rule. For a more detailed analysis, see van Schewick, *supra* note 560.

574. See *supra* notes 476-86 and accompanying text; *infra* Table 3.

User-controlled Quality of Service is the only type of Quality of Service that the Order discusses explicitly:

Thus, enabling end users to choose among different broadband offerings based on such factors as assured data rates and reliability, or to select quality-of-service enhancements on their own connections for traffic of their choosing, would be unlikely to violate the no unreasonable discrimination rule, provided the broadband provider’s offerings were fully disclosed and were not harmful to competition or end users.

25 FCC Rcd. at 17,944-45.

575. See *supra* notes 372-81 and accompanying text; *infra* Table 3.

576. See *supra* notes 383-442 and accompanying text; *infra* Table 3.

577. See the sources cited throughout Part II.C.1 above.

578. 25 FCC Rcd. at 17,949-50 (“We also reject the argument that only ‘anticompetitive’ discrimination yielding ‘substantial consumer harm’ should be prohibited by our rules. We are persuaded those proposed limiting terms are unduly narrow and could allow discriminatory conduct that is contrary to the public interest. The broad purposes of this rule—to encourage competition and remove impediments to infrastructure investment while protecting consumer choice, free expression, end-user control, and the ability to innovate without permission—cannot be achieved by preventing only those practices that are demonstrably anticompetitive or harmful to consumers. Rather, the rule rests on the general proposition that broadband providers should not pick winners and losers on the Internet—even for rea-

tion of the FCC's rule that restricted unreasonable discrimination to discrimination that is anticompetitive) would have made it impossible to bring complaints against many types of discriminatory conduct that threatens the values network neutrality rules are designed to protect.⁵⁷⁹

Finally, according to the Order, the same principles that guide the Commission's interpretation of the nondiscrimination rule were also to guide the Commission's evaluation of network management practices under the Open Internet Rules' exception for reasonable network management.⁵⁸⁰ The exception applied to the no-blocking rules for fixed and mobile Internet access and to the nondiscrimination rule. Some had argued that discriminatory and exclusionary practices should automatically qualify as "reasonable network management" as long as they were designed to solve network management problems.⁵⁸¹ However, the harm to users and innovators from discriminatory or exclusionary conduct is the same regardless of the network provider's motivation, making it necessary to impose stronger constraints on reasonable network management.⁵⁸² In line with these considerations, the Order made clear that network management would be evaluated by the same principles that guide the interpretation of the nondiscrimination rule.

Overall, the nondiscrimination rule adopted by the Commission (as clarified by the text of the Order) constituted a considerable improvement over the same rule without clarifications. The general theoretical framework underlying the Order as well as the specific factors that would have been used to interpret the nondiscrimination rule and the reasonable network management exception are in line with the broader theoretical framework on which calls for network neutrality regulation are based.⁵⁸³ In contrast to the standards used by other case-by-case approaches (e.g., by an antitrust framework or the Verizon-Google legislative framework), the factors the FCC would have used to evaluate differential treatment do not automatically exclude instances of discrimination that threaten the values network neutrality rules are intended to protect.⁵⁸⁴ Instead, the substantive factors—application-agnosticism and user choice—reinforce key values that were at the core of the Internet's success. Specifying the factors provides additional clarity to market participants and guidance to the bureaus within the FCC that may end up enforcing network neutrality rules.

Still, compared with the bright-line nondiscrimination rule supported by this Article, considerable uncertainty remains. For example, it is not clear how

sons that may be independent of providers' competitive interests or that may not immediately or demonstrably cause substantial consumer harm." (footnotes omitted)).

579. See *supra* Part II.C.1.

580. 25 FCC Rcd. at 17,954.

581. AT&T Open Internet Comments, *supra* note 355, at 183-87; Cox Comments, *supra* note 366, at 30-33.

582. See, e.g., van Schewick, Official Testimony, *supra* note 68, at 4-8, *see also supra* notes 213-16, 251-58, 268-75.

583. See *supra* Part I.

584. See *supra* Parts II.C.1, II.C.2.

the Commission would evaluate a practice that is in line with some, but not all, factors mentioned by the Order. Thus, the rule leaves a lot of discretion to later adjudicators. By creating considerable uncertainty that will only be resolved in later case-by-case adjudications, the rule creates many of the same problems and social costs as the less precise standards discussed above.⁵⁸⁵

The text of the Order provides the most certainty with respect to behavior that is likely to be reasonable. In particular, the Order explains that differential treatment that is use-agnostic is likely to be reasonable and that “end-user choice and control are touchstones in evaluating . . . reasonableness.”⁵⁸⁶ This suggests that, under such a rule, network providers who would like to minimize the risk of having to defend themselves in costly and highly public adjudications at the FCC should choose practices and invest in network technologies that are use-agnostic (i.e., that do not discriminate among specific uses or classes of uses) and preserve user choice over technologies and practices that are application-specific and threaten user choice.

585. For a discussion of these costs, see Part II.C.4 above.

586. *Open Internet Order*, 25 FCC Rcd. 17,905, 17,944-46 (2010) (report and order), *vacated in part*, *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

TABLE 3
Evaluating Different Forms of Quality of Service Under
the Open Internet Order's Nondiscrimination Rule

Criteria for evaluation	Types of QoS			User-controlled QoS where (1) the different classes of service are available equally to all applications and classes of applications; (2) the user is able to choose whether, when, and for which applications to use which class of service; (3) the network provider charges only its own Internet service customers for the use of the different classes of service*
Preserves application-agnosticism of the network/is use-agnostic (i.e., does not discriminate among specific uses or classes of uses)	Provider-controlled QoS to individual applications within a class of like applications	No	No	Yes
Preserves user choice	No	No	Yes	
Preserves innovation without permission	No	No	Yes	
Likely to be reasonable under the FCC's nondiscrimination rule	No	No	Yes	

* According to the FCC's Open Internet Order, charging application or content providers who are not the network provider's Internet access service customers for prioritized or otherwise enhanced access to the network provider's Internet access service customers is likely to be unreasonable. Thus, under the Open Internet Rules, network providers would be allowed to charge only their own Internet access service customers for any differential treatment allowed by the nondiscrimination rule. *See supra* note 573.

TABLE 4
The Impact of Different Nondiscrimination Rules on Quality of Service

Forms of QoS Rules	Provider-controlled QoS to individual applications within a class of like applications	QoS to provider-defined classes of applications	User-controlled QoS
Allow all discrimination	allowed*	allowed*	allowed*
Case-by-case approaches	unclear	unclear	unclear
Ban discrimination that is not disclosed	allowed, if disclosed*	allowed, if disclosed*	allowed, if disclosed*
Ban discrimination among like applications and classes of applications, allow discrimination among classes of applications that are not alike and application-agnostic discrimination ("like treatment")	banned	allowed, as long as like traffic is treated alike*	(1) different classes of service are available equally to all applications and classes of applications; AND (2) user is able to choose whether, when, and for which applications to use which class of service*
Ban application-specific discrimination, allow application-agnostic discrimination	banned	banned	(1) different classes of service are available equally to all applications and classes of applications; AND (2) user is able to choose whether, when, and for which applications to use which class of service*
FCC's nondiscrimination rule	likely banned	likely banned	(1) different classes of service are available equally to all applications and classes of applications; AND (2) user is able to choose whether, when, and for which applications to use which class of service; AND (3) network provider charges only its own Internet service customers for the use of the different classes of service**
Ban all discrimination	banned	banned	banned

* If policymakers adopt a nondiscrimination rule that allows network providers to offer some form of Quality of Service, they need to decide whether, and if so, whom network providers should be allowed to charge for it. As I argue elsewhere, network providers should only be allowed to charge their own Internet service customers for any differential treatment allowed by the nondiscrimination rule. See *supra* note 80.

** According to the FCC's Open Internet Order, charging application or content providers who are not the network provider's Internet access service customers for prioritized or otherwise enhanced access to its Internet access service customers is likely to be unreasonable. Thus, under the Open Internet Rules, network providers would be allowed to charge only their own Internet access service customers for any differential treatment allowed by the nondiscrimination rule. See *supra* note 573.

CONCLUSION: NETWORK NEUTRALITY AND QUALITY OF SERVICE

The network neutrality debate is often framed as a debate for or against Quality of Service. As this Article shows, the reality is much more nuanced. Some proposals take an all-or-nothing approach to discrimination. They ban or

allow all forms of discrimination and, consequently, Quality of Service.⁵⁸⁷ Most proposals take a more nuanced position. They allow some, but not all, forms of Quality of Service, with different proposals drawing the line between acceptable and unacceptable forms of Quality of Service in different ways.

Often, it is not immediately apparent how a specific nondiscrimination rule affects network providers' ability to offer Quality of Service. To address this problem, this Article explores the effect of the various proposals on the different forms of Quality of Service. The results of this analysis are summarized in Table 4: The Impact of Different Nondiscrimination Rules on Quality of Service above.

Underlying the differences between the proposals are disagreements over the social benefits and costs of the different forms of Quality of Service. In this respect, this Article offers interesting new insights.

Most proponents of network neutrality agree that *allowing network providers to offer Quality of Service exclusively to one or more applications within a class of "like" applications* should be prohibited, and this Article shares that view.⁵⁸⁸ For example, a network provider should not be allowed to offer a low-delay service only to its own Internet video application or only to select unaffiliated Internet video applications. This type of Quality of Service interferes with users' ability to use the applications of their choice without interference from network providers and enables network providers to use the provision of Quality of Service as a tool to distort competition among applications within a class, which is exactly what network neutrality rules are designed to prevent.

By contrast, many network neutrality proponents see no problems with *allowing network providers to offer different types of service to different provider-defined classes of applications as long as the network provider treats like traffic alike*. In other words, they would allow network providers to provide different types of service to different provider-defined classes of applications that are not alike as long as they do not discriminate among classes of applications that are alike or among applications within a class of like applications. This requirement is often called "like treatment."⁵⁸⁹ Under this approach, a network provider would be allowed to offer low-delay service to Internet telephony, but not to e-mail, as long as it does not treat Vonage differently from Skype, or Gmail differently from Hotmail.⁵⁹⁰ In the United States, the AT&T/BellSouth merger conditions and various draft bills in Congress allowed this form of Quality of Service.

The positive stance towards forms of Quality of Service that provide like treatment is based on the assumption that discriminating among classes of applications that are not alike is socially harmless and should therefore be al-

587. On these proposals, see Parts II.B.1 and II.B.2 above.

588. On this form of Quality of Service, see Part II.D.2.a.i above.

589. On this form of Quality of Service, see Part II.D.2.a.ii above.

590. Internet telephony is sensitive to delay, but e-mail is not, so the two classes of applications are not alike. *See supra* note 15.

lowed. As this Article shows, this assumption is not correct. In many cases, discrimination among classes of applications hurts some classes of applications, even if the classes are not alike. For example, some Internet applications, such as Internet telephony applications, Internet messaging applications, or Internet video offerings, compete with network provider services that are sold separately from Internet access and do not run over the Internet access portion of the network provider's access network. In these cases, discriminating against all applications in that class allows the network provider to favor its own offering without discriminating among applications within the class. Moreover, applications in a class can be harmed by differential treatment even if they do not compete directly with applications in other classes that are treated more favorably.

In addition, like treatment negatively affects several of the factors that have fostered application innovation in the past. *First*, like treatment removes the *application-agnosticism* of the network. Allowing network providers to treat classes of applications differently requires the network provider to identify the different applications on its network in order to decide which class they belong to and determine the appropriate type of service. Thus, like treatment requires network providers to treat data packets differently based on information about the applications on the network. Since the concept of "like applications" is not well defined, network providers have broad discretion to decide which applications are alike, which allows them to deliberately or inadvertently distort competition among applications or classes of applications.

Second, like treatment violates the principle of *user choice*. Under like treatment, network providers, not users, choose which application should get which Quality of Service. Since users' preferences for Quality of Service are not necessarily the same across users and may even vary for the same user over time, letting network providers determine which applications gets which Quality of Service will result in levels of Quality of Service that do not meet users' needs.

Third, like treatment harms application innovation by requiring innovators to convince network providers that their application belongs to a certain class. Requiring network providers to take action before an application can get the Quality of Service it needs violates the principle of *innovation without permission* and reduces the chance that new applications actually get the type of service they need. *Finally*, disputes over which classes of applications are alike, or whether a certain application belongs to a certain class, are likely to be frequent and difficult to resolve, creating high costs of regulation.

Thus, contrary to what is commonly assumed, forms of Quality of Service that respect the principle of like treatment do not adequately protect the values that network neutrality is designed to protect and should not be allowed under a network neutrality regime.

By contrast, Quality of Service architectures *in which network providers make different types of service available equally to all applications and classes of applications and in which users choose whether, when, and for which appli-*

cations to use which type of service do not raise similar concerns.⁵⁹¹ *First*, they preserve the *application-agnosticism* of the network: The provision of Quality of Service is dependent not on which applications users are using but on the QoS-related choices that users make; thus, the network provider does not need to know anything about which applications are using its network in order for this scheme to work. The network provider only makes different classes of service available but does not have any role in deciding which application gets which Quality of Service: this choice is for users to make. As a result, network providers cannot use the provision of Quality of Service as a mechanism to distort competition among applications or classes of applications.

Second, since users choose when and for which applications to use which type of service (in line with the principle of *user choice*), they can get exactly the Quality of Service that meets their preferences, even if these preferences differ across users or (for a single user) over time. *Third*, in line with the principle of *innovation without permission*, an innovator does not need support from the network provider in order for his application to get the Quality of Service it needs. The only actors who need to be convinced that the application needs Quality of Service are the innovator, who needs to communicate this to the user, and the user, who wants to use the application. This greatly increases the chance that an application can get the type of service it needs.

In sum, this type of user-controlled Quality of Service offers the same potential social benefits as other, discriminatory or provider-controlled forms of Quality of Service without the social costs. With appropriate restrictions on charging and with provisions that protect the quality of the baseline service from dropping below unacceptable levels, this type of Quality of Service should be allowed under a network neutrality regime. Under the nondiscrimination rule proposed by this Article and the Open Internet Order's vacated non-discrimination rule for fixed broadband Internet access, these are the only forms of Quality of Service that network providers would be able to offer.

If policymakers adopt a nondiscrimination rule that allows network providers to offer some form of Quality of Service, they need to decide whether and, if so, whom network providers should be allowed to charge for it. Again, policymakers have a number of options, each supported by at least some proponents of network neutrality: (1) the network provider is not allowed to charge anyone for the use of Quality of Service (though it can increase the general price for Internet service); (2) it can charge only its Internet service customers; (3) it can charge its Internet service customers and/or application and content providers but is required to offer the service to application and content providers on a nondiscriminatory basis; or (4) it can charge its Internet service customers and/or application and content providers. Concerns about offering differential treatment and about charging for it are driven by different sets of policy considerations that should be considered and evaluated separately. I take

591. On this type of Quality of Service, see Part II.D.2.b.i.A above.

up restrictions on charging elsewhere.⁵⁹² There, I argue that network providers should only be allowed to charge their own Internet service customers for any differential treatment allowed by the nondiscrimination rule.⁵⁹³

Finally, a network provider that is allowed to charge for Quality of Service has an incentive to degrade the quality of the baseline, best-effort service to motivate users to pay for an enhanced type of service. To mitigate this problem, any network neutrality regime that allows network providers to charge for Quality of Service should require the regulatory agency in charge of enforcing the network neutrality rules to monitor the quality of the baseline service and set minimum quality standards if the quality of the baseline service drops below appropriate levels.⁵⁹⁴

Opponents of network neutrality regulation have created the impression that policymakers need to choose between protecting users and application innovators against interference from network providers on the one hand and innovation in the network and the needs of network providers on the other hand. As this Article shows, it is possible to protect users and innovators while giving network providers the tools they need to manage their networks and allowing the network infrastructure to evolve. Thus, regulators can have their cake and eat it, too.

592. See sources cited *supra* note 29.

593. This restriction also applies to interconnection agreements, as discussed in response to Question 3 in Part II.D.2.b.iii. *See also supra* note 480.

594. For a discussion of this requirement, *see* van Schewick, Background Paper, *supra* note 29, at 10-11. The European Union has adopted a similar rule following its review of the regulatory framework for telecommunications services. *See* Universal Service Directive, *supra* note 291, art. 22(3); *Impact Assessment*, *supra* note 293, at 92, 95-97, 101.

Network Neutrality and Zero-rating

Barbara van Schewick

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Whether network neutrality rules should prohibit zero-rating – i.e. the practice of not counting certain applications against users' monthly bandwidth caps – has become the next frontier in the net neutrality debate. Since the FCC adopted its Open Internet Rules in 2010, zero-rating has spread from developing countries and is now used by operators in almost all OECD and European countries where it is not explicitly prohibited.¹ As a result, zero-rating has become a key point of contention in network neutrality debates around the world. In the past year, regulators in Chile, the Netherlands, Slovenia and Canada explicitly prohibited zero-rating, while regulators in Germany, Austria and Norway publicly stated that zero-rating violates network neutrality.²

The FCC's 2010 Open Internet order prohibited fixed ISPs from charging application providers for zero-rating. The FCC's Fact Sheet does not explain how the FCC plans to address zero-rating – i.e. the practice of not counting certain applications against users' monthly bandwidth caps. While the Fact Sheet's description of the ban on paid prioritization could be read to include the zero-rating of applications against a fee, press reports suggest that the FCC intends to evaluate all forms of zero-rating under the general conduct rule.³

In this proceeding and in the press, ISPs have consistently asserted their desire to engage in zero-rating.⁴ In a recent filing, Verizon argued that it appealed the Open Internet Rules because its lawyers recognized the order banned zero-rating for a fee and Verizon wanted to engage in this practice.⁵ As a result, zero-rating in the US has generally been limited to wireless offerings. If the FCC does not address the issue, it is likely that zero-rating will expand rapidly, given the ISPs' interest in the practice. While interested parties could bring complaints under the general conduct rule, this solution would create considerable uncertainty and put the burden on the public to bring complaints. Given the considerable social costs associated with leaving zero-rating to later case-by-case adjudications, the FCC should explicitly ban those types of zero-rating now that are clearly harmful.

1. Zero-rating has a strong discriminatory effect.

Network neutrality rules aim to prevent network providers from distorting the playing field among applications or classes of applications, and from interfering with users' choices regarding the use of the network. Some commenters assume that zero-rating is less harmful than technical

¹ Drossos (2015); Digital Fuel Monitor (2014b) (listing 92 cases of zero-rating in OECD and EU countries).

² See, e.g., Meyer (2015b); Meyer (2015a); Meyer (2014a); Meyer (2014b); Drossos (2015).

³ Higginbotham (2015); Brustein (2015).

⁴ Bergen (2015).

⁵ Verizon (2015).

forms of discrimination (such as slowing down or speeding up certain applications), because applications that are zero-rated continue to receive the same technical treatment as applications subject to the cap. However, while zero-rating operates slightly differently, the discriminatory effect is the same: Zero-rated applications are more attractive to users than applications that are not.

Evidence suggests that zero-rating has a powerful effect. For example, in a study commissioned by CTIA, "[n]early three-quarters of respondents (74%) report that they would be more likely to watch videos offered by a new provider if the content did not count against their monthly limit."⁶ When Slate experimented with zero-rating and "told some would-be listeners that the podcast wouldn't count against the data plans on their smartphones [...] users were 61% more likely to press play."⁷

This is not surprising. Consider an Internet service provider that zero-rates its own streaming video application, while the traffic of all other applications is counted towards subscribers' bandwidth cap, a common practice around the world.⁸ For users who have not exhausted their monthly bandwidth allowance, watching a video that produces 2 gigabytes (GB) of traffic via an unaffiliated application brings those users 2 GB closer to exhausting their bandwidth cap. By contrast, watching the same video via the Internet service provider's application does not reduce the amount of bandwidth available to users before they reach the bandwidth cap. Users who have exhausted the monthly bandwidth allowance and watch the video using the unaffiliated application will have to bear the consequences of using another 2 GB (e.g., paying overage charges, having their traffic throttled, or being cut off from Internet access), while users watching the video via the affiliated application will not face any consequences. Thus, even if the data packets associated with different streaming video applications receive the same technical treatment in the network, the practice of counting only some streaming video applications towards the monthly bandwidth cap makes those applications relatively more attractive. The lower users' monthly caps, the stronger the pull.

Thus, zero-rating is a powerful tool to favor some applications over others and causes the same problems as technical forms of differential treatment. Like technical forms of discrimination, zero-rating may be used in one of three ways:

- An ISP can offer applications providers to pay for zero-rating.
- An ISP can zero-rate selected applications in a class of similar applications without charging the providers of the zero-rated applications.
- An ISP can zero-rate all applications in a class without charging the providers of the zero-rated applications.

⁶ CTIA - The Wireless Association (2014).

⁷ Knutson (2014).

⁸ Digital Fuel Monitor (2014a).

Like the different kinds of technical discrimination, these different kinds of zero-rating pose different problems, and should be evaluated separately.

2. Zero-rating in exchange for edge-provider payment

ISPs have expressed their interest in offering application providers the opportunity pay to have traffic affiliated with their application exempted from the cap. In the US, AT&T offers a program called “sponsored data,” that allows any interested application provider to pay for zero-rating.

Zero-rating against a fee harms the start-up innovation ecosystem and free speech

Fees in exchange for zero-rating pose the same threat to innovation and free speech as fees in exchange for technical forms of preferential treatment.⁹ As the record shows, start-ups, small businesses and low-cost speakers will often be unable to pay to be in the fast lane; they won’t be able to pay for zero-rating, either. But if some companies can pay so that their content loads faster or does not count against users’ bandwidth cap, then those who can’t pay won’t have a chance to compete and be heard. For this reason, start-ups have consistently asked the FCC to ban this type of zero-rating, too.¹⁰

Zero-rating against a fee harms users

Proponents of zero-rating argue that allowing application providers to pay for zero-rating will benefit consumers by allowing ISPs to lower prices for mobile Internet services.¹¹ Like arguments that allowing ISPs to be in the fast lane will result in profits that ISPs will use to lower the price of Internet access or deploy more and better broadband networks, this argument is highly questionable. There is no guarantee that ISPs will use the additional profits to lower the price of mobile Internet service. Economic theory suggests that ISPs’ incentive to pass through any profits to users depends on the strength of competition in the market for Internet services. Thus, any benefit in the forms of lower prices is highly speculative. In addition, application providers don’t exist in a vacuum. Application providers will have to recoup the costs of zero-rating somehow – e.g., through higher prices or more advertising on the site. Thus, users will ultimately pay the price.

At the same time, there are strong indications that allowing ISPs to charge application providers for zero-rating will harm consumers. If ISPs can charge application providers to be zero-rated, they would have an incentive to lower monthly bandwidth caps or increase the per-byte price for unrestricted Internet use in order to make it more attractive for application providers to pay for zero-rating. The resulting reduction in bandwidth caps harms users and

⁹ van Schewick (2014); van Schewick & Weiland (2015), p. 87.

¹⁰ See, e.g., Letter from Nick Grossman, Union Square Ventures, GN Docket Nos. 14-28 & 10-127, Feb. 18, 2015; Letter by Vimeo, Cogent Communications, Inc., Contextly, Inc., Distinc.tt1, Dwolla, Inc., Engine Advocacy, Kickstarter, Inc., OpenCurriculum, Inc., and Tumblr, Inc., filed by Michael Chea, Vimeo, GN Docket Nos. 14-28 & 10-127, Feb. 18, 2015.

¹¹ Knutson (2014).

providers of applications that do not pay for exclusion from the cap.¹² This effect can already be observed in Europe.¹³ As Digital Fuel Monitor has documented, ISPs that zero-rated their own applications have either restricted the amount of bandwidth that users can pay to low bandwidth caps of 5-10GB, not allowing users to buy more, or increased the per-bandwidth price of unrestricted Internet access so that it becomes more difficult to buy additional bandwidth that can be used without restrictions.¹⁴

By contrast, shortly after the Dutch regulator prohibited ISPs from zero-rating their own applications, KPN doubled its monthly bandwidth cap for mobile Internet access from 5 to 10 GB at no additional cost. It was about to introduce its own mobile TV application, and had planned to zero-rate it. But with zero-rating off the table, KPN faced a choice of offering an application that users can't use (because the bandwidth caps were too low), or increase the bandwidth cap so that users can actually use KPN's application - but in a way that allows users to choose freely among competing applications.¹⁵ Thus, banning zero-rating ultimately benefits all users (even those that aren't interested in using the zero-rated application) and all applications, by making more unrestricted bandwidth available.

Ultimately, regulators face a trade-off: Allowing zero-rating against a fee harms start-up innovation and small businesses. It fundamentally changes the environment for free expression online. It creates an incentive to lower bandwidth caps, which harms users and anybody who can't pay for zero-rating. It might, in rare cases, lower the price for mobile Internet access, but users will ultimately pay the price through different channels.

In the context of the debate over edge provider payments for priority or other forms of technical treatment, the FCC's answer has been clear: We are not willing to allow practices that are bound to harm users, innovation and free speech in the hope that this might potentially lead to lower prices or more deployment. The same arguments are directly applicable here.

The solution: ban zero-rating in exchange for edge-provider payment

Thus, any network neutrality rules should explicitly prohibit ISPs from charging application providers for zero-rating. To realize this goal in the FCC's current proposal, the bright-line rule banning paid prioritization should prohibit ISPs from charging application providers for any form of preferential treatment, including zero-rating.

The problems that drive a ban on zero-rating in exchange for edge-provider payment exist regardless of whether an ISP offers the opportunity to pay for zero-rating to all applications (as in AT&T's sponsored data offering), to all applications in a class of similar applications (i.e. to all music streaming applications) or exclusively to some, but not all applications within a class

¹² See, e.g., Ananny, et al. (2015), p. 3.

¹³ Rewheel (2014a); Rewheel (2014b); Digital Fuel Monitor (2015).

¹⁴ Drossos (2015) (summarizing the findings); Rewheel (2014a) (summarizing the findings); Rewheel (2014b) (documenting the price increase).

¹⁵ Digital Fuel Monitor (2015).

of similar applications (i.e. only to YouTube, but not to Netflix). Thus, the rules should categorically ban all forms of zero-rating for a fee, regardless of how they are being offered.

In the US, not banning zero-rating against a fee would be a significant step back from the FCC's 2010 Open Internet rules. The text of the order effectively prohibited ISPs from striking deals with application providers "to directly or indirectly favor some traffic over other traffic."¹⁶ As Verizon explained in a recent ex parte letter, the Open Internet rules prohibited it from entering into commercial arrangements that would allow application providers to pay for zero-rating; Verizon appealed the rules because it was interested in exploring such arrangements.¹⁷

Congressman Waxman's October 2014 letter proposed banning zero-rating against a fee as well.¹⁸

3. Zero-rating of selected applications within a class of similar applications without charging edge providers

In a second type of zero-rating ISPs zero-rate selected applications within a class of similar applications without charging the providers of the zero-rated application.

This practice appears in two variants:

First, ISPs might zero-rate their own applications, while counting all other applications against the cap. In the US, Comcast's zero-rating of its Xfinity App for the Xbox is an example of this approach. The Xfinity App is zero-rated, while other online streaming applications like HBO Go, Netflix or Hulu count towards the cap. According to research by Digital Fuel Monitor, 36 ISPs in the OECD and in Europe zero-rate their own online video applications. Ten ISPs zero-rate their own cloud storage applications, while uploads to competing applications like DropBox or Google Drive count towards the cap.¹⁹

Second, ISPs might zero-rate one or more unaffiliated applications without charging the providers of the zero-rated application for the benefit. This practice is very common in Latin America, where ISPs often zero-rate the top three social messaging applications or the top three social networks, while continuing to count all other similar applications towards the cap.²⁰

¹⁶ FCC Open Internet Order, p. 43, para 76.

¹⁷ Verizon (2015) ("As we explained to the court in our briefs, the Commission's earlier rules foreclosed voluntary business arrangements, such as 'innovative arrangements (such as advertiser-supported services) that would help recover the costs of building and maintaining broadband networks.' These types of 'sponsored data' arrangements – where online content or service providers voluntarily pick up the tab for usage associated with their traffic, rather than the end user doing so – also hold promise for saving consumers money and enabling interested providers to differentiate themselves and better compete.", *ibid.* at 2)

¹⁸ Waxman (2014), p. 11 ("The FCC should adopt a separate bright-line rule that outlaws paid prioritization. The rule would prohibit broadband providers from entering into "pay-for-play" schemes with content providers and bar the use of access charges for obtaining preferential treatment such as faster speeds, guaranteed quality of service, exemptions from data plan limits, or other favorable terms and conditions.")

¹⁹ Digital Fuel Monitor (2014a); Digital Fuel Monitor (2014d); Digital Fuel Monitor (2014c); Drossos (2015) (summarizing the findings).

²⁰ See Ex parte letter by Ademir Pereira, GN Docket No. 14-28, filed February 19, 2015 (attached to this letter).

In the US, T-Mobile offers subscribers to its voice only data plans the ability to user unlimited Facebook for free. Thus, users can use as much Facebook as they want, but they can't access anything else on the Internet.

Zero-rating selected applications within a class of similar applications without charging edge providers distorts competition and user choice and harms start-up innovation, small businesses and free speech online

The competitive effect of this practice is significant:

When European ISPs zero-rate their own, bandwidth-intensive applications, they set the bandwidth caps so low that use of the competing applications becomes effectively impossible. Thus, users have a choice: They can use an unlimited amount of the zero-rated application, while use of competing applications would exhaust their cap in a few hours.²¹ In these cases, the anticompetitive effect is obvious.

If ISPs zero-rate social networking or social messaging applications, these types of applications generally don't use a lot of bandwidth, so users can still use competing applications even though if the cap is low. But because the draw of zero-rating is at last in part a psychological one (users hate to worry about hitting their caps, even if the caps are large enough) the zero-rating exerts a powerful draw in favor of the zero-rated applications, reinforcing their already dominant market position. Beyond the obvious competitive distortion in individual cases, allowing ISPs to zero-rate selected applications is going to systematically hurt start-ups and small businesses, and will marginalize speakers with less popular views. When they don't zero-rate their own applications (which serves a different purpose), ISPs will choose applications for zero-rating that they think will most appeal to their customers. Like the Latin American ISPs, they will zero-rate the top applications in a class. These applications effectively pay with their own brand and get their already dominant position reinforced in return. New applications that are yet unknown won't have the option. In markets that are subject to economies of scale or network effects, unseating the incumbent is difficult enough. Being up against a zero-rated incumbent will make it even harder for start-ups to succeed.

Zero-rating selected applications does not address the needs of underserved communities

Some commenters argue that at least one type of zero-rating in this class – giving users access to Facebook even if they haven't bought a mobile Internet plan – is beneficial for underserved communities. Having “free” access to Facebook, they argue, is better than not having no access to the Internet at all.

This argument does not apply to the zero-rating of ISPs own applications, so it shouldn't prevent the FCC from adopting a ban on these practices. But even for plans that give users “free” access to Facebook, the argument that these plans benefit minorities is wrong for two reasons:

²¹ Digital Fuel Monitor (2014c) (documenting the effect for cloud storage applications); Drossos (2015) (providing data for online video applications).

First, users of these plans don't get Facebook for free. The price of the bandwidth is rolled into their voice subscription.

And second, the argument suggests a false choice. The choice is not between granting low-income communities free access to Facebook or no Internet access at all. Instead of allowing free access to Facebook, ISPs could offer low-cost, limited options that give users free, but limited access to the entire Internet.

Zero-rating Facebook doesn't meet the needs of underserved communities. Now more than ever, Internet access is necessary to secure full participation in American economy and democracy. However, access to Facebook is not the same as access to the Internet. Low-income families need access to the Internet to do homework, communicate with teachers, search for jobs, sign up for health insurance, and register to vote. Minority communities, who have historically been left out of broader social and political discourse, need the Internet to organize, create, educate and innovate online. Facebook alone does not allow them to do this.

If ISPs want to help underserved communities, there are better options that are entirely compatible with meaningful network neutrality rules. Plans that offer "free," unlimited use of Facebook or similar applications are based on calculations about the average amount of data users use for this application. Rather than giving away bandwidth that can only be used for Facebook, wireless providers could give away a comparable amount of bandwidth that can be used to access the full Internet. These minimal plans would cost the providers the same as zero-rating.

Alternatively, providers could offer subsidized plans that are only available to low-income customers. For example, most German providers offer mobile data plans for students that include more monthly data than regular plans at lower costs. These alternatives would come at no extra cost to providers, but they would provide enormous benefit to low-income communities.

Ultimately, allowing ISPs to zero-rate certain applications as a tool to help spread the digital divide sets a dangerous precedent. Carriers like AT&T, T-Mobile, and GoSmart are currently marketing their zero-rated plans heavily to minority communities who rely on cell phones as their primary way of accessing the Internet. African-Americans and Hispanics are significantly more likely to rely on their phone for Internet connection than non-Hispanic whites, according to a 2013 Pew Research poll. These customers welcome free access to Facebook. What they're not told is that providers could give them free (albeit limited) access to the full Internet – at the same cost as their current, zero-rated plans. As zero-rating becomes more popular, it will spread to wired broadband services in homes that don't have any access at all. This is only the illusion of progress. Low-income families, both on their computers and on their phones, will be restricted to sites that providers choose for them. It will shuttle already marginalized communities into "walled gardens" – cutting them off from free information and full participation. The FCC should not allow this, especially when providers could provide full access at no additional cost.

In sum, like technical discrimination that singles out specific applications for special treatment, zero-rating certain applications artificially makes these applications more attractive than others.²² And just like technical discrimination, zero-rating selected applications, but not other, competing applications allows ISPs to tilt the market in favor of specific applications and to “pick winners and losers” on the Internet. This is exactly the kind of harm that network neutrality rules are designed to prevent.

These plans aren’t beneficial for underserved communities, either. Plans that offer consumers the ability to use Facebook for “free” aren’t free. They don’t meet the needs of minorities or other underserved communities who need access to the full Internet. If ISPs really want to help these communities, they have alternatives that are equally cost-effective, but that do not similarly restrict users to a walled garden, distorting competition and user choice in the process.

The solution: Ban zero-rating of selected applications within a class of similar applications without charging edge providers.

For these reasons, the rules should explicitly prohibit ISPs from zero-rating selected applications within a class of similar applications without charging the providers of the zero-rated application. This ban should apply regardless of whether the zero-rated applications are affiliated with the ISP or not.

Congressman Waxman’s October 2014 letter proposed prohibiting ISPs from zero-rating affiliated applications, but would have allowed the zero-rating of unaffiliated applications in the absence of an edge-provider fee.²³ However, the harm from the practice is the same, regardless of whether an ISP is affiliated with the application or not.

4. Zero-rating of all applications in a class that does not involve edge-provider payments

Third, while zero-rating all applications in a class is likely to be harmful as well, the harms from the practice may not be as obvious. If the FCC feels unprepared to fully evaluate this practice in advance, it could evaluate this type of zero-rating under the general conduct rule. T-Mobile’s Music Freedom program, which seems to allow any interested music streaming application to apply to be zero-rated without payment, seems to belong to this category.

Conclusion

The FCC’s rules should explicitly ban two types of zero-rating:

- (1) zero-rating in exchange for edge-provider payment; and

²² van Schewick (2015), pp. 30-33; van Schewick & Weiland (2015), pp. 89-90.

²³ Zero-rating in exchange for a fee would have been prohibited by his proposed ban on paid prioritization. Waxman (2014), p. 11 (“Arrangements between a broadband provider and an affiliate that give the affiliated entity prioritization should also be considered a violation of this ban [on paid prioritization].” The footnote following this sentence clarified that “[a]ffiliates of broadband providers already have a monetary relationship with the provider and thus [are] subject to the ban on paid prioritization.” Ibid., footnote 34).

(2) zero-rating of selected applications within a class of similar applications without charging edge providers.

These types of zero-rating are clearly harmful and should be banned now.

A third type of zero-rating – zero-rating of all applications in a class that does not involve edge-provider payments – should be reviewed under the general conduct rule.

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2.3.5 Mozilla



12/29/15

TO:

RS Sharma
Chairman, Telecom Regulatory Authority of India

CC: Vinod Kotwal
Advisor (F&EA), Telecom Regulatory Authority of India

Introduction

Thank you for the opportunity to submit comment on the Telecom Regulatory Authority of India's Consultation Paper on Differential Pricing for Data Services.

The Mozilla Corporation produces the Firefox web browser and Firefox OS, together adopted by half a billion individual Internet users around the world. Mozilla is also a foundation that educates and empowers Internet users to be the Web's makers, not just its consumers. Finally, Mozilla is a global community of technologists, thinkers, and builders, including thousands of contributors and developers in India, who work together to keep the Internet alive and accessible.

Connecting the world's unconnected is one of the great challenges of our time, but in the current global debate on how to accomplish this goal, we believe that the advent of various differential pricing schemes has created harmful normative pressure to interpret "connecting people" to mean connecting them to some parts of the Internet, not all parts of the Internet.

As our Executive Chairwoman Mitchell Baker noted in a May 5th letter to Prime Minister Modi¹:

"We stand firm in the belief that all users should be able to experience the full diversity of the Web... At a time when users are increasingly being pushed into private, walled gardens and Internet malls providing access to only a limited number of sites, action is needed to protect the free and open Web."

As TRAI makes reference to in this consultation paper, a variety of business models featuring some form of subsidization and differential pricing have been put forward, many in the name of accelerating the rate at which people are connecting to the Internet. Access is a challenging and still-unsolved problem; yet, we worry about the harm that differential pricing would pose were it to be blessed as part of the solution. While differential pricing does not raise the same prototypical harms associated with net discrimination (i.e., throttling and blocking), we share your concern that many of these models effectively enable unfair prioritization giving rise to anti-competition and anti-innovation effects.

The core principles of net neutrality have created a level playing field that has been critical to the Internet's success to date. The Internet's capacity to be an engine for economic and social development, education, opportunity, and innovation will be diminished if we sacrifice these principles and install new gatekeepers in the name of connecting new users.

¹ <https://blog.mozilla.org/netpolicy/files/2015/05/Letter-from-Mozilla-Executive-Chair-Mitchell-Baker-to-Prime-Minister-Modi.pdf>

Harms of differential pricing

The open Internet relies on many technological and legal assumptions for its continued vitality. One of those assumptions is net neutrality: the idea that Internet Service Providers and governments should treat all data on the Internet equally, not discriminating or charging differentially by user, content, site, platform, application, type of attached equipment, or mode of communication. While paid prioritization is frequently invoked as a violation of this principle, subsidization that makes some content available for free, and other content only available at a cost that is prohibitively expensive to some, raises similar concerns. As with blocking, throttling, or paid prioritization, differential pricing can enable gatekeepers who exercise market power to disrupt the Internet's level playing field. Even with platforms that claim to be open to any site or service that meets certain technical specifications, we are concerned with how open they would be to including a new, startup competitor to their established services and those of their partners.

There are some that argue that differential pricing for a short period of time is justified if it leads to users purchasing access to the full Internet in a reasonably short time period. In assessing claims that differential pricing schemes are successful in moving users who were unconnected to paid plans, we encourage TRAI to look carefully at the data. For example, it is worth investigating the connectivity available to these users before they acquired a SIM with a differential pricing scheme. Put another way, users of differential pricing schemes are not necessarily first time Internet users. While genuine successes in accelerating the rate at which people are connecting to the full diversity of the open Internet may in certain cases outweigh the anti-competition and anti-innovation harms, if such claims prove to have little to no merit, then there would be fewer benefits conferred by differential pricing to counterbalance the harms.

In a context of difficult practical questions around promoting access to and adoption of Internet connectivity, we welcome TRAI's investigation into differential pricing schemes, given the potential for significant harm to both the orderly growth of the telecom sector and the consumer interest in the long term. As the TRAI exercises its oversight and regulation of such product offerings, we believe you will be well served by the principles you have previously enumerated: Non-discriminatory, transparency, not anti-competitive, non-predatory, non-ambiguous, and not misleading.

Alternative models

In the belief that there can and must be business models that will serve to connect the unconnected, and connect them to the full diversity of the open Internet without violating the principles of net neutrality, Mozilla is exploring alternatives to this end as part of our work on Equal-Rating². We are conducting research to better understand the complex nexus of Internet openness and Internet access, while at the same time sparking innovation in alternative market solutions.

As the consultation notes, there are already in market a variety of alternative business models that are emerging to help accelerate the rate at which people are connecting to the Internet which do not rely on differential pricing. In a blog post introducing the concept of equal-rating³ we note two early explorations of such alternative approaches; many more are possible, and will certainly be introduced in years to come.

What is certain is that we should not accept business models that offer access to only a select few chosen websites for free as the only or ultimate solution to connecting the unconnected. If we are to accelerate

² <https://blog.mozilla.org/netpolicy/2015/05/05/mozilla-view-on-zero-rating/>

³ <https://blog.mozilla.org/netpolicy/2015/05/05/mozilla-view-on-zero-rating/>

the rate at which people are connecting to the Internet, some subsidization may very well be needed. However, a market solution that provides access to all of the Internet is preferable in that it allows “consumers [to] pick the content they choose to access based on the quality of that content, not the financial power and business partnerships of the provider,” as our Executive Chairwoman Mitchell Baker noted in her blog post introducing Equal-Rating.⁴

Investing in improving capabilities

While much of the global conversation around connecting the unconnected has focused on the challenges of improving affordability and infrastructure, we also encourage serious consideration of the value of investing in improving capabilities, specifically digital literacy and digital skills training.

In a recent paper⁵ we co-wrote with the GSMA, we detail a small scale study we conducted in Bangladesh demonstrating the power of digital literacy. As part of this study, a group of participants received basic web literacy training: they learned about device basics, the difference between apps and browsers, and online identity and privacy. A second group of participants received no training. The results? After four weeks, the first group logged 17 percent higher Web usage and expressed increased ability and a greater desire to become content producers. Indeed, participants in the group that received training actually exceeded the 2GB of data we provided to them for free as part of this study at higher rates than those in the control group. This demonstrates that there is increasingly a business case as well an opportunity for positive government intervention in spurring investment in digital capabilities.

Conclusion

We commend the TRAI and the Government of India for your commitment both to connecting the unconnected and to upholding the principles of net neutrality that have served the Internet so well. We understand the temptation to say “some content is better than no content,” choosing a lesser degree of inclusion over openness and equality of opportunity. But it shouldn’t be a binary choice; technology and innovation can create a better way, even though these new models may take some time to develop. The people of India want net neutrality and want access to the full diversity of the open Internet as reflected by the more than a million submissions that came from users across India in response to TRAI’s last consultation paper; we urge you to heed their call.

Sincerely,
Denelle Dixon-Thayer
Chief Business and Legal Officer

⁴ <https://blog.lizardwrangler.com/2015/05/06/zero-rating-and-the-open-internet/>

⁵ https://stuff.webmaker.org/whitepapers/smartphones_content_skills.pdf

2.3.6 Telecom Watchdog

TELECOM WATCHDOG

(Registered under the Societies Registration Act, 1860)

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Nothing should be stopped which is offered free to consumers

The Advisor (F&EA)
Telecom Regulatory Authority of India
New Delhi

Date: January 07, 2016

Kind attn: Ms Vinod Kotwal

Response to Consultation Paper dated 09.12.2015 on “Differential Pricing for Data Services”

What is free should be promoted, not demoted. FB Free Basics is Public Purpose Data Access. Trai’s Differential Pricing consultation is a ploy to finish Net-Neutrality & make OTT expensive

Madam

In response to the above referred consultation paper, at the outset we would like to state that Trai should not reject any proposal that offers free services to general public including the one being offered by Facebook under the brand “Free Basics”. In case the need arises, issues regarding any discriminatory behavior can be tackled through Model Standard Interconnect Agreement, which has been a common practice in Trai in such situations. So far, from the consultation paper it appears that no such incidence has come across. There may be some vested interests who are opposed to any move of providing anything free to the consumers. Our detailed response given below revolves around this idea that nothing should be stopped that is offered by Operators as free to consumers.

Welcoming their new born daughter, the Facebook CEO Mark Zuckerberg, 31, and his wife, Priscilla Chan, wrote a letter to her pledging 99 per cent of Mr Zuckerberg's Facebook Inc shares into a new philanthropy project focusing on human potential and equality.

Though these shares presently are worth over \$45 billion (Rs 3 lakh crore), but he, with his modesty, termed it a small contribution. *“We know this is a small contribution compared to all the resources and talents of those already working on these issues. But we want to do what we can, working alongside many others,”* said the couple in the letter to their baby.

It is not a mere statement, but detailed plans were disclosed in couple's letter of December 1, 2015 to their beloved baby named Max. Mr Zuckerberg posted the letter on his Facebook page.

Now, this great innovator-businessman of our times, who has donated 99 per cent of his shares, is suspected of motives when he launched “Free Basics” in India.

So much so, that Trai, in order to stop such free services, issued a special consultation paper on December 9, 2015 inviting suggestions of all the stakeholders. Calling it “discriminatory”, Trai reportedly even issued direction to Reliance Communications to stop such free services, with which Facebook has non-exclusive tie up for “Free Basics.”

Trai must have been swayed by a lot of uninformed noise that passes as television debate and stories in the mainstream media. Most of them had reported the issue of Free Basics to be

opposed to net-neutrality. The most common phrases used while opposing the Free Basics are:

- **Critics' views:** Free Basics is discriminatory and will lead to elimination of start-up companies or kill competition or it is anti-internet growth.

Our views: So far no such events have been reported – neither in the media nor by Trai in its consultation paper. But even to remove any possibility of this happening in future, Trai can introduce a “Model Standard Interconnection Agreement” which can be made mandatory for providing free internet access to ensure transparency. Trai has been successfully using this tool to eliminate discrimination. Trai has never stopped any services / interconnections in the past.

Moreover, such so called discriminations, based on the end-usage of services, already prevail. For example, termination charges payable for SMS is into three categories: It is 2 paisa per SMS if it is used for normal communication by individuals and government agencies. It is 7 paisa, if SMS is sent for commercial purposes. So, the SMS charges depend upon the usage. For non-commercial use, it is 2 paisa, and for commercial use it is 7 paisa.

Another example is of Doordarshan. Many of the Doordarshan channels must be shown free to viewers, whereas most of the other channels are paid. Thus, there exists a system of free to air channels because, the government wants to reach out to even those people who cannot afford to pay to watch such channels.

- **Critics' views:** If Facebook is so concerned about spread of internet, why do not they offer free services to all, to begin with few hundreds of MBs every month.

Our views: The concept of targeted subsidy already prevails. For example, under Universal Service Obligation (USO) Fund subsidized services are provided in rural or non-profitable areas.

Also, the government has recently changed the policy of providing subsidy for domestic gas cylinders. Now, only the needy are provided with subsidized cylinders.

Also, we can see individuals donating “blankets” during winter season to the poor and indigent. We don’t tell them to donate blankets to everyone or that instead of blankets they should donate “cash”. The donors should have the right to decide how their donations are be used in a targeted manner and what specific purposes are to be achieved.

The regulator should interfere only in case it is notified of any alarming situation of anti-competitive behaviour.

Trai should have framed enabling questions

The government is using USO Fund for providing subsidy for increasing access to various telecommunication services. Free Basics from Facebook is a great example of enlightened action by a Technology company to contribute and reduce load on the USO Fund. The government should encourage this.

There must be some operators who are opposed to the very idea of providing anything free to the consumers and they are the ones who have launched the anti-campaign.

Inorder to clear the air, Mr Zuckerberg came to India and had open discussions with the youth explaining them the need for such services. The same objectives can be seen in the couple's letter to their baby.

Facebook also launched a special media advertisement campaign trying to tell the public the advantages of the Free Basics during their short launch with Reliance Communications. Trai should have analysed such claims and included it in its consultation paper so that the respondents had the required authentic information while giving their responses.

In our view, Trai should have framed the questions for consultations in an internet friendly manner. The right questions should have been:

- (i) Should Trai define some categories of web sites the access to which can be provided free by all the operators?
- (ii) Should there be some more companies besides Facebook, who should be encouraged to provide access to certain web sites free?
- (iii) What should be the maximum tariff chargeable for certain categories of web sites?

In any case, our specific responses to Trai's questions are as follows: -

Q1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

A1: Trai should never deny free access of telecommunication services to consumers. Framing of questions by Trai in this manner is not a correct approach. Strangely, Trai has given extremely wide meaning to differential pricing. Trai must recognize the fact that what is being offered under Free Basics by Facebook is absolutely free and by no stretch of imagination it can come under the purview of "differential pricing". So far there has been no misuse by providers in any part of the world. In India, people who are opposing such a move are doing so under the presumption that in future the providers may misuse it. But, free access provided in a transparent manner cannot be stopped on mere apprehensions.

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

A2: At the outset we would state that under the guise of permitting "differential pricing," the OTT services should not be made costlier. Free is to be treated as absolutely free. It is not priced. So the question of this being termed under "differential pricing" does not arise.

On March 27, 2015, Trai (under its highly anti-consumer former chairman Rahul Khullar) had come out with a consultation paper that was titled as "*Regulatory Framework for Over-The-Top (OTT) Services.*" We had opposed it vehemently because it intended to make certain apps, accessible over internet, costlier for the consumers.

Incidentally, this time Trai's consultation paper has been titled as "*Differential Pricing for Data Services.*" If Trai has put the "**old wine in a new bottle**", then we suspect that Trai even under its new chairman, knowingly or unknowingly, continues to play into the hands of certain class of operators who had been fleecing customers, right since beginning. We strongly oppose this.

Neither does allowing unrestricted access to services such as Free Basics mean that regulations are framed in a manner that automatically allow discriminatory data tariff as that would mean making OTT services expensive. Therefore, under the guise of allowing Free

Basics, Trai should not frame such Regulations which can be exploited by certain operators to charge a higher tariff for certain types of OTT services. Allowing Free Basics and OTT services in the prevailing affordable form should co-exist as there is no inherent contradiction.

Trai should come out with a “**free access web register**” and any company such as Facebook or an operator should be able to provide free access to such web sites through a transparent arrangement.

To bring a transparent regime in Free Basics like services, we suggest Trai may introduce a Model Standard Interconnect Agreement where anyone and everyone can come and provide free data / internet services. Trai has achieved the specified goals of non-discrimination and transparency in the past on number of occasions.

Q3: Are there alternative methods / technologies / business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest / describe these methods / technologies / business models. Also, describe the potential benefits and disadvantages associated with such methods / technologies / business models?

A4: Nandan Nilekani & one Viral Shah in an article published in The Times of India have suggested crediting the accounts of all the users with certain MBs of data usage every month free by the government from the USO Fund on the same pattern like what is being done by the government under Direct Benefit Transfer (DBT) schemes.

This is not at all a wise and practical idea. Certain class of people in society download & view indecent content from the web sites and it will be difficult to block such sites on daily basis. Every day hundreds of new such webs will appear if contents are provided free.

Moreover, crediting a fixed amount monthly would mean undue enrichment of the operators from the government funds especially when there are companies who are willing to provide such services free. Besides, monitoring of actual usage claimed by operators will be a big issue.

Therefore, let the system work for sometime in the present form. In case it requires any regulatory intervention at a later stage, Trai has all the powers to set right the misuse.

Q4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

A4: Though this Consultation Paper purportedly has been issued to protect the interest of the consumers, but in the absence of any specific complaints of misuse, we suspect a hidden hand behind this. It appears that the aim is to primarily make OTT apps / services expensive for the consumers. Trai’s new chairman RS Sharma should be cautious of officers, who are already there at senior positions in Trai, who are bent upon barring free services to favour incumbent operators.

The present issue on the pricing of data services can be traced back to Trai’s anti-consumer move of levying Termination Charges (TC) on SMS. In 2013, moving SMS from Bill-And-Keep (BAK) to TC regime was unwarranted and anti-consumer that has made the SMS costlier for the consumers, which was earlier used freely by banks, schools, etc. After that, the operators tried to make SMS expensive on apps such as WhatsApp, etc., through Trai’s

March 2015 OTT consultation Paper. A strong opposition by consumers across the country stopped it.

It is important to highlight here that in an affidavit dated October 31, 2011 filed before the Supreme Court, Trai had declared that it would move away from TC regime to BAK regime even for mobile to mobile calls by 2014, but Trai took u-turn on this pro-consumer issue and it has not implemented this so far. Also, unrestricted Voice over Internet Protocol (VoIP) is a long pending issue of the consumers, but somehow the operators had been successful in keeping it in abeyance. These are the issues, which must be addressed by Trai's new leadership.

Conclusion

The new chairperson of Trai Ram Sewak Sharma has accorded centrality to consumer interests. The current consultations should embody that principle. We hope the decision will be taken in favour of consumers without denying them free access to services wherever available. Already consumers are burdened with heavy charges on using data services.

Recently, we have seen Mr Sharma taking tough stand against the operators on issues like "call drop" while also countering them on their false claims of "huge impact" on their revenues because of the penalty levied for call drops. Trai had levied Rs 1 as penalty for every call drop subject to a cap of Rs 3 per day.

Our answer to Trai's question is not to stop any service that is offered free. Model Standard Interconnect Agreement is the answer to any abuse of dominance and discriminatory behaviour.

Thanking you

Yours sincerely
For Telecom Watchdog



Anil Kumar
Secretary
Mobile: 81-301-67111

2.3.7 Internet Society of India Chennai

These comments are submitted by the commenter in his capacity as President of the Internet Society India Chennai Chapter:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No. The Internet has emerged as a global resource of unprecedented value and enormous benefits because of its non-discriminatory values. Differential pricing would be beneficial to commercial enterprises, but would cause severe harm to the Internet.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

None. The very notion of differential pricing is by itself discriminatory and is prejudicial to the fundamental principles of competition and would lead to barriers for market entry.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

The alternative is to work towards freeing the wireless spectrum which would eventually bring down bandwidth prices. Government could invest in / subsidize investments in Internet infrastructure on a scale not conceived before, on a new model of public-private partnership, which would make the Internet more affordable. Internet access for the weaker economic sections could be enabled by an intense review of the unnecessary laws created by the Law and Order agencies that have almost eliminated Internet Access Booths in the country. For the weakest of the population, the Government could devise a program that would pay for a minimal amount of bandwidth free, and not encourage complex commercial models of "free" Internet access.

Free basics, as a program, even if possibly prompted largely by a benevolent intent, cause concerns that far outweigh any credit due for the monetary concessions to its potential users:

- a) The size of the target segment for free basics is 3 billion users and, in a country like India, it exceeds over half the population. Hences, Free Basics would become the first, and more likely than to be not, a persistent point of entry to the Internet for over 50% of India's Internet users, covering almost three fourth of India's voters.
- b) Though might not be intended for its value as media, Free Basics could -in effect- emerge as a global neo-media enterprise governed by its own rules over an audience of over 3 billion Internet Users
- c) Free basics, if it operates as an expanded facebook, is likely to have its own 'algorithm' to determine what broad trend, topic or news should form part of its "feed", what gets freely promoted as popular or most popular.

Please see

http://www.slate.com/articles/technology/cover_story/2016/01/how_facebook_s_news_feed_algorithm_works.html?wpsrc=sh_all_dt_tw_top

Any user, within its "Walled Gardens", when repeatedly exposed to a certain trend or certain point of view, would be influenced in a certain way, which is sociologically, economically and politically a cause for a significant concern.

- d) There is a likelihood of Free basics being operated in a manner that is far from that of an environment for the free flow of content, but rather as a controlled environment that would employ well researched content feed techniques to determine what to feed, for commercial reasons, if not for other reasons.

It is exchanged in a public policy email list that at "any given Facebook user is currently involved in about 10 of these experiments at any time without their knowledge".

Please see

<http://www.radiolab.org/story/trust-engineers/>

and

[http://www.nytimes.com/2014/06/30/technology/facebook-tinkers-with-users-emotions-in-news-feed-experiment-stirring-outcry.html? _r=0](http://www.nytimes.com/2014/06/30/technology/facebook-tinkers-with-users-emotions-in-news-feed-experiment-stirring-outcry.html?_r=0)

and

<http://www.wired.com/2014/06/everything-you-need-to-know-about-facebooks-manipulative-experiment/>

Also, the discussion mentioned "the potential of Facebook manipulating elections"

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The Telecom Regulatory Authority of India may find it necessary to count the million comments that it received as submitted by Facebook that of its users, as guided comments, or count it as a singular mobilized statement of support, and not as a million separate comments.

The Telecom Regulatory Authority of India, in deciding on a huge issue of enormous implications to the country and to the whole world, would attentively consider the inputs received from Business, Academia, Civil Society Organization and Individuals as also involve other departments of the Government and the government functionaries at the highest level.

Thank you

Sivasubramanian Muthusamy
President
Internet Society India Chennai Chapter
<http://isocindiachennai.org>
6.Internet@gmail.com

2.3.8 Consumer VOICE

To,
Ms. Vinod Kotwal, Advisor (F&EA),
TELECOM REGULATORY AUTHORITY OF INDIA
MAHANAGAR DOORSANCHAR BHAWAN,
JAWAHAR LAL NEHRU MARG, NEW DELHI-110 002
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VOICE comments on-
“Consultation Paper on Differential Pricing for Data Services”

We at VOICE as part of our advocacy initiative in Telecommunications continuously raise different issues with Policy makers impacting consumers based on the knowledge through Consumer feedbacks. We also publish a magazine “CONSUMER VOICE” for consumer empowerment. As registered CAG with TRAI we are in forefront of providing inputs to TRAI related to consumer concerns and interests.

In continuation of these efforts from VOICE, we hereby submit our comments as under-

At the outset VOICE believes that Internet should be treated almost like other Human Right per UN charter with absolutely no scope for even a remotest possibility of denial to any human being in any disguise. Differential Pricing is the stepping stone in this direction hence should not be allowed.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

VOICE COMMENT: An absolute NO. TSPs should not be given any such option which will definitely lead to malpractices impossible to regulate. Every TSP is in the business for their legitimate aim of “Profit Maximisation” within the overall principle of free & fair market. Any such model (of **differential pricing**) will provide too big a control with TSPs and will lead to formation of “bouquets” like in Cable TV which consumers will need to opt for making the choices available restricted.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

VOICE COMMENT: It is impractical. A site will need to join such a platform and the platform owners/managers will accept or reject such applications—who formulates the criteria / who exercises control in such decisions and who arbitrates? Then there will be many such platforms – something like industry associations because everyone wants to control. We have already seen the same system operating at a micro level in Cable TV industry and how complicated it is

to regulate. Internet will be extremely complex and multi-dimensional system almost impossible to regulate.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods /technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

VOICE COMMENT: There are immense possibilities if the purpose is to provide Internet access to the under-privileged or extend its reach. Few possible ways are-

- Differential / preferential pricing for data services in Rural India
- Differential / preferential pricing for data services for all non-commercial users
- Differential / preferential pricing for data services in Rural India
- Differential / preferential pricing for data services in all educational institutions

All these options are easy to implement, non-discriminatory, Not Anti-competitive and Transparent. A model of financing all TSPs by these platform creators like Facebook, Google etc. can be devised and monitored by TRAI.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

VOICE COMMENT: Internet is extremely dynamic, unpredictable, technologically evolving entity with profound impact on mankind – politically, socially, personally. It has become omnipresent and may become as important as food, water and air. There is no way one can predict the impact of these actions on future outcome. So it should be considered a public utility like water, roads etc. and pricing has to ensure availability to all at a most affordable cost.

CONCLUSION:

- Content is beyond the purview of TRAI
- Issues involved here are beyond only communication- it also involves Human Rights, Right to Information- both to know and to be heard, and of a Civil Society
- The issue is too big for the TRAI and beyond the scope
- There is absolutely no way TSPs can be given any authority to regulate content

- This issue is too important and fundamental. Any regulation will pave the way for the TSPs to start chipping at the boundaries of the regulations to continuously test the deviations they can go to maximize their gains.

Hemant Upadhyay
Advisor- IT & Telecom

30/12/2015

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2.3.9 mKisan

To: Ms. Vinod Kotwal, Advisor, F&EA, TRAI

Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. With 1 billion Indian people not yet connected, banning Free Basics would hurt our country's most vulnerable people.

Free Basics provides free access to essential internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all developers who satisfy basic [technical guidelines](#) and non-exclusive so any mobile operator can participate.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Sincerely,
Prashanth Reddy – *Founder, mKisan*

2.3.10 Society for Knowledge Commons et



Society for
Knowledge Commons

B-130, Lower Ground Floor, Shivalik, Malviya Nagar, New Delhi 110017
Phone: 011-26683563
Email: knowledgecommons@gmail.com

To,

December 29, 2015

Ms. Vinod Kotwal
Advisor (F & EA)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawaharlal Nehru Marg
New Delhi 110 002

Re: Response to the TRAI Consultation Paper on Differential Pricing for Data Services dated December 9, 2015 (No. 8/2015)

Dear Sir,

We refer to the captioned Consultation Paper, and enclose herewith the joint comments of the following organizations:

- (a) Society for Knowledge Commons, New Delhi
- (b) Delhi Science Forum, New Delhi
- (c) Free Software Movement of India, Hyderabad

We would also crave your indulgence to provide further submissions / responses to TRAI during the counter comments submission phase.

We would like to thank the TRAI for ensuring that opinion from stakeholders/the general public is sought prior to creating or adopting any new framework for regulation of the online space in India, a sector that is vital for the continued development of a vibrant democracy and flourishing economy.

Yours sincerely,


(Rishab Bailey)

Director – Legal
Society for Knowledge Commons
B-130, Basement,
Shivalik, Malviya Nagar
New Delhi – 110 017

Response to the TRAI Consultation Paper on Differential Pricing for Data Services dated December 9, 2015 (No. 8/2015) (the “Consultation Paper”)

The Internet is already an integral part of today's economy and society. As more and more services, content and applications are made available on the Internet, we are only likely to see the further use and therefore growing importance of this resource. It must however be kept in mind that the primary purpose or imperative of the Internet is not necessarily commercial – but rather to enable free communications and exchange of knowledge. This is why the Internet is often referred to as the greatest innovation of humankind – in that it enables unimaginable social benefits and efficiencies through connecting every person. TRAI must approach any regulation of the Internet keeping this basic principle in mind.

At the outset we would like to point out that the current consultation paper issued by TRAI restricts the Consultations to determining the tariff for different data pricing models without explicitly enunciating net neutrality principles, as it would apply to these models. Though the Consultation Paper does deal with the implications of violating net neutrality, it does so using the existing principles of tariff regulation i.e. the principles of Non-Discriminatory, Transparent, Not Anti-competitive and Non-Predatory pricing. While we recognize that these principles are certainly essential in their applicability to the telecoms regulatory regime in general and possibly broad enough to address the issue of data services, a clear definition in India of net neutrality and setting of relevant high level principles would be invaluable in providing certainty to the issue and would reduce arbitrariness that may otherwise occur in addressing violations on a case by case basis.

Prior to examining the specific issues raised by the Consultation Paper, we believe it is vital to also understand the emerging trends in the Internet economy, in order to be able to put in place a policy that is forward looking and progressive.

The Internet provides access to those who want to “consume” content (users) or those who offer content (the content being websites, services, applications, etc.). Both sides -- those who ‘view’ the Internet or provide content or services have contracts with their relevant Internet Service Providers (ISP's) that permit them access to the ‘public Internet’. This ensures that any content provider, or those looking to access content, are able to reach each other without the ISP's on either side playing a gatekeeping role. This is the core principle of net neutrality. This is what has led to the explosion of content and applications on the Internet. If content and service providers had to pay an additional ISP (i.e. the ISP of the user), this enormous expansion of the Internet would have been stillborn.

What distinguishes the architecture of the Internet is that it was conceived as a flat communications structure which allowed anybody with a computer to connect to anybody else, provided both sides had access to the Internet. It can provide one-on-one communication (single cast), one to many (multicast) or even broadcasting to a very large audience, all using the same mechanism. This is in contrast to all other forms of mass communications, which are all platforms for broadcasting content of a few entities to the mass of passive consumers.

In the initial phase of the commercial Internet, telecom companies (telcos) already had massive market power (often having monopolistic power) and huge subscriber

bases. They saw the fledgling Internet as another source of revenue as only they would provide access to users and therefore could assert a gatekeeping function. They demanded that popular sites pay a variant of what in telecom language would be called a termination fee to reach their subscribers. This was the first set of net neutrality battles that pitched telcos against Internet companies and netizens. The massive public outcry (both in India and abroad) finally forced the telcos to back off, retaining the current architecture of the Internet.

With the growth of Internet and the growing market power of the incumbent Internet giants, there has been a significant shift in the strategic situation as far as the online market is concerned. Today, big Internet monopolies are teaming up with telcos to form different kinds of cartels. Their attempt is to use the monopoly that the telcos have over their own subscribers and create a discriminatory/unequal market place. Telcos will also be increasingly forced to form such alliances with Internet giants merely in order to survive.

While this may not immediately create revenues for the company performing the gatekeeping role, the battle in the Internet space is for eyeballs and commodification of personnel data. The creation of a platform that others cannot match would mean long term benefits as the data of all those who are on platforms such as “Free Basics” would be with Facebook. Facebook already has more than 125 million users in India. Analyzing its revenue model would show that Facebook generates a revenue \$5 to \$25¹ per Facebook user. Permitting supposedly altruistic projects such as Free Basics would essentially be akin to the regulator permitting large scale harvesting of Indian user data – which is both a security concern and problematic from the perspective of equitable access to content.

Is there a need to regulate data pricing?

The first issue that must be addressed is whether this indeed a need to regulate data pricing in India. Taking into account purchasing power parity, data rates in India are relatively high. Further, India faces a huge shortage of available bandwidth – which can only be overcome by greater investments in infrastructure and connectivity. TRAI must therefore approach any regulatory practice from the perspective of lowering costs for users including by ensuring greater infrastructure development – which we believe can only occur if the policies are such that service providers are encouraged to build infrastructure and increase bandwidth instead of pitting place business models based on creating and exacerbating an artificial scarcity of a precious resource. Permitting service providers to act as gatekeepers of the Internet (as differential pricing practices would do) would hamper development of infrastructure and consequently will stunt bandwidth availability to users. It is in the service provider’s interest to create an artificial scarcity of bandwidth. This permits it to charge differential rates for different content – thereby adding a perverse incentive

¹ Cotton Delo, “How Much Are You Really Worth to Facebook and Google?”, Advertising Age, May 7, 2014, <http://adage.com/article/digital/worth-facebook-google/293042/>; Matt Petronzio, “How Much is the Average Facebook User Worth”, Mashable, April 25, 2014, <http://mashable.com/2014/04/24/facebook-average-worth-chart/#ginOUWSV2Eq3> and Forbes Magazine, George Anders, “A Twitter User is Worth \$110, Facebook’s \$98; LinkedIn’s \$93”, Forbes Magazine, November 7, 2013, <http://www.forbes.com/sites/georgeanders/2013/11/07/a-twitter-user-is-worth-110-facebooks-98-linkedin-s-93/>

to a notionally egalitarian market and ensuring that service providers will not have an incentive to invest in network and infrastructure growth.

Given the massive amounts of revenue² being generated by service providers on account of growth in data usage (and noting the anticipated increase in data usage as pointed to by various studies), as well as the increasing instances of unethical practices in the market (which breach the non-discriminatory aspect of net neutrality regulation) and adversely affect public interest – we believe that TRAI can and must regulate data pricing.

As referenced in the Consultation Paper itself, this must primarily be to promote competition, protect the openness of the medium and ensure the rights of the users are protected (through the application of consumer protection principles including transparency related principles).

The pricing of data services – as in the case of any other economic good – is a key to the growth of the Internet and its use as a public utility. However, this must be done in an open and non-discriminatory way. Any principle that in the short term, may supposedly help poorer set of subscribers to access certain “basic” sites, could in the long run, also be used to charge high data rates for certain kinds of websites and services. The choice of what should be the policy in order to enable low-end consumers to connect to the internet has to be well thought out so as not to skew the growth of the internet in the future or create disadvantages for a certain set of subscribers. Failure to adopt an appropriate regulatory approach (or one that empowers service providers to act as gatekeepers of the Internet) would create additional barriers to entry to the Internet, stifle innovation and reduce the choice of consumers to access content of their choice.

² It may be noted that the industry's revenues reportedly grew by as much as 10.1% across the market in the previous financial year (2014) as compared to an 8.6% growth rate previously. Various industry and investor reports also paint a rosy picture of the telecom industry. Notably, a BNP Paribas Securities India report from last year clearly states that EBITDA margins are improving, revenues from data growth are rising and that while spectrum auctions would reduce profitability temporarily, the telecom industry as a whole was actually in improving health. “TRAI Data Shows Turnaround Happening in the Telecom Sector”, The Hindu Business Line, June 10, 2014, available at <http://www.thehindubusinessline.com/features/smartsell/tech-news/trai-data-show-turnaround-happening-in-telecom-sector/article6101702.ece>

Even looking at companies performance on an individual basis, one sees that not only are some of the telecom companies making massive profits, these are only set to continue to increase in the near future – largely on the back of growth of data services (as well as addition of subscribers).

For instance, Airtel has earned revenues of over 140,000 Crores over the last 2.5 years which equates to a profit of approximately 16,000 crores in the same period. Nikhil Pahwa, “A Response to Airtel’s Justification of Its Net Neutrality Violation”, Medianama, December 27, 2014, available at <http://www.medianama.com/2014/12/223-a-response-to-airtels-statement-justifying-net-neutrality-violation/>

Similarly Vodafone is also doing exceedingly well and has declared record profits for a couple of years now - backed by growth in its subscriber base, higher call rates and increased data usage. Business Standard, “Vodafone Posts First FY Profit in India”, May 21, 2014, available at http://www.business-standard.com/article/companies/vodafone-posts-1st-fy-profit-in-india-114052001237_1.html

Idea too is doing exceedingly well from a business perspective. Their Profit After Tax was up last FY by over a 100% from the previous year to 1689.3 crores (total income stands at something like 26,179 crore). Notably Idea has paid dividends to shareholders for the last 2 years. The Economic Times Idea Cellular Ltd company financials, May 3, 2015, available at <http://economictimes.indiatimes.com/idea-cellular-ltd/profitandloss/companyid-3154.cms>

We now have data to show that the revenue stream from data has seen the fastest growth in recent times. Currently, there are 300 million users (June, 2015 figures, TRAI) of mobile Internet services, and this is growing at a rate of about 25%. We have added 60 million new users in the last year alone. This may be compared to the growth of mobile voice users, whose growth is now about 7%.

While this rate of growth can be considered to be satisfactory, it still leaves out another 650-700 million mobile users. Given the importance of the Internet, it is important that we quickly provide Internet access to all. The question therefore is how do we provide access to this segment without creating long-term problems for the sector.

We would submit that providing low-end consumers access to a few sites – as is being proposed by projects such as Free Basics -- would be the wrong approach to this problem. It would create the principle that net neutrality can be violated for an ostensibly “good cause”, and will lead to a set of subscribers believing that Facebook and a few other sites are the entire Internet. In Indonesia, studies show that 70% of the users believe that Facebook is the Internet³. It will also deprive these users the economic benefits of using the Internet.

One alternate approach would be to bring down the cost of data services drastically, particularly for 2G Edge services, where no new investments are being made by the telecom players. Data plans can provide for either a zero cost for the first slab of data usage, or a very low cost, to lower the threshold for accessing the Internet. This will allow the full Internet to be accessed and not just a few websites, pretending to be the “basic Internet” (this suggestion is in addition to other models of subsidized access discussed further on this response).

Though TRAI has till now practiced forbearance on these services, it is necessary in the public interest, to examine the issue of data tariffs. We need to see the disaggregated costs of such services from the point of view of their actual costs, and also consider telescopic/progressive tariff plans to encourage more mobile users to access the internet, particularly those using 2G and 3G services.

Differential Data Pricing:

While it may be convenient to defend differential pricing on the grounds that “some” Internet access is better than “no” Internet access – this tradeoff does not reflect the nature of the situation at hand. The real tradeoff is between expanding Internet uptake, lowering data service prices and setting a precedent that will make it harder for users to freely access the Internet.

Permitting differential pricing, even on purportedly ‘open’ platforms will exacerbate problems of monopolization / centralization of online services. This will permit big companies (such as for instance, Facebook) to act as a repository of all user data. Presently, given the multiplicity of services on the Internet, data is collected

³ Quartz, “Millions of Facebook Users Have No Idea They’re Using the Internet”, February 9, 2015, <http://qz.com/333313/millions-of-facebook-users-have-no-idea-theyre-using-the-internet/>

differently by each service provider. Big Internet companies want to ensure that they can become centralized repositories of user data (which they can then monetize). This can be accomplished by ensuring that people can only access content through single platforms – such as that provided by Facebook. Essentially, Facebook will subsidise market access for certain content players, in exchange for user data that their service and content offerings collect. This will therefore increase the market power of big Internet companies and may in fact lead to the creation of private Internets – each associated with a particular service provider. To also be kept in mind that per statistics each user is worth between 5 and 25 USD to Facebook.⁴ Permitting Facebook to allow it to take advantage of its market share and thereby force even more people into its platform (both content providers – who will need to in order to access users and users – who will due to the irrational pricing, network effects etc.) is essentially permitting the harvesting of Indian user data by a select few Internet companies in order to report even greater profits than they already do. This is not a position that TRAI should encourage or support.

The use of such differential pricing options is indicative of a new form of cartelization emerging in the Internet economy – with service providers and existing Internet monopolies acting so as to ensure all competing providers are kept out of the mainstream market. This poses a threat to the Internet economy in the medium to long term and will lead to service providers basically carrying a ‘bouquet’ of websites / applications, thereby reducing the Internet to cable TV and thereby limiting user choice and reducing the potential benefits that the Internet as a public network can offer.

One must also consider the effects such deals will have on increasing the centralization of online services (and consequent social and consumer problems that could be raised such as effects on privacy). For instance, using *Free Basics* may require one to sign into Facebook thereby permitting Facebook to track your activity on all applications and services offered on the platform.

Various zero rating platforms have stated that they are ‘open’ and will host any services (that meet certain conditions). Even in such situations however the platform provider can decide what services to host on the platform – thereby skewing the internet economy, limiting consumer choice and ensuring that the Internet is turned largely into a commercial enterprise rather than a space for exchange of knowledge. This is the equivalent of a benevolent dictator deciding to not tax his populace for a certain time – even if initially welcome, any such decision is colored being subject to the whims and caprices of a single unelected authority. In this context it is also worth questioning the claim of platforms such as Free Basics that claim they will carry all content submitted to them – the Internet comprises over a billion webpages – should every developer/content provider submit their content to Free Basic it appears

⁴ Cotton Dalo, “How Much Are you Really Worth to Facebook and Google?”, Advertising Age, May 7, 2014, <http://adage.com/article/digital/worth-facebook-google/293042/>; Matt Petronzio, “How Much is the Average Facebook User Worth?”, Mashable, April 25, 2014, <http://mashable.com/2014/04/24/facebook-average-worth-chart/#ginOUWSV2Eq3> and George Anders, “How Much is a Twitter, Facebook and LinkedIn User Worth?” Forbes Magazine, November 7, 2013, <http://www.forbes.com/sites/georgeanders/2013/11/07/a-twitter-user-is-worth-110-facebooks-98-linkedin-93/>

unlikely that the platform will agree to subsidise access to all such content (i.e. the full Internet).

In this context it is useful to refer to the comments made in the Report on Net Neutrality of the Department of Telecommunication dated May 2015, which states quite unequivocally that “*At the same time large organizations with market power have started creating closed ecosystems which protect their business model in the long run. Also new business models are being devised by large organizations to increase their user base, but unfortunately some of these initiatives are considered non-competitive, restrictive and in conflict with Net Neutrality principles. The Committee was conscious that the market for content provision indicates that clear market leaders emerge in a short while and if such market leaders are able to dictate the path to specific content, then the principles of non-discriminatory access from a user view-point can be compromised leading to distortions emerging in the content provision market and consequent implications for the larger Internet economy and emergence of new innovations. The Committee, therefore, is of the firm opinion that content and application providers cannot be permitted to act as gatekeepers and use network operations to extract value, even if it is for an ostensible public purpose. Collaborations between TSPs and content providers that enable such gatekeeping role to be played by any entity should be actively discouraged. If need be, Government and the regulator may step in to restore balance to ensure that the internet continues to remain an open and neutral platform for expression and innovation with no TSP /ISP, or for that matter any content or application provider, having the potential or exercising the ability to determine user choice, distort consumer markets or significantly controlling preferences based on either market dominance or gatekeeping roles.*”

Differential pricing deals as proposed by the Free Basics project also raise privacy and other concerns. For instance, per Facebook terms and conditions, Facebook will gain a royalty free worldwide license to use any content provided by the user. Further, they will track users through their entire use of the Internet.org / Free Basics platform. This raises serious concerns about privacy, ownership and usage of data – will poor and first time users (whom such platforms largely target) be in a position to either understand or mitigate such concerns?

It is also worth questioning whether government services / e-governance programs etc., will be forced to ride on such private platforms. Will the government and citizens be required to share user and other data with private corporations running such platforms, given that most terms and conditions are extremely one-sided (for instance Facebook’s terms confer a royalty free worldwide license to Facebook to use all information shared on the service).

In the circumstances, we believe that the arguments provided for permitting such differentiated data pricing, including the practice of zero rating are indeed harmful (to consumers in general and society at large) and do not actually empower the underprivileged (as erroneously contended) as explained below.

It is contended that allowing consumers access to certain limited array of content would enable the underprivileged to access at least some portions of the Internet – which they would otherwise not be able to. This would further have the advantage of

“expanding and accelerating Internet access, as first-time users of the free internet could experience its benefits and start paying for full access”

We believe this argument is misplaced. While on the face of it, it would appear that permitting customers access to limited content would be beneficial, it must be kept in mind that the content so provided is generally speaking, chosen by the service provider. This not only hampers the exercise of free speech (both by users as well as marginalized content providers) but also creates an unequal Internet, without a level playing field both for users as well as content providers (who will face an additional barrier to access their consumers / users base). While undoubtedly users will get a limited benefit of being able to access some content for free, it must be kept in mind that this provision of free access is not to the Internet, but to a limited array of services and content – as recognized by TRAI, there are therefore problems with monopolization and its effects. TRAI has also noted the critical issue of ensuring plurality of media and what happens to smaller players who cannot afford to enter into similar agreements. It is largely for this reason – i.e. the uncompetitive effect of such practices and their effect on plurality of content that various jurisdictions have held such agreements to be unlawful. To be kept in mind that differential pricing is not merely a question of whether or not such deals contain exclusivity clauses – i.e. whether they explicitly exempt others from participation in the platform, but what the effect would be on content providers who cannot afford to pay even supposedly nominal charges to access providers to ensure their content is carried on such a platform (in addition to any technical barriers or costs – such as for instance ensuring appropriate browser updates in order to access the service etc). One must keep in mind that at present, a content provider of any size merely has to get a single internet connection in order to provide his or her services to the public. Zero rating will create an environment where start ups and smaller businesses will have to enter into such additional agreements in order to reach their user base. In situations where their content is accessed through different service providers (say in different telecom circles), this could lead to huge costs on account of having to sign agreements with many service providers. This could also lead to situations where users are driven to certain specific service providers as content providers may not choose to enter into deals with all service providers (due to costs) but may instead opt only to enter into agreements with those service providers who already have large market shares. This will therefore hamper the business of smaller ISPs who will not be able to offer a content provider as much bang for the buck as a large ISP (in terms of number of people viewing the content providers content for free) and will consequently see its existing market share reduce as customers opt for ISPs who provide them free services. Such a system would also create a tiered Internet with some services available for ‘free’ – something that is clearly a problem from the perspective of ensuring diversity of content and competition in the online market.

Differential pricing gives service providers the power to unilaterally tilt the market in favor of specific applications and to ‘pick winners and losers’ on the Internet.” Tilting the market could stifle competition from local social networks, apps developers and content providers who cannot afford to pay providers to provide their content and cheaper rates or who do not have the market share or eyeballs on their products to make it attractive to operator to provide cheaper data for their services.

As discussed previously, such practices merely enable the creation of a captive

audience for certain giant Internet content providers / service providers who can use their market power to cartelize and ensure that other smaller players in the market are denied access to consumers / users.

Further, the argument that the underprivileged (who are the primary target of zero rated plans) will be empowered enough to start paying for additional services after a while, appears illogical. Providing a poor person access to say, Facebook for a limited duration will not mean that the person will be able to start affording regular Internet access thereafter – however much he or she may want it. Permitting differential pricing has the capacity to shut low income and other underprivileged groups into a ‘walled garden’ of cutting them off from free information and full participation” on the Internet. This would merely create new digital divides, something the regulator must be wary of, given increasing evidence that shows the existence/presence of second generation digital divides even in relatively well connected countries such as the US.

It must also be kept in mind that such practices by service providers also lead to consumers being duped (as recognized by the Consultation Paper) when they are directed to paid portions of the Internet, despite being on zero rated plans (and without adequate notice).

Given that a large proportion of our connected populace is new to the Internet and not necessarily tech savvy – it is essential that TRAI approach regulation from the perspective of ensuring user rights are protected.

In this context, it is useful to refer to the findings of various studies that have found that large proportions of people, particularly in developing countries, have no idea that they are actually using the Internet while using Facebook i.e. Facebook is becoming synonymous with the Internet (largely as Facebook has worked hard to ensure it is the only accessible content option to many users – including through the use of zero rating deals). This of course has huge implications for the continued growth and usage of the Internet. Not only is this a competition related issue – it is also likely to limit the potential uses to which the Internet can be put and will lead to an unhealthy centralization of online services. Already services are starting to move away from the open web and to Facebook – businesses for example are increasingly flocking to Facebook as large parts of their customer base only use this one platform. If people ‘decide’ to largely use one service, it follows that content, advertisers, and associated services also will flow to that service, possibly to the exclusion of other venues.

There is increasing pressure on telecom regulators around the world to permit differential data pricing and particularly zero rating. Expansion of this practice would merely turn the Internet into a service similar to cable TV – with different content-based packages being subscribed to by users. This would completely destroy the Internet as we know it today. Evidence shows that permitting such pricing packages, even in limited commercial instances, only leads to more and more of the big service

providers launching similar competing services – thereby ensuring that a large proportion of a country's users have only limited Internet access.⁵

Finally, it is worth pointing out that the Indian government cannot and should not outsource its duty to ensure adequate connectivity to the private sector. While certainly private sector involvement and expertise is a must, the state cannot side-step its responsibility in ensuring basic rights of the citizen to access the free and open Internet are not met.

Applicability of the Tariff Order of 1999 to data pricing:

It is noteworthy that through this consultation paper TRAI is *inter alia* attempting to regulate the relationship between content providers and those that provide access – namely the telcos/ISPs. The issue of tariff however, is something that concerns consumers / users and their service providers or telcos. Regulation of the relationship between a content provider and service provider is clearly a net neutrality issue, one that requires appropriate regulatory principles to be framed in order to be adequately addressed. The Department of Telecom has already produced a report (of May 2015) in which it has accepted the importance of implementing principles of net neutrality and we are of the firm opinion that this Report should have been used as the basis of developing the relevant principles further with a view to implementing appropriate regulation.

That said, while an argument could be made that price differentiation ought to be permitted on the lines of that permitted for voice etc. in terms of the Tariff Order of 1999, it is worth pointing out that the said Order does not deal with identical issues as the issue of Net Neutrality. The said Tariff Order is in consonance with the principle of common carriage and *we believe a similar analogy in the context of the Internet would be permitting differentiation based only on bandwidth offered/provided, or the usage of data.*

As stated in the TRAI Consultation Paper itself, “*differential tariffs results in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). This may potentially go against the principle of non-discriminatory tariff. Secondly, differential tariffs arguably disadvantage small content providers who may not be able to participate in such schemes. Such providers may have difficulty in attracting users, if there exist substitutes for free. This may thus, create entry barriers and non-level playing field for these players stifling innovation.”*

Permitting service providers to differentiate between users based on the content they may wish to access is akin to voice service providers charging consumers differently based on the topic of conversation and is clearly illogical and perverse. Such classification would go against the terms of the Tariff Order as being arbitrary and unreasonable.

⁵ Ariel Futter, Alison Gillwald, “Zero Rated Internet Services: What is To Be Done?”, Policy Paper 1, 2015:Broadband Africa, September 2015, http://www.researchictafrica.net/docs/Facebook%20zerorating%20Final_Web.pdf

Similarly, classification of content providers into different categories by a service provider (and thereafter providing users with differentially priced access to each category) would also violate the letter and spirit of the Tariff Order.

If we accept TRAI's position that the matter under consideration is a tariff issue pertaining to the classification of different types of subscribers and differential tariffs, we do not find that a contract between the telco/ISP and a platform such as Free Basics can be used to classify subscribers (i.e. a classification based on the content viewed or platform subscribed to by the user). This is an entirely arbitrary method of classification and based on an extraneous consideration – a contract by the ISP with a third party – and cannot be used as a basis of classifying subscribers. A differential rate of tariff, including data services is possible on the basis of usage, time of day, bandwidth, or even the *subscriber* being given a choice of a certain number of free websites (not to be confused with a platform like Free Basics – which forces users to submit to its choices of content).

The ultimate aim of TRAI should be to ensure a larger number of people have access to the full Internet. The single biggest push to this would be in reducing access costs to the Internet itself - accordingly we believe an alternate approach would be to bring down the cost of data services drastically, particularly for 2G Edge services, where few investments are being made by telcos. Data plans can provide for either a zero cost for the first slab of data usage, or a very low cost, to lower the threshold for accessing the Internet – similar to say how water or electricity – other essential public utilities are distributed in India. This will allow the full Internet to be accessed and not just a few websites, pretending to be the “basic Internet”.

Transparency:

We note that ensuring transparency in the provision of services is a key component of ensuring non-discriminatory and appropriate Internet access to consumers and accordingly believe that TRAI must put in place strong measures to improve the current standards of disclosure (and seeking consent) as followed by service providers.

It must be kept in mind that service providers are usually a single source of information for consumers, content providers and indeed for TRAI regarding all aspects of the provision of services. Further, agreements between content providers and service providers are private arrangements and not subject to public scrutiny. Should projects such as Free Basics be permitted, TRAI must ensure that all contracts between the ISP and Facebook are made public.

Accordingly, most consumers of Internet services are not in a position to determine whether they are being provided the services they have paid for or whether they are being cheated by their service providers.

Ensuring appropriate regulation, including through the imposition of transparency related provisions, is therefore necessary to ensure certainty in the market, ensure informed decision making by users, prevent malpractice by access providers and to create a level playing field for all users and indeed access providers. Permitting differentiate pricing (which would consequently encourage content providers and

service providers to enter into private arrangements to regulate access) would only act as a further barrier to transparency in the provision of Internet services for consumers.

In addition to the above, we also need to point out that Facebook's naming its platform 'Free Basics' is misleading. In the campaign that it has launched using Facebook itself, it says, "Unless you take action now, India could lose access to free basic internet services, delaying progress towards digital equality for all Indians. Tell the TRAI you support Free Basics and digital equality in India." Clearly, it is seeking to confuse the Facebook users and making them believe that Facebook is offering is "basic internet services", not a few websites that are partnering Facebook, which misleadingly called "Free Basics".

In light of the discussion above, our responses to the specific questions raised by TRAI are interleaved.

- 1) *Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?*

Response:

No. Service providers must not be permitted to implement differential pricing for data usage based on the content being accessed / platform being used to access the content.

The disruption to the Open and neutral Internet environment created by differential pricing – both from the perspective of users and content providers creates perverse incentives in an otherwise reasonably egalitarian network. It must be kept in mind that permitting differential pricing can also increase the incentive for service providers to charge application providers to provide subsidies access. Service providers would have an incentive to lower monthly bandwidth caps or increase the per-byte price for unrestricted Internet use in order to make it more attractive for application providers to pay for prioritized / cheaper access to their content being provided by the service provider.⁶ This would have the effect of hampering Internet access dramatically and making general Internet access far more expensive for users (as opposed to the specific content provided at a subsidized rate).

Data from Europe shows that by using differential pricing mechanisms, and subsidizing their own content services, service providers "*are foreclosing the mobile internet video market by placing all other competitors (e.g. Netflix, Vimeo) at a disadvantage. Watching third party Internet video over their open*

⁶ An example can be found in Germany where in 2013, Deutsche Telekom announced a plan that will cap the volume of fixed internet access connections but it will exempt its own IPTV (zero-rated) video service. The reaction from German authorities was swift. A German court blocked Deutsche Telekom's plan on the basis of consumer protection law while the German telecom regulator Bundesnetzagentur carried out an investigation and warned Deutsche Telekom that zero-rating could infringe net neutrality. Antonio S Drossos, "The Real Threat to the Open Internet is Zero Rated Content", World Wide Web Foundation and Digital Fuel Monitor/Rewheel, 2015, http://dfmonitor.eu/downloads/Webfoundation_guestblog_The_real_threat_open_internet_zerorating.pdf

mobile internet plans instead of the zero-rated ones would eat up the monthly data allowances in the matter of hours or set them back few hundred EUR per month. Consumers are therefore left with really no choice but to opt for the service provider's content offering – thereby skewing the market (or ensuring that content providers are forced to partner with a service provider). Further, service providers are foreclosing the Internet video market by overpricing general Internet data while prioritizing their own services.”

Operator group	EU market	Price & Gigabytes		Telco zero-rated video (TV/films)	Open internet video (max allowed time to watch HD video in open internet plans)	NETFLIX	vimeo	PLUTO.TV
		Smartphone plan with unlimited mins & SMS	Price additional Gigabyte					
TeliaSonera	Finland	€25 (50 Gigabytes)	€0.2	No	Practically unlimited ✓			
Hutchison 3	Austria	€36 (14 Gigabytes)	---	Yes (Unlimited 24/7)	5 hours per month Not allowed to buy more!	TV		
Orange	Spain	€40 (5 Gigabytes)	€10	Yes (Unlimited 24/7)	2 hours per month (€30 per additional hour)	TV		
Deutsche Telekom	Hungary	€45 (5 Gigabytes)	---	Yes (Unlimited 24/7)	2 hours per month Not allowed to buy more!	TV		
TELEKOM AUSTRIA	Bulgaria	€55 (10 Gigabytes)	---	Yes (Unlimited 24/7)	3 hours per month Not allowed to buy more!	TV		
vodafone	Romania	€59 (6 Gigabytes)	€10	Yes (Unlimited 24/7)	2 hours per month (€30 per additional hour)	TV		
TELECOM Italia	Italy	€86 (13 Gigabytes)	---	Yes (Unlimited 24/7)	5 hours per month Not allowed to buy more!	TV		

Telecom groups are foreclosing the internet video market by overpricing mobile internet Gigabytes while prioritizing (zero-rating) their TV/film services!

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(source: Antonio S Drossos, “The Real Threat to the Open Internet is Zero Rated Content”, World Wide Web Foundation and Digital Fuel Monitor/Rewheel, 2015, http://dfmonitor.eu/downloads/Webfoundation_guestblog_The_real_threat_open_internet_zeroRating.pdf)

Digital Fuel Monitor has shown in November 2014 that in many OECD markets where mobile operators launched zero-rated film stores and TV services, consumers are either not allowed to buy more than a few (5-10) gigabytes at all or most likely, they cannot afford to buy more because the price of additional gigabytes is prohibitively expensive (e.g. € 10 per gigabyte). Consumers are harmed because their choice of internet video services is severely restricted.⁷

Data shows that during the fourth quarter of 2014, several OECD mobile operators that have launched zero-rated video services have at the same time hiked the price of open mobile Internet usage.⁸ It is also argued that the spread of zero rated and other such differential pricing mechanisms has been mirrored

⁷ Antonio S Drossos, “The Real Threat to the Open Internet is Zero Rated Content”, World Wide Web Foundation and Digital Fuel Monitor/Rewheel, 2015, http://dfmonitor.eu/downloads/Webfoundation_guestblog_The_real_threat_open_internet_zeroRating.pdf

⁸ *Id.*

by the global decline of unlimited data plans, with only 1% of operators offering such deals in 2014, when they represented 35% of plans in 2012.⁹

Service providers operators have a fundamental conflict of interest in selling both open internet access and as well their own or their selected partners' online content. If price discrimination such as zero-rating is not banned, service providers have an incentive to favour their own services by zero-rating the usage (selling gigabytes at zero cost) while collectively overpricing the gigabyte usage of all other internet services. The economic problems likely to be caused by permitting differential pricing are described particularly well in a letter written to the FCC by 36 noted American scholars (including Lawrence Lessig, Tim Wu and Barbara van Schewick) available at <https://cyberlaw.stanford.edu/downloads/ProfessorLetterToFTC-20150129.pdf>.

Essentially, however, “if price discrimination such as zero-rating is banned, service providers are commercially incentivized in pushing down the price of open internet (or conversely push the monthly volume caps as high as possible) in order to encourage the carefree usage of, first and foremost, their own video and cloud services.”

“In the Netherlands, where zero-rating is banned, KPN just doubled (free of charge) the mobile internet volume caps to encourage a carefree usage of its online videos. KPN’s action is the first empirical evidence of the pro-competitive benefits of real net neutrality rules that ban zero-rating and all other forms of price discrimination”.¹⁰

- 2) *If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?*

Response:

The principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are best addressed by ensuring that service providers are not allowed to act as gatekeepers of the Internet.

Permitting differential pricing for data usage on grounds of the type of content accessed by the user would violate the principles of the Tariff Order as well as general principles of non-discrimination and promotion of plurality in the media / content space.

- 3) *Are there alternative methods/technologies/business models, other than*

⁹ “Access’s Comments to the Brazilian Government on Zero Rating and Marco Civil”, Access, https://s3.amazonaws.com/access.3cdn.net/7f755440a612008202_evm6b93it.pdf

¹⁰ Antonio S Drossos, “The Real Threat to the Open Internet is Zero Rated Content”, World Wide Web Foundation and Digital Fuel Monitor/Rewheel, 2015, http://dfmonitor.eu/downloads/Webfoundation_guestblog_The_real_threat_open_internet_zerorating.pdf

differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response:

As recognized by TRAI there are alternate models that can be used to provide free or subsidized Internet access to the general populace. We strongly urge TRAI to consider the first option suggested in paragraph 19 of the Consultation Paper viz. delink free internet access from specific content, and instead limit it by volume or time. This would ensure user choice, a neutral and competitive Internet market place and would also meet the aim of enhancing Internet access.

There are many different models in vogue across the world today (notably in Africa, the Middle East and certain Asian countries) that provide subsidized access without breaching principles of net neutrality.

Mozilla's Mitchell Baker has pointed out alternatives¹¹:

- subsidizing Internet access for users by showing them advertisements;
- companies offering free data in the form of coupons, on the basis of the usage of their website;
- donation of money to subsidise Internet access for the poor;
- instances of citizens with expensive data plans being charged a nominal fee which can be used to subsidise Internet access for the poor.

We understand that Mozilla and Orange have experimented with data bundled with handsets in Africa, and in Bangladesh¹², Grameenphone, along with Mozilla, allows users to get data if they watch ads. For instance, Orange clients in Africa are offered free talk, text and 500 mb of data per month for 6 months when buying a 40\$ phone sponsored by Mozilla. In Asia, Telenor's clients get 20m of data per day free in exchange for watching a 30 second advertisement.¹³

mCent, a service from Boston start-up Jana, makes it possible for any app developer to underwrite a user's cost of downloading and using an app.¹⁴

Separately, we believe that TRAI could consider exempting certain specific

¹¹ Neutral Web, "Internet Access Alternatives to Internet.org for the Digitally Excluded. Don't Let Access Providers Become King Makers", Medium.com, May 6, 2015, <https://medium.com/@inw/internet-access-alternatives-to-internet-org-for-the-digitally-excluded-don-t-let-access-providers-7aa481c03569>

¹² Mitchell Baker, "Zero Rating and the Open Internet", May 6, 2015, <https://blog.lizardwrangler.com/2015/05/06/zero-rating-and-the-open-internet/>

¹³ Access, "Policy Brief: Access's Position on Zero Rating Schemes", https://s3.amazonaws.com/access.3cdn.net/d812d59f706c3e8a75_w0m6iijp5.pdf

¹⁴ David Talbot, "Facebook's Controversial Free App Plan Gets Competition", MIT Technology Review, May 6, 2015, <http://www.technologyreview.com/news/537201/facebook-s-controversial-free-app-plan-gets-competition/>

public / government services from any restrictions imposed on regular content providers / service providers – however these exemptions must be on a case-by-case basis and purely on public interest grounds (as opposed to commercial interests).

- 4) *Is there any other issue that should be considered in the present consultation on differential pricing for data services?*

Response:

See introductory comments above.

2.3.11 Consumer Protection Association Gujarat

CONSUMER PROTECTION ASSOCIATION
HIMMATNAGAR
DIST. : SABARKANTHA
GUJARAT



COMMENTS ON
Consultation Paper
On
Consultation Paper on Differential Pricing for Data Services

INTRODUCTION :

One of the founding father of the Internet Tim Berners - Lee wrote that " Net Neutrality is also about stopping " Positive Discriminations, such as when one Internet operator favors one particular service over another. If we don't explicitly outlaw this, we hand immense power to Telcos and Online service providers."

The Market dynamism has the regulatory world struggling to keep ahead. Just as one issue has been identified the next came up; a market is finally defined just in time to watch it morphing into something else. The main regulatory challenge is to provide a future proof frame work which maintains its relevance no matter how the market develops. Key words here are technology neutrality and ex-post rather than ex-ante regulation. Alongside facilitating the development

of the communications market to the benefit of the country, the basic rights of individuals and society must also be protected by legal and Regulatory measures.

India is a country with low speeds and price conscious consumers. Price discrimination is a form of positive discrimination and involves making some services comparatively more expensive than other by making some services cheaper.

Where reduced rates are tied to specific content, potentially, both positive and negative effects arise from an economic and regulatory perspective. On the one hand, it appears to make overall internet access more affordable by reducing costs of certain types of content. On the other hand, several negative effects might ensue. Differential tariffs results in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). This may potentially go against the principle of non-discriminatory tariff.

The growth of data usage and the manner in which data schemes are being designed by service providers currently, calls for a re-look at the regulatory principles of non-discriminatory tariff and transparency measures in the context of data tariff offers.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Comments :

No.

1. This will creates a fundamental and permanent shift in the way the internet works by splitting it into free and paid. This will lead to the launch of similar services from all ISPs. This means that each user will get a different experience of websites, and may never know the universe of knowledge outside of this collection of websites. That restricts consumer choice. ISPs favors those services who pay them to be zero rated, Internet.org favors those services which are low bandwidth and allow face book to access user data even if face book is not being used on internet.org.
2. Consumption of discriminated services is likely to be higher than that of paid services, and with limited bandwidth and spectrum, there will be a possibility that this will consume more data and leave limited bandwidth for open web access.
3. In social media, users are voluntarily disclosing personal data (Photographs, preferences etc.) which are then mined to serve targeted advertisements. These concerned about privacy, ownership of data and longevity of data among others. Recent changes by Face book and Google are examples of such issues - e.g. Google with its latest notification indicates that " it would have the right to use an individual's photographs to endorse a product in advertising to others, if the user has recommended this product elsewhere in their search.

Additional complexity arises from social media players' ever-changing terms of use in tandem with their lock - in effect - which forces many users to continue usage and give up ownership of their content.

4. There may be incentive to ISPs to increase cost of open web access in order to drive both start ups and users to the discriminated plate form.

5. Discrimination of rating is a means of instituting a carriage fee for telecom operators. This leaves room for potential abuse like :

- > Manipulation of access speeds
- > Monopolistic hiking of rates like in case of carriage fees in cable T.V. etc.

6. Privacy :

It is nothing but an attempt to buy the de-anonymised packets of the Indian poor at a bulk rate, breaking their security in the process of destroying their privacy. This will offer the right to send all their traffic, tied to their personal identifying data. Though their servers, thus allowing them to spy on all the Internet traffic of millions of consumers.

It is worth noting the relatively low adoption rates for some widely available consumer privacy tools . For example, most Browsers allow users to set policies for accepting different types of cookies used to track their web surfing behavior. While there does not appear to be any systematic study of this behavior, a test by one Internet Service Provider (ISP) found that 96 to 97 percent of its users allow some cookies and 85-90 percent allow third -party

cookies. Similarly, users can opt out of targeted advertising on many web sites by clicking on a small triangular icon but often decline to do so . Privacy advocates suggest that users are unaware of these tools and unaware that, advertisers are gathering and aggregating data about their Internet use. On the other hand, this could be “rational ignorance” on consumers’ part, reflecting a view that the cost of engaging with details of privacy settings outweighs the benefits gained.

The new applications, in term, create new sources and types of data for example, it is now possible to track :

- > A user's location via mapping soft ware
- > Their browsers and search history
- > Whom and what they " like " on social networking like face book.
- > The songs and videos they have streamed
- > Their retail purchase history
- > The contents of their on line review blog posts.

ISPs can also utilize these new types of information to make an educated guess about consumer characteristics. It is considerably easier to track customer behavior on web sites or mobile applications. Many Internet users don't understand how their data are being gathered and used.

7. Ad supported internet business :

The second trend is the growth of the ad supported business model, and the creation of a secondary market in consumer information. Companies like Google and Face book both of which earn much of their revenue by selling

targeted marketing opportunities, demonstrate the commercial potential of ad supported internet plate form.

8. Differential pricing for data usage for accessing different websites, applications or platforms are in violation of the guiding principle of How the Internet should function.

9. It is against the DoT panel who defined the core principle on Net Neutrality as :

The committee says that “content and application providers cannot be permitted to act as gatekeepers” and go against the principles of Net Neutrality. It also notes that very often the content market sees the rise of a leader, and that if these end up directing users to “specific content”, it amounts to a violation of Net Neutrality. Based on what the committee has recommended, Internet.org or even Airtel Zero rating app will be seen as violating the principle of Net Neutrality.

- (a) ' No blocking ' of any lawful content
- (b) ' No degradation ' of Internet traffic based on content, application, services or end users
- (c) ' No paid prioritization ' which creates discrimination.
- (d) Improper (Paid or otherwise) prioritization may not be permitted.
- (e) Tariff plans offered by TSPs/ISPs must confirm to the principles of Net Neutrality set forth in guidelines issued by the Government as Licensor.

(f) The panel says tariff plans offered by TSPs/ISPs must conform to the principles of Net Neutrality, and TRAI will have the power to examine these tariff plans. So a special tariff plan which offers the service for free, could be seen to be in violation of the principle of Net Neutrality.

10. It is Discriminatory, Anticompetitive, Predatory and misleading.

11. This plan may go against the principles of non-discriminatory tariff. It may increase Tariffs. It May put ' prohibitive Tariffs ' for other websites thus restricting internet access.

12. Such tariffs put small content providers at a disadvantage and " creates entry barriers and non level playing field for these players stifling Innovation."

13. It will empower/enables the TSPs to select content providers (either through the platforms or directly) and offer discounted access plans to these websites/applications/platforms.

14. The combination of Big Data and differential pricing does raise serious concerns. For example, big data may facilitate discrimination against protected group and when prices are not transparent, differential pricing could be conductive to fraud or scams that take advantage of unwary consumers.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for data usage should not be permitted.

If permitted :

1. In a competitive market with transparent pricing, value based pricing is unlikely to harm the average consumer, who can easily compare offers and switches ISPs. Usually ISPs uses " Bait & Switch " tactics to attract customers with false promises or bury important details in the small print of complex contracts. Differential pricing can cross the line into fraudulent behavior. In such cases, the Authority should prohibit " deceptive acts or practices. "
2. Free Information for do homework.
3. The ability to work on new models for access.
4. The trend towards differentiated/ tiered service could lead to some internet traffic being neglected completely. It is recommended that the net neutrality guidelines issued in Singapore should be used :
 - 1) Operators are *not allowed to block legal content*;
 - 2) They must always comply *with competition and interconnection rules*;
 - 3) They must *disclose information* to the end-users about their network management practices and typical internet broadband download speeds;
 - 4) They must meet *minimum QoS standards* as defined in their licenses; and
 - 5) They are allowed to provide niche or *differentiated services*.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Comments :

The billions of people are unconnected. Every one person who get access to the internet gets lifted out of poverty. So in theory going and connecting everyone on the Internet is a large national and even global priority.

1. The ISPs should accept its role and provide internet services to the consumers at minimum price.
2. Previously ISPs has given promotional data for free access the internet, they can introduce a free internet access of around 250 MB to consumers to try services of their own choice. (without government or ISPs selection.) This can be funded by the organization who claims to get more users online.
3. We feel that the TRAI may fix a higher cap on the net usage charges, and leave the discount or free usage etc to the various players in the market, this will keep check on escalating of rates, whereas competition would be there to benefit the ultimate user.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

1. User's right on the Internet need to be ensured, so that TSPs/ISPs do not restrict the ability of the user to send, receive, display, use, post any legal content, application or service on the Internet or restrict any kind of Lawful Internet activity or use.
2. TSPs/ISPs must make adequate disclosures to users about their traffic management policies. Additionally, traffic management that is "exploitative or anti-competitive" should not be allowed.
3. There are some requirements for Internet services and applications to develop optimally in a society :

(a) Consumer security : Covering :

- Privacy
- Information security
- Intellectual property rights and
- Data portability

(b) National security :

- Information security
- Cyber crime measures

4. > Data consumption is increasing
- > 2 G and 3 G users are increasing
- > Data ARPU is increasing
- > Average revenue per MB is increasing

And there are adequate incentive for ISPs to invest in mobile internet infrastructure. ISPs should not discriminate the prices.

5. Implement research to assess the *economic demand for broadband*, including differentiation for different qualities of service. Such research must combine existing data concerning use of broadband and consumer/business research to assess how much users would be willing to pay for capacity and quality and their elasticity of demand with increasing or decreasing tariffs.

In short :

1. Value based pricing generally benefits ISPs as well as customers also.
2. Competition, Collecting purchasing and arbitrage can all limit ISPs ability to implement differential pricing.
3. Concern with differential pricing are often entangled with related concern about competition or consumer privacy. In many cases, policy should be able to address these issues individually. In particular, where differential pricing harms a protected group or crosses the line into fraudulent behavior, our competition, Consumer Protection and other laws provide a variety of tools to correct the problem.
4. However, the speed at which both, the Technology and business practices are evolving, this deserve ongoing scrutiny, particularly where ISPs may be using sensitive information in ways that are not transparent to users and fall outside the boundaries of existing regulatory frame works.

2.3.12 National Law School Bangalore

COMMENTS ON TRAI'S CONSULTATION PAPER ON DIFFERENTIAL PRICING

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Question 1: Should TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

It is necessary to assess this question by looking at the rationale and reasoning behind Differential Pricing, as well as the purported impact on various stakeholders.

Basis for the Demand of Differential Pricing

This is rooted in the argument that there is limited internet penetration in India, as a result of which, investments are required to be made to establish the infrastructure.¹

Justification of the Differential Pricing Model

A platform that is stipulated to be non-discriminatory, open and non-exclusive imbibes the essential principles of Net Neutrality. Basic access to healthcare, education and knowledge allows for a broadened outreach,² which is crucial in a developing nation like India.

Another justification that arises is that by proffering tiered services, consumers are enabled to receive higher speeds of data connectivity, especially in intensive services such as that of cloud computing and multimedia streaming.³

The explanations that have been offered by Facebook indicate that their platform aims at Zero Rating in the absence of any commercial consideration. This would belie the concern regarding the motivation for a cost free platform to indulge in anticompetitive conduct.⁴

Concerns of Net Neutrality

The Department of Telecommunications Committee in its Report on Net Neutrality has opined that the application providers and the content providers should not be allowed to act as gatekeepers, and that the core principles of Net Neutrality need to be adhered to.⁵ The

¹ *Consultation Paper on Differential Pricing for Data Services*, TELECOM REGULATORY AUTHORITY OF INDIA, 4 (2015).

² *Facebook's Response to TRAI Paper: Free Basics Non Exclusive, Open for All*, THE INDIAN EXPRESS (December 25, 2015), (December 10, 2015), available at <http://indianexpress.com/article/technology/tech-news-technology/facebook-s-response-to-trai-paper-free-basics-non-exclusive-open-to-all/> (Last visited on 29 December, 2015).

³ S. Crets, *A Neutral Guide to Net Neutrality*, OCCUPY WALL STREET, available at <http://occupywallstreet.net/story/neutral-guide-net-neutrality> (Last visited on 29 December, 2015); B. Howell, *The Net Neutrality Debate: Why Price Discrimination can be a Good Thing*, available at <http://www.techpolicydaily.com/communications/net-neutrality-debate-price-discrimination/> (Last visited on 29 December, 2015).

⁴ N. Rajan, THE INDIAN EXPRESS, available at <http://indianexpress.com/article/technology/tech-news-technology/facebook-s-changes-seem-to-align-it-closer-to-net-neutrality-rajeev-chandrasekhar-after-meeting-zuckerberg/> (Last visited on 29 December, 2015).

⁵ *Net Neutrality DoT Committee Report*, DEPARTMENT OF TELECOMMUNICATIONS, 15 (2015).

ramifications of the Differential Pricing Model at present, could lead to a paradigm where it is possible that all of the regulatory principles stand violated.

Impact on Different Stakeholders

Consumer Welfare

In general, the above policy can lead to imposing limits on user choice. A consumer is provided with greater inducement to use a particular platform as opposed to another, thereby curtailing the available options to those only as provided by the TSP. Each TSP will have free reign to prioritise one set of services over others (and thereby include it within their data pack, while excluding a same or similar service), giving consumers incomplete knowledge of the available tools and resources, which are at their disposal. There is a possibility that the impact on the content providers with a niche market may be greater, since they cater to a limited outreach. This is problematic, since the consumers whose needs were earlier catered to by the TSPs, may now be denied the service, or be charged a higher amount for the same, which is an indication of an unfair distinction being drawn.⁶

The psychological impact of providing another layer of confirmation when a consumer attempts to choose a service not included in the pack is that of an added decision to access the open web, which will disincentivise the user from paying for the addition. This can be a violation of controlling the preference of the consumer.

Entrepreneurs and Innovators

Differential Pricing leads to the restriction or tiering of access to information. When viewing the Internet as a competitive field for innovation, the open access to the same is vital. If the access to open source and tools is restricted, this can stifle the capacity to innovate.⁷

The possibility of competition between different companies can be reduced if the competitors are able to collude with the TSPs. The collusion can result in financially able entities paying the carriers to ensure that the opponent's website loads slowly, or is inaccessible altogether, or the use to it is more cost intensive. This is additionally detrimental from the perspective of promoting anti-competitive acts, with the consumer not having any say in the quality⁸ and

⁶ M. Murthy, *Facebook is Misleading Indians With its Full Page Ads About Free Basics*, THE WIRE (December 26, 2015), available at <http://thewire.in/2015/12/26/facebook-is-misleading-indians-with-its-full-page-ads-about-free-basics-17971/>

⁷ K. Fiedler, *Net Neutrality*, 10 (EDRI Paper Series No. 8, European Digital Rights).

cost of the service provided. This problem of paid prioritisation is detrimental to entrepreneurship.

These businesses may be affected by the acts of TSPs promoting their own applications and services, and restricting access to their services. With instances of TSPs such as Airtel having launched OTT services in games, music and movies, to add to their content portfolio,⁹ this is not an unlikely conception.

General Issues Regarding Differential Pricing

Lack of Autonomy in a Permission Based Internet

TSPs will have the authority to decide the terms and conditions as well as the services that are to be a part of the data package provided.¹⁰ Further, technical guidelines of these TSPs would have to be conformed to, by the entities which request to be a part of any Zero Rating Model. This can hinder the very nature of the Open Web.

Effect of Shift in Revenue

The emphasis of the Differential Pricing Model is on providing individuals of a lower economic stratum the opportunity to access at the very least, certain websites, applications and platforms free of cost. This implies that there has been a shift in the source of the revenue, from the consumers, to the content providers being included as well.¹¹ This would in essence mean that TSPs can be incentivised to allow content of those providers who possess deeper pockets.

Anti-competitive effects

This can be directed towards the customers or against other TSPs. It can manifest itself in the form of increasing the market entry costs for entities, thereby effectively increasing the entry barriers, using the dominance in the market to abuse the same through service tie ups and predatory pricing.¹² Further, another instance is that of the use of an opaque traffic

⁹*Bharti Airtel announces the Launch of Wynk Games*, THE INDIAN EXPRESS (December 29, 2015), available at <http://indianexpress.com/article/technology/tech-news-technology/bharti-airtel-announces-launch-of-wynk-games/> (Last visited on 29 December, 2015).

¹⁰ K. Bhasin, *Why we need Net Neutrality*, THE INDIAN EXPRESS (April 18, 2015), available at <http://indianexpress.com/article/opinion/columns/why-we-need-net-neutrality/99/> (Last visited on 28 December, 2015).

¹¹ N. Economides and J. Tag, *Network Neutrality on the Internet: a Two Sided Market Analysis*, 24(1) INFORMATION ECONOMICS AND POLICY 91, 92 (2012).

¹² B. Mohanty, *Net Neutrality and Antitrust: Options for India*, 99(1) OBSERVER RESEARCH FOUNDATION ISSUE BRIEF 2 (2015).

management policy, which may throttle speeds of certain services and provide high speed for others.

Privacy Concerns

The mode of network management that can be employed by the TSPs can affect privacy of the consumers. Deep Packet Inspection allows the TSP to analyse all of the user data at run time.¹³ This has already become a rising concern, with the information provided by the consumers to applications such as Free Basics raises apprehensions regarding the usage of the same.

Distortion in the Market

There exists the danger of identity based discrimination that can arise. This can be seen in the form of one particular search engine being prioritised in delivering its search results to the consumers. This can render the search engine market skewed.¹⁴

Allaying Concerns Raised

In order to assuage the clamour that has arisen with respect to the allegations of gatekeeping, Facebook has stated that it would permit a third party audit to assess the reasons behind the acceptance and rejection of different applications. It further indicated that it had not removed any content provider as long as it complied with the technical guidelines.¹⁵

An International Perspective on Differential Pricing ban

Zero Rating, as a model has been banned in countries such as Norway, Chile, Netherlands, Iceland, Finland, Latvia, Japan, Estonia and Malta. Salient instances include that of Vodaphone and KPN being fined by the Dutch telecommunications regulator for the internet services which were zero rated, and of the Slovenian regulator fining the Telekom Slovenia and Telekom Austria for zero rating their cloud and music applications. However, several other countries, such as Israel, Belgium, South Korea, EU and France have not imposed sanctions on Zero Rating yet, with several questions regarding its impact on Net Neutrality

¹³ *Net Neutrality and Privacy*, THE CENTRE FOR INTERNET AND SOCIETY, available at <http://cis-india.org/internet-governance/blog/net-neutrality-and-privacy> (Last visited on 29 December, 2015).

¹⁴ H.K. Cheng *et al*, THE DEBATE ON NET NEUTRALITY: A POLICY PERSPECTIVE 3, available at <http://ssrn.com/abstract=959944> (2011).

¹⁵ Ready for Free Basics scrutiny, open to adding Twitter and Google: Facebook, THE INDIAN EXPRESS (29 December, 2015), available at <http://indianexpress.com/article/technology/tech-news-technology/ready-for-free-basics-scrutiny-open-to-adding-twitter-and-google-facebook/> (Last visited on 29 December, 2015).

being posed.¹⁶ It is clear that the Differential Pricing paradigm is being contested throughout the world, with proponents and nay sayers debating the issues that have been raised above.

Unanswered Question Regarding Differential Pricing

The crux of the debate remains centred on the idea of access to the internet, and if limiting the services can be justified by a broader outreach. Thus, on the basis of the above arguments, it becomes evident that though on paper, there may be reasons for the inception of a Differential Pricing regime, there remain several valid concerns that remain unanswered by the Zero Rating Platforms at present, making it deleterious to adopt this regime at such a nascent stage.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing, well known as “price differentiation” in Economics, is a widely accepted and standard practice of charging different consumers different prices for the same product. While the practice of price discrimination raises few objections and is considered acceptable across a number of industries (the most notable being the airlines and hotel industry), the idea of imposition of price discrimination insofar as the world of internet is concerned, raises eyebrows and is perceived as antithetical to the fundamental rationale of openness and equality of internet. One of the reasons which have most substantially contributed to the explosive and exponential growth of Internet is the fundamental principle which has been equal treatment of all packets of data.¹⁷

However the biggest concern with respect to the proposed differential price policy for data usage is the power of telecom operators to select the kind, quality and speed of the data to be provided to consumers. This is a breach of consumers’ fundamental right to choose provided by the Constitution itself. Hence there is a need to address the issue of differential pricing with caution and to prevent the telecom operators from being the gatekeepers of content on the internet. It is further submitted that if this gatekeeping is not prevented then non-

¹⁶ R. Guha and G. Aulakh, *Zero Rating: What Countries are Doing About it*, THE TIMES OF INDIA (April 21, 2015), available at <http://timesofindia.indiatimes.com/tech/tech-news/Zero-rating-What-are-countries-doing-about-it/articleshow/47001571.cms> (Last visited on 29 December, 2015).

¹⁷ This implies that no discrimination between the price of transmitting packets based on the identity of either the transmitter or the identity of the receiver, based on the application, or the type of content the packet contains.

discrimination, transparency, affordable internet access, competition and market would not be achieved.

The main argument for implementing differential pricing is to make internet more accessible especially to the poor. *First*, it is strongly suggested not to implement the differential price policy as there are other ways available to make the internet more accessible and affordable. *Secondly* it is submitted that the measure of transparency would not be effective in the present scenario since transparency can only help in revealing the true picture of game in order to develop an action plan. Hence transparency is only a means to solution rather than the solution itself. In other words transparency is necessary but not sufficient. Also transparency would be of little help in affecting the discretionary power of the operators in deciding the content or in availing entry to the small start-ups. *Finally* it is submitted that differential pricing may lead to vague non-discrimination standards leaving small companies with very less bargaining power. Further it would be very cumbersome to assess the cases singularly.

In spite of the aforesaid arguments, if the differential pricing is permitted then the following measures can be adopted in order to make the problematic situation less problematic-

- The easiest way that the Telecom Service Providers can execute price discrimination is by evolving a form of reverse secondary price discrimination wherein they charge lower prices from the end user for lesser usage and progressively higher charges for enormous data consumption. This ensures that services such as VoIP, video streaming which consume huge amount of data are priced higher as compared to services requiring nominal data consumption such as text messages. This technique can still be considered neutral in some sense that differential rates are being applied based on quantity and not on type of service. Another proxy for price differentiation can be speed which is highly valued by consumers. High speed data services ensure that consumer can use a wide array of application. With the development of advanced applications, the demand for faster internet connection has increased. Speed is a metric that consumers that allowed them to effectively sort themselves since slow tiers reduced the chance of someone being priced out of connectivity altogether and faster tiers gave high-value users a reason to pay more.¹⁸

¹⁸ Diana Carew, *Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries*, available at http://www.progressivepolicy.org/wp-content/uploads/2015/03/2015.03-Carew_Zero-Rating_Kick-Starting-Internet-Ecosystems-in-Developing-Countries.pdf.

- Additionally, the differential pricing of data services should be permitted only after certain riders are attached to it by the regulating authorities. The regulator must explicitly prohibit
 - a) zero-rating in exchange for edge-provider payment: TSPs should be prohibited from charging application providers for any form of preferential treatment, including zero-rating. Fees in exchange for zero-rating pose the same threat to innovation and free speech as fees in exchange for technical forms of preferential treatment. As the record shows, start-ups, small businesses and low-cost speakers will often be unable to pay to be in the fast lane; they won't be able to pay for zero-rating, either and thus, losing out on a chance to compete.¹⁹ The regulator should categorically ban all forms of zero-rating for a fee, regardless of how they are being offered.
 - b) Ban zero-rating of selected applications within a class of similar applications without charging edge providers: ISPs should be prohibited from zero-rating selected applications within a class of similar applications without charging the providers of the zero-rated application. This rule will prohibit the TSPs from zero rating Youtube and not Vimeo, for an instance. Like technical discrimination that singles out specific applications for special treatment, zero-rating certain applications artificially makes these applications more attractive than others.²⁰ Just like technical discrimination, zero-rating selected applications, but not other, competing applications allows ISPs to tilt the market in favor of specific applications and to “pick winners and losers” on the Internet.²¹
- Small start-ups can be allotted some specified deadline before which they have to attain certain level of popularity (to be determined by a panel of specialists). During this entire period the fee charged from them would be minimal and if they are successful in attaining the given level of popularity then the government would mandatorily provide them subsidy and other financial/non financial support to help them flourish. And if the given level is not attained then the start-up can either exit (without any kind of charge/fine) or can continue after paying the specified fee (to be decided by the panel of specialists after considering various factors such as future

¹⁹ Barbara van Schewick, Analysis of Proposed Network Neutrality Rules, available at <https://cyberlaw.stanford.edu/downloads/vanSchewick2015AnalysisofProposedNetworkNeutralityRules.pdf>.

²⁰ *Supra* note 6.

²¹ *Ibid.*

scope/possibility, market condition, need of the consumer etc.). The government can draft a policy in the light of the idea, however, with great care and caution and after taking into account all the factors involved in it. The government can even create a fund for it. Moreover the telecom operators can be asked to provide certain percentage of their profits for the fund, as has been done under Corporate Social Responsibility. Hence through this idea the start-ups would have a free entry in the market and the consumer would be able to enjoy its services without paying any additional charges at least for a certain period of time.

- Another tool to undermine the burden of additional cost because of differential pricing is the measure of group discounts. Instead of a single individual paying the bill, there can be a collective action of a group negotiating for group discounts. The bigger the group, the higher the bargaining power and better the discounts. The telecom operators may provide packages of unlimited services at certain price to be enjoyed by the group. This group can even be a locality or a neighbourhood. Such data schemes to be designed in the light of principle of transparency.
- An impartial regulatory body can be set up to prevent the operators from becoming gatekeepers. All the telecom authorities would be required to submit a quarterly report of their transactions to this body. Such body may seek clarification or explanation regarding the operator/service provider's decision in case any doubt arises on their intention. This body would be covered under the Right to Information Act.
- It goes without mentioning the measures of (a) prescribing data limit and (b) reimbursement as suggested in the consultation paper can also be very effective in tackling the problem.

Thus, if price discrimination is permitted, the regulator has to monitor that the market performs in a manner which is conducive to all the parties having a stake, be the consumer or a new entrant to a market. With adequate regulation, there would be no substantial conflict between differential treatment and net neutrality.

Q. 3 Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Providing free data for limited periods of time

A viable alternative is for ISPs to provide data packs for a certain limited time every day, thus incentivizing users to purchase data packs for longer time durations. This is similar to the way free WiFi is offered in airports for limited amounts of time, after which WiFi services have to be purchased. In India, Aircel has begun providing full internet access for free at 64 kbps download speed for the first three months. Schemes such as Gigato offer data for free for surfing some sites. The Mozilla Foundation runs two programmes for free and neutral Internet access.

Providing a certain fixed quantity of free data

ISPs can choose to provide a certain quantity (eg. 50 MB) of free 2G data free per day. While this will lead to increased traffic for 2G services (hence leading to slower internet), it can actually prove to be an incentive to consumers to upgrade to faster internet services, such as 3G or 4G. In Bangladesh, Mozilla (in partnership with Telenor) allows users to receive 20 MB of data usage for free each day, in exchange for viewing an advertisement. In Africa, consumers can buy \$40 Firefox OS smartphones (in partnership with Orange) that come packaged with 6 months of free voice, text, and up to 500 MB per month of data. According to Mozilla, scaling up arrangements like these could represent a long-term solution to the key underlying problems of digital inclusion and equality.

Government Initiatives like NOFN

The Government intends to construct a National Optical Fiber Network to provide internet access to Gram Panchayats in India. This is efficient as it utilizes the existing fiber optic utilities of BSNL, RailTel and Power Grid. An initiative like this will provide internet access to remote areas of the country.

Offering Free Data as Reward

Free data can be offered in exchange for watching advertisements. Mozilla has been exploring this model in a partnership with Grameenphone (owned by Telenor) in Bangladesh, where users can receive 20MB of unrestricted data per day after watching a short ad in the phone's marketplace.

Offering free data by an ISP alongwith purchase of associated products

ISPs can offer free data for, say, 6 months on purchase of a certain company's handset. Orange and Mozilla are experimenting with this sort of model in multiple African and Middle

Eastern markets, where users purchasing a \$40 (USD) Klif phone receive unlimited talk, text, and 500 MB a month for 6 months. The Orange users also get 500 MB of free access on buying a \$37 handset in Africa.

CSR initiatives by Companies

A viable alternative is linked to CSR norms in the Companies Act, 2013, where some portion of a company's earnings have to be earmarked for this purpose. The corporates could be encouraged to provide free and open internet services to employees as part of their CSR.

Subsidized Plans for Certain Groups

Providers could offer subsidized plans that are only available to low income customers. For example, most German providers offer mobile data plans for students that include more monthly data than regular plans at lower costs. These alternatives would come at no extra cost to providers, but they would provide enormous benefit to low-income communities.

Q4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Several telecom operators have launched products and services that violate net neutrality, undermining the consultation process. TRAI should put a ban on such services till a decision is arrived at. TRAI should work with Government of India towards creating comprehensive provisions on net neutrality in India. The submissions on Questions 14 of the Consultation of OTT services (April) shall also be considered for the consultation on Pricing Discrimination and further a time frame must be set within which the consultations be concluded and some action be taken.

2.3.13 SFLC

Responses for Consultation Paper on Differential Pricing for Data Services

Introduction:

We thank TRAI for initiating the consultation process on differential pricing for data services. However, as the earlier consultation process on Regulatory Framework for Over-the-top (OTT) services had questions related to differential pricing, we hope that the responses submitted for that consultation will also be considered while analysing this issue. Differential pricing involves treating of a class of websites, application or services differently by a Telecom Service Provider(TSP) by offering discounted rates for accessing these. Essentially, TSPs, and in some cases content providers, as in the case of Facebook controlling the access through their FreeBasics programme, act as gate-keepers restricting access of consumers to the Internet.

One of the basic legal protections for the freedom of the market embedded in the common law is the non-discriminatory principle of public carriage. If firms providing transport services to the public are able to discriminate among shippers or receivers of goods, they can profit hugely, at the expense of other market participants generally, their own cartel allies excepted. So from ferrymen in medieval England to railroad and trucking companies in the 20th century, prohibiting anti-competitive discrimination in transport services for the public is basic to the fair working of the market.

Telecommunications services are not different in this respect from other forms of transport. Regulators in the 20th century dealt with telephone and other such services on a common-carriage basis, in order to prevent anti-competitive collusion. One aspect of the group of ideas sometimes misleadingly called, all together, "network neutrality," is the principle of prohibiting anti-competitive routing practices. As the recent experience of the US Federal Communications Commission has shown, management of a fair Internet is now as fundamental to the free market as the prohibition by other regulators of anti-competitive practices in other forms of transport. The FCC's imposition of common-carriage rules for Internet service providers is a victory for the public interest after of a decade of attempts by

industry to capture the regulators, to prevent this very outcome. This consultation process initiated by TRAI is also very important to protect the interests of Indian Internet users as well as startups. Any effort to present a ‘walled garden’ of the Internet to India’s less well-off majority on the false ground that this is ‘all they can afford’ is in fundamental conflict with any rational policy of social development through innovation. What citizens should resent, government should also prohibit as an obstacle to social development. The Internet is not a basket of media websites we ‘consume’ any more than a highway is a collection of stores along the side of the road we could shop at. The Internet is the possibility of unlimited interconnection, a social condition in which we can all be connected to everyone else everywhere, with rich technical connections that can allow us to produce services for one another.

The integrity of the network — that it provides one indivisible opportunity for everyone connected to it — is its most important feature. As a tool of social development, the Internet allows people with little capital equipment but plenty of ingenuity to build effective businesses from zero. But only if other people can ‘find’ them on the Internet and receive the services they are offering.

A collusion between one or more local telecommunications oligopolists and a big service platform incumbent to price a small basket of websites at zero, and to deliver network integrity only to those who will pay more for it, destroys this immense value of the Internet in realising human potential. If most people cannot see the ‘real’ Internet, startup businesses will become invisible, and the colluding platform companies will be protected against any developing competition, at the expense of wiping out hundreds of thousands of potential businesses representing India’s economic future. Such collusion is, therefore, directly antithetical to any Digital India worthy of the name. There is no cost savings whatever in providing access only to some addresses on the Internet. The telecom provider is connected to the larger world by the same universal technical protocols — developed and maintained by consensus among all users as equals — through which all computers on the Internet can locate and exchange services with one another.

The provider doesn’t increase its costs by providing the same integrity of universal

interconnection to all users further downstream. On the contrary, it incurs costs by artificially restricting the normal interconnection between parties downstream and the Net as a whole. It profits wildly from those investments, by selling at a high additional price what it could, at no additional cost, have provided to everyone in the first place.

Everything in a digital network, whether part of a phone conversation or data moving according to Internet protocols, is broken into ‘packets’, short bursts of data in a standard envelope. Your smartphone sends and receives millions of packets a day. Whether a packet is ‘voice’ or ‘data’ — and if it is data whether it’s being exchanged with a website in California or Mumbai — the cost of moving it on the local telecom network is the same.

Everywhere in India where a device is connected to the telecommunications carriers’ network, it can profitably be served at current rates for ‘phone calls’ or ‘data’. Everything else charged is mere economic rent to the telecom company. This is the sort of pricing behaviour that telecom regulators exist to prevent.

Question 1. Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSPs should not be allowed to have differential pricing for data services. A traditional economist may point to markets where when differential pricing is possible it can have benefits and costs. However, internet economy is a peculiar species to which simplistic application of such a principle ain't possible. The reasons for this view are enumerated below:

a. Competition distortion

Differential pricing distorts competition by discriminating between various websites and services. This creates an entry barrier for new websites and services as they have to negotiate with TSPs and in some cases content providers who act as gate-keepers to gain access. TSPs could zero-rate their applications or services or those of their partners. This results in other services and applications that are not part of the zero rating package at a disadvantageous position. Such a practice violates Section 3 (prohibition of anti-competitive

agreements) and Section 4 (prohibition of abuse of dominance) of the Competition Act, 2002. There are many instances in other countries that show that differential pricing of data affects users. A few of those are listed below:

Instances

- In 2013, Deutsche Telekom, a German TSP announced plans to set volume caps for data, but exempted or zero-rated its video service. The German regulator held that the practice of Deutsche Telekom of not counting Spotify toward the volume limit constitutes discrimination since a specific application is treated differently than the other applications¹
- In OECD markets where TSPs launched their video services, they have over-priced data bytes while zero-rating their video services²
- YouTube recently complained about T-Mobile's efforts at throttling its video service although it is not part of the Binge-on program offered by T-Mobile, in which the videos of partner services are offered at a low speed and do not count towards data consumption.³

Differential pricing in internet access will be implemented through opaque arrangements between the telecommunication service providers and platform companies designed to trap buyers. Many of these offerings may be “bait and switch” types to attract unwary users and then up-selling them other online services.

b. Differential Pricing incentivises degradation of quality

In the transport economy in the United States, early railroad operators⁴ in an attempt to increase profits by price discriminating between rich and poor consumers decided to offer roofless third-class carriages in order to contrast the quality and price between the third class and the first class ticket. Internet was developed on an end-to-end principle that treated the network mostly as a dumb pipe making it extremely difficult for internet service

1 The unofficial translation of the Report of the Bundesnetzagentur of 14 June 2013 is available at http://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/BNetzA/Areas/Telecommunications/TelecomRegulation/NetNeutrality/Report_BNetzA_NN.pdf?__blob=publicationFile&v=1

2 http://www.dfmonitor.eu/downloads/Neelie_Kroes_Specialized_Services_are_a_giant_net_neutrality_loophole_HI_GHLIGHTS.pdf

3 <http://fortune.com/2015/12/23/youtube-t-mobile-video-throttling/>

4 https://www.whitehouse.gov/sites/default/files/whitehouse_files/docs/Big_Data_Report_Nonembargo_v2.pdf

providers to engage in any kind of differential pricing. If allowed the telecommunications service providers will degrade the service of the regular internet connection or disable a few features, thereby creating a high and low end version of the internet.

As broadband in wireless and traditional wired connections, mobile internet spreads, the archaic business models of telecommunications service providers is threatened as technology is reducing costs of the core of running these services. Whereas once voice or text were big revenue generators, today they are fast becoming just one of many services delivered through broadband. In such an environment, open networks that can provide general connectivity must emerge as winners as they can generate more revenue from users instead of slicing up the internet and offering it as bunches of television channels and turn the internet into cable television.

c. Users denied choice

The subscriber is denied a choice and the TSP or the content provider who acts as the gate-keeper decides the websites she can access. This limits the understanding of the new user about the Internet and only helps to further the commercial interests of a select few corporates included in the zero-rated bouquet of services. A survey on communications use in Africa showed that the number of people who had responded saying they used Facebook was much higher than those who said they used the Internet. A more recent survey conducted by *Quartz* in Indonesia and Nigeria shows that at least a few millions of Facebook's 1.4 billion users suffer from the same misconceptions.⁵ The survey observes that in both countries more than half of those who don't know they're using the Internet say they "never" follow links out of Facebook, compared with a quarter or less of respondents who say they use Facebook and the Internet. If people stay on one service, it follows that content, advertisers, and associated services also will flow to that service, possible to the exclusion of other venues.⁶ Yet another study that looked at how newer, low-income users were responding to mobile internet, and in particular, to data plans that provide restricted access,

5 <http://www.theatlantic.com/technology/archive/2015/02/facebook-is-bigger-than-the-internet-whoa/385350/>

6 <http://qz.com/333313/millions-of-facebook-users-have-no-idea-theyre-using-the-internet/>

showed that many low-income users between ages 18 and 35, who had no access to Wi-Fi and had only recently started using mobile internet, expressed a strong preference for unrestricted all-access internet plans, even when limited plans were more affordable. It was concluded that the next generation of internet users are mostly young, and curious about the ability of the internet to materially benefit their lives. Limited access curtailed this ability. Some users also expressed fear of being unexpectedly charged for leaving the “free zone”, by, for example, clicking on links on Facebook. They felt more comfortable with the standard flat-fee data plans.⁷

d. Violation of license conditions

TSPs provide Internet services based on the license agreements entered into with the Department of Telecommunications. Condition 2.2 of the Internet Service License⁸ states that “*Internet access means use of any device/technology/methodology to provide access to internet including IPTV and all content available without access restriction on Internet including web hosting, web colocation but it does not include service provider's configured Closed User Group Services (VPN)*”. Condition 2.1 of Chapter IX of the Unified License⁹ states “The Licensee may provide Internet access including IPTV. The subscriber **shall have unrestricted access to all the content available on Internet except for such content which is restricted by the Licensor/designated authority under Law**”

When the TSP provides the subscriber access to the Internet, it should be to the entire Open Internet except content blocked under the provisions of the information Technology Act, 2000. Restricted access to select bouquet of services cannot be permitted.

e. Privacy/ Security concerns

Restricted Internet Services provided by TSPs in association with content providers as in the case of FreeBasics by Facebook, require subscribers to access Internet through their servers which are often located outside India. Such services by design, track all the web interactions of all users, receive and store data on navigation information. Often, encryption

⁷ <http://www.savetheinternet.in/files/amba-kak-thesis.pdf>

⁸ cca.ap.nic.in/i_agreement.pdf

⁹ http://dot.gov.in/sites/default/files/Unified%20Licence_0.pdf

is broken at the end of the proxy server of the gate-keeper and this affects the privacy and security of the communication. As proposed these kind of services break the authentication function of HTTPS, partially break the basic security of the content exchanged by first decrypting it all at their servers and then re-encrypting it for onward transmission to the intended recipient. Thus, restricted Internet services by its very nature result in loss of privacy and affects security.

f. Big Data

With the advent of sophisticated techniques of analytics and availability of big data have created new ways for businesses to collect data about their customers that can be used to offer a gradation of prices based on various factors. Now its possible to collect information about location, search history, travel history, device history, likes, dislikes, more so on mobile applications that require users to create accounts to log into. Such information linked with information gathered from other sources creates user profile that allows for price discrimination at a scale unprecedented in history of capitalism. Given sufficient data combined with sophisticated analytical tools give the telecommunications service provider an ability to predict consumer behaviour and change its services accordingly. This can result in discrimination against some specific groups.

g. Harms user interests

If TSPs can charge Over The Top(OTT) services to be zero-rated, they would have an incentive to lower monthly bandwidth caps or increase the per-byte price for unrestricted Internet use in order to make it more attractive for applications providers to pay for zero-rating.

In many OECD countries, operators have reduced data caps to promote their video services which are zero rated.¹⁰ However, in sharp contrast, when the Dutch regulator prohibited zero-rating practices followed by ISPs , KPN, a TSP, doubled its monthly bandwidth cap for mobile Internet access from 5 to 10 GB as it could not proceed with the zero-rating plan for

¹⁰ http://www.dfmonitor.eu/downloads/Neelie_Kroes_Specialized_Services_are_a_giant_net_neutrality_loophole_HI_GHLIGHTS.pdf

its mobile service and without higher data caps, users would not find its video service attractive. Thus, enforcing net neutrality would benefit consumers.¹¹

h. Breaks the open, decentralised nature of the Internet

The Internet or the *Network of Networks* was designed to be open with anyone on the network being able to reach anyone else on the network. However, with differential pricing the Internet is broken into parts with users access restricted to parts of the Internet. This leads to two kinds of Internet, where the users of a service like FreeBasics are given access to only select services with the vast resources on the Internet being denied to them.

Experience of other countries:

Chile, Netherlands and Slovenia are a few of the countries that have strong Net Neutrality laws that prevent zero rating. In Netherlands, the regulator imposed fines on KPN and Vodafone for violation of net neutrality.¹² A fine of EUR 250,000 was imposed on KPN for blocking various services including several Internet calling services. A fine of EUR 200,000 was imposed upon Vodafone for zero-rating HBO's video service. In 2014, the Chilean Telecommunications Regulator banned zero rating of social networking apps like Facebook and Twitter.¹³ Frode Sørensen, Senior Advisor at the Norwegian Post and Telecommunications Authority has clarified that "*The Norwegian guidelines on net neutrality state quite clearly that 'Internet users are entitled to an Internet connection that is free of discrimination with regard to type of application, service or content or based on sender or receiver address.' This means that in the Norwegian market zero-rating would constitute a violation of the guidelines.*"¹⁴

India should opt for a regulatory framework that protect the interests of its Internet users. With the Government striving hard to promote startups, regulations that are introduced

¹¹ Network Neutrality and Zero-rating, Barbara van Schewick, February 19, 2014 available at <http://apps.fcc.gov/ecfs/document/view?id=60001031582>

¹² <https://www.acm.nl/en/publications/publication/13765/Fines-imposed-on-Dutch-telecom-companies-KPN-and-Vodafone-for-violation-of-net-neutrality-regulations/>

¹³ <https://gigaom.com/2014/05/28/in-chile-mobile-carriers-can-no-longer-offer-free-twitter-facebook-and-whatsapp/>
The machine translation of the order is available at https://translate.google.com/translate?sl=es&tl=en&js=y&prev=_t&hl=en&ie=UTF-8&u=http%3A%2Fwww.subtel.gob.cl%2Fnoticias%2F138-neutralidad-red%2F5311-ley-de-neutralidad-y-redes-sociales-gratis&edit-text=&act=url

¹⁴ <http://eng.nkom.no/topical-issues/news/net-neutrality-and-charging-models>

should permit and promote innovation and should ensure that there are no entry barriers to startups for reaching out to users.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing of data services affects consumers as well as startups as explained in the answer to the first question. Thus, it is in nobody's interest to permit differential pricing.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Differentiated tariff plan, although marketed as a method to provide free/discounted access is often a tactic to get more users for the free/discounted bouquet of services. The real issues of digital literacy and providing access to the poor and people in villages remain unaddressed in this debate on zero rating.

Many Panchayaths¹⁵ and municipal corporations¹⁶ are taking the lead in providing free Internet access to the public. The need of the hour is to support and promote such initiatives at the grass root level than banking on marketing gimmicks pushed as philanthropic ventures.

Other suggestions which have been advanced to improve access include:

- Free packs of with a data cap like 500 MB/month
- Free access provided at low speeds using 2G networks
- Free Wi-Fi Hotspots and community centres.

¹⁵ <http://www.thehindu.com/news/national/kerala/free-wifi-for-all-at-eraviperoor/article7707446.ece>

¹⁶ <http://www.thehindu.com/news/national/kerala/malappuram-to-log-on-to-free-wifi/article7483969.ece>

- Data coupons that can be redeemed for data.
- Direct Money transfer for data packs
- Websites/Apps transferring money earned from advertisement to the user's accounts as Internet data subsidy¹⁷
- Ad supported data packs, i.e watching advertisements for data credit.
- Data bundling with new devices
- Using USO funds to fund access schemes for the disadvantaged sections

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The earlier consultation on Regulatory Framework for Over-the-top (OTT) services overlaps with the current consultation process. Hence, it is important to have a definite road map and to have a time-bound plan to finalise the process. The comments and counter-comments provided on the issue of zero-rating in the earlier consultation process will have to be considered while analysing the issue of differential pricing.

To conclude, we repeat the suggestion given in our comments to the earlier consultation paper. There are several ways to enforce the principle of Net Neutrality, including the following:

- In exercise of its powers under Sections 11(1)(b)(v) and 36 of the TRAI Act, TRAI could issue a set of legally binding regulations that embody and thereby enforce the principles of net-neutrality, and the DOT could amend the license terms under which TSPs operate, mandating strict observance of said TRAI regulations.
- Based on responses received to the consultation paper, TRAI could [in exercise of its powers under Section 11(1)(a) of the TRAI Act] make recommendations to the DOT concerning the incorporation of net-neutrality respecting obligations into TSPs' service licenses. Giving effect to the recommendations and incorporating relevant terms into service licenses would cement the TSPs' obligation to respect the principles of net-neutrality in their conduct.

¹⁷ <https://medium.com/@inw/internet-access-alternatives-to-internet-org-for-the-digitally-excluded-don-t-let-access-providers-7aa481c03569#.fq8altwfd>

- In exercise of its powers under Section 11(1)(a) and based on the responses to the consultation paper, TRAI could make recommendations before the Central Government to enact a new central legislation or amend an existing legislation such as the Indian Telegraph Act in order to mandate strict adherence by TSPs to the principles of net-neutrality. Giving effect to these recommendations would again oblige TSPs to respect the principles of net-neutrality at all times.

2.3.14 India Against Corruption

To:
The Chairman TRAI
Shri Ram Sewak Sharma,
through Ms. Vinod Kotwal, Advisor TRAI

Sir

INDIA AGAINST CORRUPTION is constrained to comment on the TRAI's subject consultation paper as follows:-

- 1) That it appears this consultation paper has been provoked by a scheme of RELIANCE COMMUNICATIONS (RCOM) to offer FACEBOOK's free access to walled garden of FACEBOOK's website internet.org and to access certain internet sites from their walled garden.
- 2) That apparently FACEBOOK is a publicly traded US Corporation in which also apparently many big-wigs of Bharatiya Janata Party are heavy investors via various benamis, and that the present NDA government has signed secret Non-disclosure agreements with the large US IT players like FACEBOOK, GOOGLE, MICROSOFT etc with a view to corral the impressionable youth of INDIA on these free walled gardens, to spy on them, to blackmail them for their transgressions and to thereby convert these youth to ideology of United States of America and their puppet party known as Bharatiya Janata Party. Such so called "free internet" walled gardens are therefore nothing but a political gambit by the Government of United States of America to brainwash the impressionable youth of India to their decadent capitalist ideologies by providing such lollipop internet platforms for promoting the USA's puppet party known as Bharatiya Janata Party, which is the new East India Company.
- 3) That TRAI is still to properly dispose of INDIA AGAINST CORRUPTION prior comments on net neutrality given in response to TRAI's prior consultation papers on the subject. Accordingly we are compelled to remind you that only officers of dubious integrity are appointed as Chairman TRAI and we thus have no confidence that you will dispose of our comments in an honest and reasoned manner and free of corruption. In this connection we remind you as follows:-
 - a) That when you were the Secretary in the DEITY, the IAC repeatedly

sent you many images of gross obscenities being published over the internet by an organisation known as "WIKIPEDIA India Chapter" from their website WIKIMEDIA.IN whose registered address was located at "No. 194, 2nd 'C' Cross, Domlur, 2nd Stage,:Bangalore, Karnataka, 560071 and similarly by using free internet access (zeropaid) from TSPs like AIRCEL etc. to access such pornographic and grossly obscene content from Wikipedia. That as Secretary DEITY you corruptly did not take the prescribed action under the IT Act to ban this website WIKIMEDIA.IN or stop the zeropaid schemes, and we therefore doubt that your intentions are honest at the present time.

- b) That in response to the TRAI's earlier net-neutrality paper the same pornographer organisation WIKIMEDIA/WIKIPEDIA then organised massive internet lobbying under an internet domain "SAVETHEINTERNET.IN" at the same address from Bangalore/Karnataka which allegedly sent over 1 million emails in response to TRAI's consultation paper. These spamming emails used, and apparently repeatedly impersonated, lakhs of email IDs. IAC immediately protested these to TRAI and demanded that TRAI lodge appropriate FIRs under IPC and IT Act, but TRAI took no action, thereby indicating that TRAI tacitly supported these WIKIMEDIA pornographers who are masquerading as champions of free speech and free internet to promote their obscenities and lies in India.
- c) That when IAC further sent the impugned obscene images to TRAI as part of our counter -comments, the TRAI replied back to us that those images from WIKIPEDIA / WIKIMEDIA were too obscene to be published as part of our counter-comments and requested we delete them from our submissions, and which we declined to do.
- 4) That in these circumstances, where there is similarly massive organised email spamming of TRAI's consultation papers, we must request you to take the following actions before asking the citizens of India to participate in TRAI's rascally mock consultation processes.

A) TO IMMEDIATELY PROHIBIT ANY FREE INTERNET ACCESS OVER MOBILE DEVICES AND INCLUDING BY PROVIDING FREE WIFI SERVICES.

B) To immediately obtain and place in public domain all agreements /

understandings / letters exchanged or entered between Government of India, State Governments and the foreign ISPs / TSPs/ Internet giants like WIKIMEDIA, FACEBOOK, GOOGLE, YOUTUBE, MICROSOFT, ALIBABA, AMAZON, EBAY, QUIKR, OLX, UBER, OLA, FLIPKART, SNAPDEAL, BIGBASKET etc, or their dummies, proxies and fronts etc..

C) To verify and confirm that all email comments sent to the designated email IDs for this consultation paper carry the complete name, telephone and physical address of the sender/s which are uploaded as part of their comments. Else these may be disregarded.

We shall then fully reply to your consultation paper after being properly informed. Until such time kindly treat this email as our comments.

Sincerely

Sarbajit Roy
National Convenor
INDIA AGAINST CORRUPTION, jan andolan
B-59 Defence Colony
New Delhi 110024
TeL 91-8010205897

2.3.15 RFC

Dear Sir,

Thank you for this Consultation Paper on Differential Pricing for Data Services; Internet coverage is 30% in India. Providing free internet coverage to our lowest income brethren will have to be part of any solution to rapidly expanding this coverage. We believe TRAI should bring in rules that foster private market innovation so we can make this happen. We also believe and show that this cannot happen without differential pricing and access limits for such free coverage plans.

I hope the TRAI considers our answers.

Thanking you,

Our Answers:

Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

- We are opposed to differentiated pricing for anyone paying the regular price for data plans.
- However we would suggest that free plans be treated as a different usage segment and allow TSPs to limit internet services that are available on such plans.

To maintain a clear distinction - we would suggest to TRAI to not allow free traffic for subscribers on a paid plan (or those prepaid users who have data credits). This would ensure that the paid internet is totally neutral. (Users cannot access some sites for free and others sites for a fee at the same time)

Furthermore - we would suggest that free plans do not exceed some fixed bandwidth threshold per month. And furthermore that the traffic from free plans are carried at a priority lower than regular traffic.

The arguments in favor of this proposal are as follows:

- Those who do not wish to be limited can always upgrade to a paid plan and get an unlimited and neutral internet.
- The structure of the free plans self-selects subscribers who are needy. Those who can afford to will never stay on a limited quota plan with less predictable performance. This

will provide efficient targeting of such plans.

- A limited internet under free plans is inevitable. We show this by considering various ways in which free plans can be funded:
 - **Case I: Subsidy is being provided by the TSP:** in exchange for future profits (the so called 'freemium' model). In this case the TSP must be allowed to figure out what level of access to free plans is economically feasible. They should be allowed to administer the scope of a free trial plan like every other business is allowed to.

It is plausible and likely in this case that the TSP will try to limit bandwidth usage to economical levels, yet provide a great internet experience that encourages conversion to a paid plan. In an internet dominated by entertainment videos - this will necessarily entail some limitations.

- **Case II: Subsidy is paid by other citizens:** either the Govt. (for example by taxpayer funded internet credits for the poor) or by other users (for example by applying a cess to regular user fees) - then also - a limited free plan becomes inevitable.

Support for this comes from well established empirical data and research work that untargeted subsidies do not work well. See: Poor Economics, Banerjee and Duflo, MIT (https://en.wikipedia.org/wiki/Poor_Economics)

Granting unlimited internet access for subsidized users is an example of an untargeted subsidy. As Banerjee and Duflo find in empirical data - the poor seek happiness - like most of us. And it is inevitable that the bulk of this subsidy then goes in usage that makes people happy (the internet equivalent of the nutrition-less sweet tea being entertainment videos).

Furthermore - there is a long precedent for such limitations in publicly funded subsidies. Public ration shops do not provide all goods - or even all varieties of rice. Mid-Day meals do not provide Coke and Pizza. The Govt. makes these choices as a steward of public funds. It also comes up optimal combinations of nutrition packages to make sure the beneficiary benefits the most.

The conclusion in either case is that free internet plans cannot be unlimited - whether privately or publicly funded - and that the users of such plans have to accept some limitations on the same. As such differential pricing for different web applications is inevitable if the concept of free plans for the poor is to be entertained.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

In the previous question - we have outlined support for free internet plans for the needy and highlighted why they must necessarily be limited. We recommend the following measures to address the issues raised in this question:

1. Our first suggestion is that free plans be limited to a small quota per mobile subscriber per month. By doing this - we make it attractive to only segments of the population who would otherwise not sign up for a data plan at all. ie. - we limit the cannibalization of paid subscription plans by free plans. This ensures that the vast majority of internet traffic (from paid subscribers) continues to be completely neutral as today and not subject to the concerns highlighted in this question.
2. Secondly that TRAI mandate that TSPs must carry any free plan traffic, to the extent feasible under current technology, at a priority lower than that from regular paid plans. This will make sure that in areas where the mobile internet is already saturated - the introduction of free plans will not degrade the experience of paid subscribers.
3. Our suggestion to TRAI would be to provide consumers a choice of free internet plans and let the market figure out the best solutions. Certain restrictions may work for one set of users - and others for another set. This is particularly important because the users who will adopt these services are voiceless. They are not responding to this consultation paper. We must necessarily give them multiple choices and let them figure out what works for them.

To do this, **we suggest TRAI can setup the following regulations around free plans:**

- a. limit maximum bandwidth quota allowed per month in a free plan
- b. publish a whitelist of sites/apps that must be supported (these can include all Govt. services)
- c. formulate common-sense net-neutral standards for light-weight web sites and mandate their inclusion in all free plans. for example - every web-page that has a total uncached page-weight less than 100KB and no asynchronous calls (AJAX - via JavaScript or Flash) can be regulated to be necessarily available via all free

plans.

this also provides a simple non-discriminatory structure by which any web publisher can get themselves included in all free plans.

- d. that providers of free-plans disclose their inclusion criteria beyond these measures (this addresses the issue of transparency)
- e. that providers of free-plans provide an auditable trail of the approval requests and the decisions taken and their justification. (this would force *non-discrimination*)

Free Plan Registry: We would suggest that TRAI establish a registry of approved free plans and vendors (this addresses market-entry - a new provider has a clear way of complying with free plan regulations and getting listed as a provider)

4. How do we prevent a monopoly in the free plan market?

The starting observation here is that while the regulator can setup a market structure that promotes competition - it cannot prevent a monopoly (if one of the vendor's product is preferred by all users, or if only one vendor ever participates). So let us focus on what kind of market can be setup to promote competition and a level playing field.

We will again break up our suggestions to this market structure based on how the free plans are funded:

- **Case I: Subsidy is being provided by the TSP:**

In the freemium model TSPs should be allowed to choose any free plan, from this approved plan registry, they want (or none). They are incentivized to choose the plan that produces high conversion at low cost.

As long as there is enough competition amongst TSPs - the market here will automatically pick a few winners from amongst the free plans. (If a TSP chooses a biased free plan - users will flock to competitor TSPs. If a TSP chooses an unviable free plan - its unit economics will suffer and it will eventually lose market share).

- **Case II: Subsidy is being provided by other citizens:**

In this case - the free plan subscriber can pick any of the free plans available in the TRAI registry. The TRAI needs to mandate that telecoms provide a way for users to access all the free plans listed in the registry.

Beyond such a minimal set of regulations - we should let the free plan provider figure out how best to provide an economical, yet fast service over (what are likely to be) poor internet connections.

Our basic motivation here is that *TRAI regulations should not prohibit innovation*. Here are some examples of interesting technological changes that a free provider may do:

- may host some content on faster local servers
- automatically downgrade image and video resolutions.
- the provider may relax normal HTTP standards related to caching (for example checking cache validity) to provide a faster service.
- Like Amazon Silk (see: https://en.wikipedia.org/wiki/Amazon_Silk) - the provider's proxies may pre-fetch, compress and pre-render data before transmitting over weaker internet connections.

These are just some of the innovations one can quickly think of - creating a market for free services will promote a lot more innovation (that one cannot think of right now).

Facebook is a good example of a vendor innovating in this area. Their services in Africa provide speedy services that are otherwise not available, witness these reviews from actual users on the ground. These reviews are hard to find (because those who use such services probably don't write blog posts):

- <https://medium.com/mwater-technology-for-water-and-health/review-of-the-internet-org-a-pp-in-tanzania-42cdd7daa3c2#.fzbu6fakj>
- <http://www.thebenedict.com/posts/2015/12/26/free-basics-alternatives.html>

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers?

If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

One obvious alternative method that has no differentiated tariff plans is provide cash subsidies to needy consumers for subscribing to existing internet plans. Two major disadvantages will quickly emerge:

- who should be able to avail such a subsidy? As we well know - many of the subsidies end up being used by people who don't need them. Like with the LPG subsidy - the Govt. will now have to figure out income thresholds or other targeting criteria - which introduce overheads and are easily gamed anyway.
- As has already been pointed out - from the point of view of how the resultant subsidized bandwidth will be used - it would be a form of untargeted subsidy - which has been found via empirical data to not be as good as targeted subsidies. Most of this bandwidth will end up getting used in bandwidth-hogging entertainment applications.

Another proposal by the Mozilla foundation is an Ad-supported model. However - it has to be demonstrated that sufficient advertising revenue potential exists at the bottom of the pyramid (so to say) that would cover the cost of reasonable internet access to our most needy segments.

We would also question that if the ad-supported model were plausible - why no TSP has ever approached the regulator with such a proposal? The technology to block internet access until some Ads have been seen exists widely and similar technology is used in millions of wifi hotspots (to block access until browser based authentication has been performed)

Question 4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

We believe the issue of innovation raised in this consultation is a very important one. It is to be noted that the conversation has been started by the innovation of a private vendor in this area. To support the role of the private sector in driving this innovation using proprietary enhancements, we list two empirically backed observations:

A. Standards Driven Innovation is often very slow

One point of view is that neutral standards must be used to provide free plan services. We would argue that such standards are often very slow to evolve. In fact - the history of Information-Technology is dominated by private innovation leading and standards catching up a long after. Some examples:

- In the Database Industry - leading vendors like Oracle and IBM introduced many proprietary extensions to SQL language. They were added to ANSI SQL many years later. (See one example: [https://en.wikipedia.org/wiki/Merge_\(SQL\)](https://en.wikipedia.org/wiki/Merge_(SQL)))
- In the area of Web technologies - IETF attempts at instituting semantic web standards just failed. Instead - the leading search engine company - Google - essentially defines how developers should add semantic data to their web sites (see: <https://developers.google.com/structured-data/>)
- In the area of mobile phone applications - Android (Google) and iOS (Apple) have defined how to write secure applications that can exploit native phone capabilities. Open-Standards based approaches in this area (HTML5) were both late to arrive and have fallen short to date.

One can find countless such examples. If innovation was held hostage to insisting that standards first emerge - then the important innovations listed above would not have happened.

Furthermore - the market - by selecting which innovations succeed - help later standardization processes be less wasteful and more useful (by going with popular choice). As an example - XML standards were defined by large committees - and not by popular choice. They turned out to be unpopular and XML was widely criticized, later, as having too much overhead. Much later - technologies like JSON and REST emerged from the developer community and have displaced the XML standards widely.

(ie. - in the current context - it is better for TRAI to solicit private innovation for free internet plans and later standardize around successful patterns).

B. Openness is a function of market structure (Standards are neither necessary nor sufficient)

One argument that has been made is that free plan providers will build closed and biased ecosystems in the absence of open standards. We argue that this is erroneous.

The experience of a mobile user today is dictated by Google Search, Google Play Store and Apple App Store (in case of iOS). These are proprietary, privately controlled ecosystems. However - they are all quite open (in terms of being open to almost all kinds of web sites and applications that conform to some standards).

The reason is simply that if these ecosystems are not perceived to be fair, if important applications and sites are not available because of any bias - then consumers will shift to other ecosystems. Bing Search keeps Google Search straight. The threat of Android keep Apple straight. And so on.

Thus a regulator should focus on market structure - rather than (only) the technological standards (which as we have seen in the previous section tends to get overwhelmed by proprietary innovations anyway).

2.3.16 The Centre for Internet n Society

CIS Submission to TRAI Consultation on Differential Pricing



Background

ICT regulation and policy should seek to further the following goals:

1. achieving universal, affordable access;
2. ensuring and sustaining effective competition in an efficient market and avoiding market failures;
3. protecting against consumer harms — like privacy violations — and maximising user choice;
4. promoting openness of the network by ensuring maximum utility of the network by ensuring the greatest extent of interconnection and interoperability, and thus lowering barriers to entry and promoting innovation; and
5. addressing state needs (taxation, collective security, etc.).

Generally, all these goals go hand in hand, however some tensions may arise. For instance, universal access may not be provided by the market because the costs of doing so in certain rural or remote areas may outweigh the immediate monetary benefits private corporations could receive in terms of profits from those customers. In such cases, to further the goal of universal access, schemes such as universal service obligation funds are put in place, while ensuring that such schemes either do not impact competition or very minimally impact it.

The best and most important defence against violations of Net neutrality is the same as the best way of providing long-term sustainable access to the Internet to all Indians: ensuring effective competition in the ISP markets, in both mobile and in wired access.

In India, to ensure effective competition in the ISP markets there are a number of steps that need to be taken:

- lowering switching costs (which are low in the mobile market in India, but are high in the wired-line market);

- seeking to ensure local loop unbundling / unbundling the infrastructure from the services provided on it, especially at the last mile;
- engaging in extensive reform of our spectrum management practices to increase spectral efficiency and also increase unlicensed and innovative usage;
- using policy levers to improve the interconnection market such that transit costs decrease, and peering levels increase;
- urgently removing the policy of not allowing content providers to interconnect at NIXI and radically revising NIXI's pricing model (or else cost of transit will never go down, roundtripping of IP traffic will continue, and peering levels will remain abysmally low, leading to low levels of content hosting in India at higher prices).

However, just as access cannot solely be reduced to a competition issue, Net neutrality cannot either. The Internet has led to the blossoming of non-commercial technological innovations which do not operate in competitive markets, like peer-to-peer protocols like BitTorrent and traffic anonymising technologies like I2P. These forms of permissionless innovation too need to be protected from unjust discrimination by ISPs.

If we have very strict Net neutrality regulations (for instance, a regulation that requires treating “all bits equally”, without regard to traffic management needs, or differential QoS needs of customers, etc.), technological and business innovation will suffer, as will consumers, as has been attested by numerous network engineers, computer scientists, and economists.

However, in the absence of any Net neutrality regulation whatsoever, the same might happen as dominant ISPs may seek to turn the Internet into something resembling current-day cable and satellite television networks with the kinds of business deals and restrictions present there. We must adopt a middle path that incorporates the range of services and the needs of the players that are emerging today without compromising on access, innovation by all and rights of users.

For that reason, we recommend the following definition of Net neutrality:

It is the principle that gatekeepers — all ISPs are gatekeepers — should not use their gatekeeping powers to unjustly discriminate between similarly situated persons, content or traffic.

We believe that ISPs should be prohibited from any form of negative discrimination — whether in the form of increased price / lower data cap, or lowered quality of service — on the basis of content or application.

However, ISPs may engage in positive discrimination in those cases where such discrimination does not harm user choice, competition, or access. (Positive discrimination will equal negative discrimination in a zero-sum game, but in most cases that we discuss below, the circumstances are not of a zero-sum game.)

Through the answers to the questions posed by TRAI we seek to provide a set of regulatory tests as to when certain forms of positive discrimination may be allowed, and when they should not.

Answers to TRAI's Questions

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

In general, differential pricing by telecom or Internet service providers for accessing different websites, applications, or platforms, **should not be allowed**, as that, for instance:

- allows ISPs to discriminate between competing content services, and that would harm competition between them;
- allows ISPs to discriminate in their own favour by lowering the prices for Internet services from a related party (e.g., Reliance Communications lowering prices of Reliance Entertainment or NDTV);
- allows ISPs to discriminate in their own favour or in favour of related parties by increasing prices for services like voice-over-IP or messaging or video streaming that compete with other non-Internet services that the ISP offers, like voice calls, or SMS, or video-on-demand, etc.;
- allows ISPs to gain an unfair competitive advantage over other ISPs if they have exclusive tie-ups with dominant Internet-based services like Facebook or Google to lower the price of those services;
- allows ISPs to enter into exclusive agreements with specific services to get paid to exempt them from data caps / 'fair usage policy' limits or to lower the costs for subscribers (note: increasing data caps or bypassing 'fair usage policies' for specific traffic also constitutes a form of price discrimination).

If such instances of harms to competition are allowed, then consumer choice suffers and the innovative potential granted by the Internet suffers.

However, not all cases of differential pricing by ISPs have the same negative consequences on consumer choice, innovation, and competition. Hence, the government should not adopt a complete ban on all differential pricing. For instance, the following kinds of differential pricing are not as harmful as those described above:

- ISPs charging lower prices for locally-peered content; since it costs the ISP less to transport locally-peered content, an ISP may choose to pass the benefits of lower costs to its customers.¹
- ISPs, without any collusion with Internet services or content providers, offering service-specific ‘data packs’, which customers are free to purchase;
- ISPs providing Web access — as opposed to Internet access — for free, in exchange for ads;
- ISPs subsidising content from a platform that has content-neutral technical criteria;
- ISPs offering “telemedicine-optimization” or “MMORPG-optimized” for extra charge, which are applications that require lower latency for specific destinations;
- ISPs charging lower prices, or removing data caps / fair usage policies for access to an entire class of applications or services (such as for all peer-to-peer traffic, or for all services identified as video streaming), as long as the contention ratio for the ‘neutral’ parts of their service doesn’t drop, nor the costs for that increase;
- Content providers purchasing data units from an ISP to offset against their customers’ data usage, as long as the same terms are available to all content providers.
- The government may wish to subsidise access to governmental services, such as the RTI portal.

These might even have some benefits:

- enabling the right to freedom of expression, and the freedom of association, especially when access to communication and publishing technologies is increased;
- increased competition by enabling product differentiation, can potentially allow small ISPs compete against market incumbents;
- increased access (sometimes to a subset of the Internet) by those without any access because they cannot afford it,
- increased access (sometimes to a subset of the Internet) by those who don’t see any value in the Internet,
- reduced payments by those who already have access to the Internet especially if their usage is dominated by certain services and destinations.
- Providing users who need greater quality of service for particular uses a means of achieving that without needing to roll out physically separate physical infrastructure;
- Providing access to basic governmental services for free

¹ This acts as a market correction mechanism as long as transit rates in India are high, and peering levels are low (as is currently the situation in India), but would be distortionary when hosting in India becomes much cheaper. So at some point in the future, market forces will stop this, and if they don’t then the regulator should step in to disallow it.

What distinguishes the set of harmful instances from the other set? In the latter set:

- There is no ‘negative’ discrimination against any specific service or application or platform, meaning cost of access to a specific service (like VoIP) or application (like WhatsApp) or platform isn’t being increased;
- There are no exclusive agreements between any content or platform provider and the ISP.
- If the ISP is charging a lesser amount for specific content being paid by the content provider, then every content provider (whether within a specific class, or more generally) is being provided non-discriminatory access to the same deal.
- If a platform exists, then non-discriminatory access is provided for every content provider to be part of that platform, with facially content-neutral and reasonable guidelines.
- In situations where governmental services like RTI are positively discriminated against (being made cheaper), it is being done in the public interest to make governmental services more freely accessible, and there is no harm or minimal harm to competition.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

1. When an ISP offers Internet access, it shall by default be to Internet access free from price discrimination. A customer must always have the choice to opt for this.
2. In no case may the ISP engage in negative discrimination by imposing a higher cost for access to any content or service or application or class thereof.
3. An ISP may differentially price traffic in a manner that is content-, service-, and application-agnostic.
4. An ISP may differentially price any specific content, service, application, or platform if and only if it meets the following criteria:
 - a. In cases where the ISP is wholly bearing the cost of the difference in pricing:
 - i. All deal shall be **non-exclusionary**: the subsidised content or platform providers shall be free to enter into such a deal with any other ISP, and the

ISP shall be free to enter into such a deal with any other content or platform provider.²

- ii. In no circumstance shall the ISP be allowed to provide preferential treatment to its own traffic or traffic of any related parties. Cross-subsidization between the ISP and a content/service/application/platform provider is strictly prohibited. All deals may only happen with content/application/platform providers at arm's length, and in no case may happen with a related party.³
 - iii. If the subsidy is being provided without a deal, it may only be at the request of the government, or in a manner that is based on criteria that any content/service/application provider can meet.⁴
 - iv. If a customer is being provided differentially priced access, the customer must be notified of that.
- b. If the ISP is being paid or otherwise compensated by a content/application/platform provider, even if partially, for the difference in pricing:
- i. It must be governed by **fair, reasonable, and non-discriminatory terms, which are content-neutral**,⁵ whether as part of a third-party offered platform or otherwise.
 - ii. These terms, including the price for data, must be openly published by the ISP.
 - iii. A customer must actively request and choose to opt-in to any such instances of differential pricing, and it shall not be permitted otherwise.

² To help address the problem of division of the market if each ISP sets up its own platform, and the added costs this would impose on services and applications, the regulator may recommend that a single platform be set up jointly by all ISPs who wish to provide such a subsidized Internet. NASSCOM has also put forward a similar suggestion, though for different reasons.

³ This restriction is required since a market-set price cannot be used to judge whether it was an arm's length transaction or not, as no price is being charged in this case.

⁴ Distinguishing between classes of application or services, wherein all members of a specific class may avail the subsidy (for instance, removing data caps for all video streaming services, or providing only free Web access instead of full Internet access), shall not be regarded as discrimination as long as there is no intra-class discrimination, and that class is reasonably identifiable as a distinct market.

Further, purely technical criteria (such as “locally-peered traffic”, or specifying specific low-bitrates for audio streaming) may be seen as content-neutral terms as long as all content that meet the criteria are treated equally. Thus, allowing low-bitrate audio streaming on a platform, but barring low-bitrate VoIP calls despite those being low-bitrate audio streaming, *would count as discrimination*.

⁵ Terms may be content-neutral even if they are application-specific: for instance, subsidizing all P2P traffic, or subsidizing all Web traffic is content-neutral, even if it isn't application-/service-neutral.

- iv. TRAI may recommend that a common marketplace/website be set up by ISPs to minimize the transaction costs for content/application/platform providers who wish to pay for subsidizing their customers' access across multiple ISPs. This marketplace will publicly disclose all such transactions in a fashion that is easy to understand for consumers.
 - v. If an ISP or ISPs colluding with each other unreasonably reduce(s) data caps / FUP limits, or unreasonably raise(s) price of the neutral Internet, TRAI shall step in and set a floor for data caps and a ceiling for price.
5. An ISP may charge differentially for providing QoS-related optimizations in accordance with the tests we have previously laid down for specialised services,⁶ as long as it provides non-optimized service without any additional charge.
 6. All differential pricing practices shall be disclosed to customers in an easy-to-understand fashion.⁷

⁶ Provision of specialized services is permitted if and only if it is shown that:

1. The service is available to the user only upon request, and not without their active choice, and
2. The service cannot be reasonably provided with "best efforts" delivery guarantee that is available over the Internet, and hence requires discriminatory treatment, or
3. The discriminatory treatment does not unduly harm the provision of the rest of the Internet to other customers.

⁷ This would apply to all differential pricing, regardless of whether it has been done under a deal or not, and regardless of whether it is wholly subsidized by the ISP, subsidized by the content/platform provider, and regardless of whether the user pays for it.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Some talk of “two-tiered” access being promoted by applications like Free Basics: one set of services for the poor and one set of services for those who can afford to pay for the full Internet, and criticise this as a form of discrimination against poor people. However, the current status quo: where those who cannot afford full Internet get no Internet, is an even worse form of discrimination against the poor.

ISPs will not provide free access to the Internet at the same quality of service as paid access to the Internet, as that would destroy the market. Hence, if increased access to the Internet for people who cannot afford current rates is desired, it has to come in one of the following manners:

1. The ISP subsidises Internet access; or
2. A private third-party subsidises Internet access;⁸ or
3. The government subsidises Internet access.

ISP subsidies

ISP subsidies of Internet access only make economic sense for the ISP under the following ‘Goldilocks’ condition is met: the experience with the subsidised service is ‘good enough’ for the consumers to want to continue to use such services, but ‘bad enough’ for a large number of them to want to move to unsubsidised, paid access.

⁸ Models like the service Gigato, which allows services to provide you with free data for having spent a fixed amount on their service, do not target those who cannot afford to pay for the Internet, since the person ends up paying in either case, but might get a larger quantity of data than what the ISP offers at that price.

ISPs do so in a number of ways:

1. Providing free Internet to all at a low speed.
 - a. This naturally discriminates against services and applications such as video streaming, but does not technically bar access to them.
2. Providing free access to the Internet with other restrictions on quality that aren't discriminatory with respect to content, services, or applications.

Private Third-Party Subsidies

1. Advertisement-supported access to the all of the World Wide Web or to the Internet.
2. Free access to Internet limited by time ("for 3 months") or by data units ("2 GB free") along with the purchase of the device.
 - a. Mozilla, Symphony, Telenor, and Grameenphone have been doing this in Bangladesh, offering 20MB of free data a day.
 - b. This naturally discriminates against services and applications such as video streaming, but does not technically bar access to them. In India, especially given our illiteracy rates, the ability to view and broadcast audio/video content is far more important than written content.
 - c. These don't provide continuous/permanent access to the Internet.

Government

1. The government may opt to require all ISPs to provide free Internet to all at a minimum QoS in exchange for exemption from paying part of their USO contributions, or the government may pay ISPs for such access using their USO contributions.
2. TRAI should recommend to DoT that it set up a committee to study the feasibility of this model.

If at some point in the future, full Internet access is available for everyone, with reasonable QoS, then the benefits provided by limited-access services like Free Basics will be minimal. At that point, TRAI may revisit the question of banning Free Basics.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Yes. The issue of differential pricing by TSP for access to the networks has not been addressed in the above questions, but is very important. There are some situations with “multihoming” (say, for customers with multi-SIM phones), but in most wired line broadband, this isn’t the case. Further, even when this is the case, it is impossible for the OTT to say whether any customer is multihoming or not. Given this, each ISP, effectively, has a termination access monopoly since they are the only route for an OTT to reach the customers using that ISP; each ISP is a gatekeeper. In markets without effective competition, this allows ISPs to charge content providers for access to its customers. This should be strictly prohibited.

However, this does not prohibit the ISP from having differential pricing agreements with different *networks* (discriminating on the basis of networks instead of discriminating on the basis of the content carried by the networks). However, to ensure that this does not result in an abuse of each ISP’s termination access monopoly, we need to first ensure transparency. Thus, every interconnection agreement — except for settlement-free peering — needs to be made available to the regulator.

- 1. No termination charges or carriage charges may be levied by any ISP upon any Internet service. No Internet service may be negatively discriminated against with regard to carriage conditions or speeds or any other quality of service metric.**
- 2. All interconnection agreements, when they involve settlement, should be deposited with TRAI.**
- 3. TRAI should remind ISPs that so far it has been forbearing from regulating ISP interconnection and pricing, but that it has the power to do so if it finds ISPs abusing their termination access monopolies.**

2.3.17 Babajob

To: Ms. Vinod Kotwal, Advisor, F&EA, TRAI

Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. With 1 billion Indian people not yet connected, banning Free Basics would hurt our country's most vulnerable people.

Free Basics provides free access to essential internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all developers who satisfy basic [technical guidelines](#) and non-exclusive so any mobile operator can participate.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Sincerely,

Sean Blagsvedt, CEO; Vir Kashyap, COO; John Gibbons, Strategic Partnerships;
Babajob

2.3.18 Socialblood

To: Ms. Vinod Kotwal, Advisor, F&EA, TRAI

Comments for [TRAI consultation paper](#) on differential pricing for data services

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The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Sincerely,
Karthik Naralasetty – *Founder, Socialblood*

2.3.19 Comptel NXT

To: Telecom Regulatory Authority of India

Consultation Paper on Differential Pricing for Data Services

Question 1:

Differential pricing for data usage should be disallowed based on the source of the content. All content should be equally priced irrespective of its source. The data connection pricing should always be based on the quantity, speed and/or time consumed - or any other factor relating to the data transmission.

We don't believe in setting artificial boundaries to the internet, effectively promoting only a small group of apps or companies within the boundaries. No matter what is said about the openness of such arrangements, they cannot be open for all content providers. They cannot provide same access for all content providers, may hamper transparency and may create effectively a monopoly for brokers managing the platform and boundaries. In addition, they will mix boundaries between content and transmission, moving power to bigger companies and conglomerates as well as hamper innovation and competitiveness of local content ecosystem and smaller companies.

More importantly, consumers lose their freedom to choose their content and are influenced or limited by brokers, who select whose content is free of charge and whose is not. This can never be in the best interests of the consumers. Consumers will face a narrower choice, a less competitive offering, and are more prone to select content influenced or paid by a mass advertiser or the broker hosting the free content initiatives.

Furthermore, such arrangements do not help TSPs to monetize the data traffic or get adequate return on their infrastructure investments. That will make the data transmission capabilities be inferior and limit the speed of Internet adoption in India.

Example 1: Two streaming video services, both offering the same video content and in this case both offering it free of charge. The cost to watch a video, or the same video, should not be different from one to another - due to one being zero-rated and another not.

Example 2: Two chat services that are different, both again free of charge services to consumers. One service is for voice only, the other with both voice & video capabilities. The latter consumes more bandwidth, thus the cost to use the service would be higher - either based on bandwidth use or based on data consumed (more data within same length of session). Any of the chat services should not get preferential treatment due to being zero-rated while the other is not - as it would create in-optimal results.

Example 3: Differentiated (dynamic) pricing. The cost of using the two streaming services in Example 1 above can however vary depending on the time of the day, day of the week, or other promotional element. The logic for such variation is effective utilization of TSPs current network assets, meaning TSPs need to be allowed to price the traffic differently in congested hours. This may and can be applied also in such a manner that consumers benefit through lower prices too. Similarly, the services in example 2 may be applied for differentiated pricing based on same attributes. Fundamental is to have pricing changes agnostic to content and be transparent & same for all content - or it would risk creating monopolies for content and services.

It is worth to note that short term sponsored data campaigns should be allowed, as long as they are clearly part of a defined and limited marketing campaign that can also be part of an event (say Cricket World Cup) or free introduction period for new smartphone and data users. These sponsored data campaigns or events should be clearly limited in scope and duration to drive benefit for consumer where the sponsor can offer free of charge data to those participating the event, potentially linking this free data to the event URL, results information etc. as the case may be.

For avoidance of doubt: all content providers are naturally free to price their contents freely and innovating on content business models and pricing should be encouraged. The examples 1-3 here refer to brokers and connectivity, which should not discriminate one content provider to another. As examples illustrate, the zero-rating would cause serious competitiveness issues and limit consumer choice.

The main open question still remains: how to offer affordable internet to all? We revert on that in answer to question 3.

Question 2:

Please see above.

Question 3:

Yes, we at Comptel FWD have alternative solution already commercially available: FWD, the Digital Sales Channel. It is a solution targeted to bring the billion consumer connected to Internet, simply and affordably.

For reference, please see FWD launch video in
<https://www.youtube.com/watch?v=eB3Wg3gKzrA>

This solution offers for consumers Full Internet access in small chunks, very affordably and very simply - being easy enough to cover all consumer segments. The time based access is very easily understandable and can be as short as 1 minute, or as long as desired, and enables all price points for all consumers (including free).

The white label, cloud based FWD solution is available for TSPs. It consists of:

- An app in the device for consumers
- Web based management tool for TSPs
- Solution backend server (OS) in the cloud

The backend is integrated to relevant operator network elements. The one-off integration project lasts typically up to three months. After that, TSP can create and edit time based Internet connections freely in a matter of a minute, and launch them immediately without any changes to network. TSP can also change and update prices with immediate effect.

Please see below a short intro video of FWD's basic functionality from consumer perspective:

<https://www.youtube.com/watch?v=PhcPpTud4GE&feature=youtu.be>

What this means for consumers?

1. Lowering the price points and making access to data affordable to vast majority.
2. Easily understandable and transparent time based packets, e.g. 30 minutes instead of e.g. 50 MB, encouraging use
3. Removal of bill-shock and risk of bill-shock without any data leakage
4. Easy access to Full Internet when and where consumer wants
5. Opportunity to get 3rd parties to sponsor or cover cost, for example cheap or free data
 - a. Sponsored data
 - b. Potential subsidy models for data (or top up data balance)

What this means for TSPs?

While consumers have the freedom TSPs have fair control on costs and prices.

TSPs are able to provide extremely low price points, fulfill needs for all segments and target all consumers effectively - and without diluting their own margins. They can monetize the data fairly, invest in improving the connectivity (and services) and get sustainable business to offer sustainable and innovative services for consumers.

TSPs can also create different campaigns for their customers. For example free Internet access to certain segments, for certain time periods, for certain locations. Through dynamic pricing TSPs will also be able to optimize the utilization of their existing network assets e.g. happy hour campaigns during off-peak hours.

What is the business model?

FWD solution is offered as a service (SaaS) without any CAPEX components. The pricing model consists of Active Monthly Users and Channel Commission.

What this means for Affordable Internet in India?

The solution can be launched by any TSP, to offer simple and understandable prices to make millions of consumers get online immediately. With simple time based offers and short packets with very affordable prices, more people in India can access full Internet without walled gardens.

It also enables the content players innovate on content (and its pricing, business model etc.) so that consumers get the benefit.

Finally, besides the described FWD solution there are other approaches that can help to make Mobile Internet affordable, and sometimes free, that can be used. Whether sponsored data or moving basic consumer subsidies and parts of social security to mobile wallets or prepaid balances, or innovative advertising options these are seen complementing solutions to described FWD solution. We strongly believe those in conjunction to driving full access Internet to Indian consumers to drive innovation, adoption for the benefit of consumers and India.

Question 4:

To summarize, all content providers are naturally free to price their contents freely. Innovating on content business models and pricing should be encouraged.

The examples 1-3 under Question 1) refer to brokers and connectivity, which should not discriminate one content provider to another.

As the examples illustrate, the zero-rating would cause serious competitiveness issues and limit consumer choice.

2.3.20 Indian Internet enabled Startups

To
Shri Narendra Modi
Prime Minister of India

Copy to
Shri Ravi Shankar Prasad
Minister of Communications and Information Technology

Copy to
Smt. Nirmala Sitharaman
Minister of State for Commerce and Industry

Copy to
Shri Rahul Khullar
Chairman of the Telecom Regulatory Authority of India

Dated: April 24, 2015
Subject: Protect and Promote the Open Internet in India

Dear Sir,

We are writing to you as founders of Indian internet-enabled start-ups.

Each of us set out on this entrepreneurial journey dreaming of creating world-leading companies from India. There is no reason why an Indian company cannot be the next Google, Facebook or Amazon. We know that you share our dream; you put it into words: Make in India. The Internet gives us all the potential to do that.

We share another dream with you, the dream of a Digital India. We dream of this as Indians, and also as businesses that wish to serve a fast-growing Indian market.

But for these dreams to come true, we need an open Internet.

Preserving the Start-up Ecosystem

The Internet is a single, global market where anyone can offer a product and be reachable by every user. This results in global competition and exchange of ideas, and drives innovation and progress.

If websites and internet applications had to first obtain a government license, or pay each Internet Service Provider (ISP) in the world—there are tens of thousands of them—this global market and competition, and the innovation and progress, would all disappear.

This is what we stand to lose if ISPs—which includes, now, telecom operators—are allowed to strike deals that favour some online services over their competitors. That would result in ISPs accepting payment from companies to make their competitors' websites inaccessible, slower or more expensive to access than their own.

These practices, if allowed, will prevent promising start-ups from using the Internet and end our dream of seeing them flourish. The western companies that dominate the Indian internet ecosystem today will use their deep pockets to perpetuate their position. The few start-ups that can afford it will be forced to find growth in foreign markets before they can return to India with the funds to pay ISPs. The rest will have to shut shop.

This would be catastrophic for our thriving start-up ecosystem.

Building a Digital India

India has the fastest growing internet user base in the world, but over 100 crore Indians still don't use the Internet.

Bringing them online is not merely a question of infrastructure or affordability; there should first be need and demand for Internet access. No poor person will begin to use the Internet just because access is cheap or even free. She would find no use for content that is not relevant to her needs; even less so when that content is in foreign languages.

The content and applications that will bring her online will not be created by the large western companies that dominate the Internet today, but by Indian start-ups like us. We can only do this if there is a level playing field, freedom to innovate, and yes, competition to drive us. Which of our products best fill her needs is a decision for each user to make, in the spirit of the free market. There should not be a corporate gatekeeper deciding this.

The key to attaining a Digital India is to let Indian start-ups experiment and build the must-have services for the next 100 crore Internet users.

Investment in Infrastructure

Cellular operators claim that providing internet access is not profitable enough to expand infrastructure. This claim contradicts their own annual reports which show increasing revenues and profits due to increased use of data. If that is not enough evidence, the fact that they continue to advertise their internet plans heavily and haven't increased prices demonstrates that this claim is untrue.

As consumer demand for internet access rises, the profitable market for providing Internet access will drive private investment into telecom infrastructure.

Zero Rating is Harmful Discrimination

Some telecom operators and large foreign companies try to falsely pit the idea of a Digital India against the principle of an open Internet.

They attempt to justify a form of discrimination called zero-rating by saying it allows them to offer "free internet to the poor".

We must point out that these offerings are neither "free", "the internet" nor "to the poor". They are not free but bundled with a paid mobile connection. Just as when a toothbrush is given "free" with toothpaste, it is really priced together as a bundle. The handful of sites that they offer in these packages—a few dozen at most—is a mere sliver of the 100 crore websites on the Internet. It must be noted that websites of government departments, educational institutions, health-care providers and others are not accessible through these offers. As to including the poor, the sites allowed in these "free" offerings and their advertising campaigns are aimed at luring away the middle-class customers of competing operators rather than reaching the poor or those who currently lack access.

Some argue that even with these flaws a few bundled websites are better than none. Quite the contrary: permitting these plans will cause serious economic harm. These are proprietary services that aim to lure users away from the real Internet, and will slow down or even reverse Internet adoption and delay Digital India. In addition, these offers will also cause a collapse of competition as crores of Indians will be locked into a few services—those that the ISPs have relationships with—resulting in a decline in quality of online content and applications.

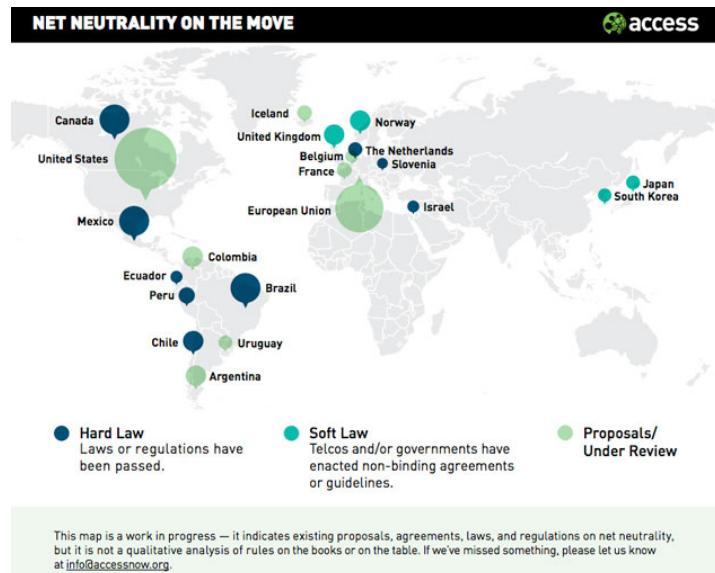
There are other ways to provide affordable Internet access to new users economically. For example, telcos may bundle internet access with voice by restricting it to a few hundred megabytes rather than to a few websites. Such plans leave it to the user to decide how his Internet plan is used, which is a powerful incentive to start-ups to provide services that benefit Internet novices and the disadvantaged.

Other Voices for Net Neutrality

Our desire for a level playing field on the Internet is shared overwhelmingly by consumers. Over the last two weeks over 10 lakh of India's best-informed citizens have written to TRAI to ask it to uphold "network neutrality" or non-discrimination by ISPs.

Many foreign nations share these views as well. Several, most recently Brazil, have passed laws to ensure net neutrality; many more countries like the US and European Union are in the process of doing so.

Here is the status of such laws in other countries as of December 2014:



Neutrality Violations have Started Already

Some telecom companies have shown scant respect for the issues presently under consideration by TRAI. In legally questionable moves, they have rolled out various services which violate network neutrality, apparently confident that they can do so without repercussions.

This is not only an affront to the Internet users in India but also to the regulatory powers of the Government of India. Forming regulations will take time. In the meanwhile, the Indian Internet user and Start-up Ecosystem must be protected.

In the absence of formal regulations on net neutrality, TRAI should issue an interim order or regulation preventing ongoing network neutrality violations by telecom service providers.

The Way Forward

We urge our government to protect the open, competitive Internet in India. We request that network neutrality is enforced and all discriminatory practices by ISPs are forbidden, including zero-rating, throttling, blocking, paid prioritization, toll-gating and others. We also hope that the regressive proposal to license online services, a throwback to the license-permit raj, will be dropped.

We, the start-ups that are at the forefront of creating Digital India, request you to take action now. We need you to protect our nation's innovation ecosystem.

Best regards,

The founders of the following 457 start-up companies.

1	34 Cross	52	Branddify	101	DataCulture	150	Fromahome
2	48 Arts and Crafts	53	Brandniti	102	Dataphi Labs	151	fullhyd.com
3	7Halo	54	Broadamp technologies	103	Datoin	152	Fungru
4	7Prosper	55	BuyHatke	104	DCCPER	153	Fuzion Productions
5	Accrete Globus Technology	56	Byte matrix	105	Demach	154	Gaboli Online Services
6	AcFire Computing	57	Byteridge	106	Design2Occupancy Services	155	Gamiana
7	Acrodelon Technologies	58	C42 Engineering	107	Diet Code	156	GazeMetrix
8	ActiveSphere	59	Cabbageheads	108	dineout	157	GeekTrust
9	Adapt Ready	60	Campus Diaries	109	DIY Motrpart	158	Genii
10	AddoDoc	61	Capillary Technologies	110	Dreamz unwired	159	Gestell Technologies
11	Adroitech	62	Cardback	111	DribbleLogics Systems	160	Ghost Tech
12	AdTriangle	63	CarIQ	112	Dzire 2 Dzine	161	GlamShutter Studio
13	Agentdesks	64	Cashkumar	113	E2E Networks	162	GoGetGuru
14	Aindra Systems	65	Cavintek	114	Edgetech Media	163	Goibibo
15	All Events in City	66	Chauka Sports Solutions	115	Edufyme	164	Gozoomo.com
16	Amazatic Solutions	67	Cheapest Online India	116	Eko India Financial Services	165	GradeStack Learning
17	Another Brick In The Road	68	cheragh	117	Elitelogics	166	Gramener
18	Aplopio	69	CimplyFive Corporate Secretarial Services	118	EnCloudEn	167	grannyads
19	Appacitive	70	Circus Tree	119	enParadigm	168	Great place IT Services
20	Appknox	71	Citrusly Media Technology	120	Enroot AR Network	169	Greenopia.in
21	Approwess Technologies	72	Civil Maps	121	Enterprise Nube Services	170	GrexIt
22	Armoks Interactive	73	ClassMatrix	122	Epictions Transmedia	171	Greytip Software.
23	Around.io	74	Clay Labs	123	ErosLabs	172	Gyrix TechnoLabs
24	Askabt Tech. (Scrollbar)	75	ClearTax	124	Espress	173	Han Digital Solution
25	Athlos Sports	76	Cleartrip	125	Eventzinga	174	HandyHome
26	Atrium	77	Clevershell Software Solutions	126	Eventizy	175	Happy Horizons Consulting
27	Aurus NEtwork	78	ClinchPad	127	Evibe.in	176	happydevils.co
28	AutoRaja	79	CloudCover	128	EximBook	177	HasGeek Media
29	Azoi	80	CLOZERR	129	Eyeppoppers Creative Solutions	178	Hashcube
30	BA Training School	81	Codebrahma Technology	130	Ezzoft	179	Hashtag Loyalty
31	Backpack	82	CodeIgnition	131	F-Grape	180	Healthgraph India
32	Backspace Consulting	83	CodeMyMobile	132	Fab Bag	181	HealthTokri.com
33	BananaBandy	84	Codians	133	fexfree tech	182	Helpshift
34	BankBazaar	85	Codlash Technologies	134	Fill in the Potholes Project	183	HelpSlip
35	Beard Design	86	Coherendz	135	Findulum Techlabs	184	Hercules Sports Nutrition
36	Bestgift.in	87	Contactz	136	Finologic Technologies	185	Hifx
37	Bidstalk	88	coupik	137	Finstop	186	Hipcask
38	Bidsvilla	89	Creative Capsule Infotech	138	Firmloop	187	Hitwicket
39	BigBinary	90	Creativitz Communications	139	Flatchat	188	HLC International
40	Bigminds Digital Systems	91	Crisp Clothing	140	flatpebble.com	189	Housing.com
41	Binjj	92	CRISP Social Ventures	141	Fliqvine Media	190	Houzify
42	BluBot Technologies	93	CrispyVeg	142	Flixtub	191	HtmlExperts
43	Bluerace Technologies	94	Crumbs & Unicorns	143	Fluous Solutions	192	HyperVerge Technologies
44	Boku	95	Crystal Power	144	Flying Stars Informatics	193	I Love Diamonds
45	Bold Kiln	96	Cumulations	145	foOfys Solutions	194	ibbani
46	bonzai	97	Cupcakes and Closet	146	Foresight	195	IdeaBullet
47	bookticketnow.com	98	Cupick	147	Fossix.org	196	Ideaflask
48	Bordoisila Media House	99	CyberSetu India	148	FourthLion Technologies	197	IdeaNanny Technologies
49	Bowstring Studio	100	Cybrilla	149	Freestone Infotech	198	IDfy
50	BrainGain					199	IMomentous
51	Brainmedia.co.in					200	Implementhit

201	iNetFrame Solutions	249	medfinder	297	Pyoopel.com	345	SmartRx
202	Infinite Loop	250	Medianama	298	Pyroductyl Games	346	SocialHelpouts
203	informant networks	251	Mediata	299	Qapfy IT Solutions	347	socit technologies
204	Infruid Labs	252	MercLain Technologies	300	QED42 Engineering	348	Sourceeasy
205	Inkmonk	253	metaHeat MediaTech	301	Qlicket	349	Spacenab
206	Inspiration Edge	254	MetaRain Software	302	Quantiguous Solutions	350	Spayee Labs
207	Instamojo Technologies		Solutions	303	Quantumgraph	351	Spiceblue
208	Instant Hotels Around You	255	Metroplots	304	Quickly Solutions	352	Sportswizz Limited
209	INTEC	256	middlepath Technology	305	Quikpills.com	353	Squadrun
210	Intellista Software Studios		Solutions	306	Quinto	354	StalkBuyLove.com
211	Interactive Media	257	Miljul.in	307	Quintype	355	StartAP
212	InterviewBay Ltd	258	MilkBasket.com	308	Qulp	356	Startify
213	InTouchApp	259	Mind Dots Software	309	Qustn technologies	357	Startup Goa
214	Inuxu Digital Media		Systems	310	RailPass	358	Startxlabs Technologies
	Technologies	260	MindSpark	311	Ralys consultants	359	Stellar Software
215	Invicto Software Solutions	261	Mindstack Technologies	312	Razorpay		Technologies
216	Ishto	262	Miranj	313	Red Monster Game	360	Stranger Arts
217	iSource Online Services	263	Mobilitas Technologies	314	Red Panthers Software	361	Stibr
218	Jana Care	264	MobStac		Solutions	362	Studeyo
219	Jaypore	265	Mondoboard	315	Reduce Data	363	Studio Fra
220	Jinnie.co	266	Multunus Software	316	Revealing Hour Creations	364	Studypad
221	Jnaapti	267	Muto Technologies	317	Revmakx Tehnologies	365	Superlative Digital
222	Junglee Games	268	Mutual Mobile	318	RippleHire		Solutions
223	JusPay Technologies	269	Mygram.me	319	River Valley Technologies	366	Surgize
224	Just Play Sports	270	Myjobnews.com	320	RoadMojo	367	svigour
	Technologies	271	myNoticePeriod.com	321	Rocket Science Innovations	368	swapieze
225	JustStickers	272	Myrefers		(BuyT.in)	369	Synup
226	Karyaa	273	Myriad Automation	322	Romin Interactive	370	Syosys
227	Katalyze Finesse	274	MySmartPrice	323	RT&CO	371	TableHero
228	KaveriTech	275	Naina.co	324	Rtriangle	372	talent anchor
229	Kayeura Technologies	276	nbus.in	325	Saakshin Technologies	373	TalentOne.in
230	Kaytek	277	Necto Technologies	326	Sahu Soft India	374	Talentpad
231	Kincredible Tech	278	nilenso	327	savaari.com	375	Taritas Software Solutions
232	Knolskape	279	Novanet	328	SayOne	376	Teadude.com
233	Koove	280	Nusigma Creative Labs	329	SchoolCom	377	Telesonic Networks Limited
234	Kore	281	octaware technologies	330	Scimata Computing	378	Tenreads
235	Kulture Shop	282	Openxcell		(Gazapp)	379	TermSheet.io
236	Landshark Labs	283	Optmyzr	331	Scribie.com	380	Testbook.com
237	Liftoffllc	284	Orobind	332	SearchBox Technologies	381	Texplore laboratories
238	Livehealth	285	Osmnez	333	SeekSherpa	382	The App Sec Lab
239	Logic Soft	286	Owtastic	334	Seven Hexagon Tech Labs	383	The Indicyb
240	LogicRoots	287	Ozonetel Systems	335	Shack Design	384	The Random Lines
241	Lookup	288	Paintcollar	336	ShermansTravel Media	385	the Scribbler
242	Loonybin Technology	289	Paravali IT Solutions	337	Shippr Technologies	386	TheSecretKart.com
243	MakeMeOK.com	290	Peepalsys	338	ShopZOi	387	TheWasim
244	Mango Man Consumer	291	Perdix Business Solutions	339	Silverlabs	388	TIFIT
	Electronics	292	Prazas Learning	340	Simplify360 India	389	TinyOwl
245	Market Simplified	293	Preseed	341	SimplyPhi	390	Tookitaki
246	Mathharbor	294	Pronix Tech.	342	smartbuildings	391	Tracknext.com
247	MavenHive Technologies	295	Protecta	343	Smartlogix Technologies	392	Train2Teach-Online
248	MayAxis Labs	296	Pyjama Party Studio	344	SmartMumbaikar	393	Trendy Souk Retail

394	Tricog Health Services	411	vidency	426	WeddingPitara.com	442	Yellbow Fashions
395	Tripnary	412	Vidooly	427	Wedeterna	443	yelo
396	Trivium technologies	413	Vintage Cart	428	What's The Scene India	444	YumWeb
397	Truebil.com	414	vintagenation.in	429	WhiteSign	445	Zamplee
398	Turtlemint	415	VioletStreet.com	430	Wiinnova Software Labs	446	ZANEC Technologies
399	TuSPAR Fashion	416	Virdhara International	431	Wingify	447	Zapota Online Services
400	Uncommon.is	417	Vistaar Digital	432	Winwind Power Energy	448	ZapStitch
401	Uniserved		Communications	433	wirecamp	449	zapyle
402	Unwired Labs (India)	418	Vitesla	434	Wisely Online Services	450	Zenify.in
403	Upside9	419	Voxapp	435	Wolken Software	451	Zerodha
404	Uptime technology	420	Walkinto	436	WonderPoint Software	452	Zomato
405	Urva Tech Labs	421	Walnut Knowledge	437	wosoft	453	Zootr sports
406	Value Research India		Solutions	438	XamCheck	454	Zorse Labs
407	valyoued	422	Walnut School	439	Xerces Blue Software	455	Ztek Consulting India
408	Vavia Technologies	423	Waverr		Solutions	456	Zydness
409	Velocita Brand Consultants	424	Webly	440	Xola Travels	457	Zyxware Technologies
410	Vicky.in	425	WebSide	441	YatraChef		

I attest that I have received written authorizations from each signatory.

Aravind Ravi Sulekha
 Askabt Technology Pvt. Ltd.
 3rd floor, #3 Wind Tunnel Road, Murugeshpalya
 Bangalore 560017

2.3.21 CCAOI



Representing the ecosystem of Internet -Bharat Model

December 27, 2015

Ms. Vinod Kotwal,
Advisor (F&EA)
Telecom Regulatory Authority of India

Sub: CCAOI's comments on the TRAI Consultation Paper on Differential Pricing for Data Services.

Dear Madam,

At the outset we wish to thank TRAI for giving us the opportunity to submit our comments on the Consultation Paper on Differential Pricing for Data Services.

Please find enclosed a copy of our comments on the paper.

Thanking you and looking forward to favorable consideration of suggestions in the interest of growth of internet in the country.

Yours very truly,
for CCAOI

Amrita Choudhury
Director
+91 9899682701
www.ccaoi.in



Representing the ecosystem of Internet -Bharat Model

CCAOI's comments on the TRAI Consultation Paper on Differential Data Pricing

CCAOI is grateful for getting an opportunity to present its views on the consultation paper released by the TRAI on issues pertaining to differential data pricing.

Please find below our response to the questions where responses have been sought.

Question 1:

Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

CCAOI Response:

In a country with a population of 1.2 Billion and an abysmally low Internet penetration of approx. 16%, where there is a **stark contrast between the haves and have-nots**, the **Internet can be the best leveller in India**, as it empowers the weaker communities.

It is an accepted fact that, apart from the technical limitation, challenges lie in affordability and adoption in the country. While free access can help those who would otherwise have no means to avail the benefits of the Internet, where adoption is a challenge, there is a need for stimulators and incentives in every form including free services being proposed by Telcos and Content providers. Therefore, **TSPs should be allowed to offer differential pricing for data usage of different services.**

Question 2:

If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

CCAOI Response:

Firstly, **all forms of differential plans are not harmful.** Zero rating plans, which do not harm the openness of the Internet nor have any negative impact on access and competition in the long



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run, should be promoted. Such plans help in increasing internet access and provide benefit to consumers.

Also, **there no empirical evidence** to support the allegation that, Zero Rating creates a walled garden, nor **substantiation of any cases where Zero rating prohibited services of other operators.**

Thirdly, any concerns regarding monopoly are completely baseless as the **user has the option to choose** whether they want to opt for the Zero rated differential service being provided, especially in India, where there are nearly 10 operators in each circle.

Currently, **free internet services are mostly enhancing the benefit of users.** Of course, while doing so, the popularity of their free site is increasing, but the advantages far outweigh the disadvantages and it is seen as fair competition and can be seen as an independent regulatory goal. In fact, such packs should not be prohibited, as that would be a case of over-regulation

Moreover, the risk of creating Walled Gardens, by providing Free Internet is negligible in the present scenario since the economic incentives for those customers who have the ability to pay for "Internet packs" but currently do not find a compelling reason to do so, or out of both a sense of public interest and self-interest of the telecom providers works against this.

Besides, Telecom providers do not make any money in non-commercial zero-priced zero-ratings. A telecom provider only makes money if subscribers start paying for sites outside of the so called "walled garden". If subscribers are happy in the walled garden, the telecom provider starts losing money and hence, has a strong motivation to stop that scheme. If on the other hand, enough subscribers start becoming paying customers to offset the cost of providing the zero-priced zero-rated service(s) and make it profitable, it shows that despite the availability of zero-priced options, a number of customers will opt for paid access to the open Internet and the open Web, and the overall harms of such zero-priced zero-rating would be minimal. Hence, the telecom providers have an incentive to keep the costs of Internet data packs low, thus encouraging customers who otherwise wouldn't pay for the Internet to become paying customers.

Furthermore, Indian users cannot be fooled. Indian users understand value for money and are no fools. If users do not find value in Free Packs and there is no market demand for such products, Telecoms/ ISPs will cease to offer such products. Thus, assuming a Telco's decision to offer such packs is purely customer-demand driven - and not due to deals it has struck with service providers. No one can shape their choices and opinions, or decide for them, as being claimed by some sections.



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To conclude, it is always better to have more and more users have some form of access than none and instead of interfering and stopping initiatives which are helping unconnected Indians to avail the benefits of the internet, free services should be encouraged and more organizations should work to offer free internet to these areas to get them connected, else it will give rise to “digital apartheid”.

Question 3:

Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

CCAOI Response:

Zero rating is one of the ways to increase internet access and adoption. Other approaches for encouraging internet access should also be encouraged. Ironically, nothing stops anyone from providing services for free for increasing Internet reach amongst the unconnected people residing in the unconnected regions of the country. So why haven't they done so?

Our approach therefore should not be to shut down Zero rating, but to improve them and encourage them. In case any competitive issue comes up, it should go to Competition Commission.

Question 4:

Is there any other issue that should be considered in the present consultation on differential pricing for data services?

CCAOI Response:

As an association, CCAOI has always advocated offering everything for Free to the community - Free Internet, Free digital literacy, Free services, etc. CCAOI believes, **TRAI should be encouraging the operators and internet companies to provide free internet services** to every nook and corner of the country, rather than discouraging such activities as creating “walled gardens”. Additionally, rather than evidence of harm, such offerings have boosted access in most areas of the world where they have been implemented and therefore should be encouraged so

that India can achieve its digital dream of connecting and empowering each citizen in the country.

To conclude, we wish to reiterate the following points:

- Internet is going to play vital role in filling up the divides especially in facilitating **equal opportunities for Rural India, Bharat.**
- For the years together, Internet was promoted in urban India by Government, Private operators, educational institutes, Content providers and other stakeholders.
- Rural India with scarce resources, such promotions especially **free services is a must and would play a vital role for adoption.**
- '**Free matters' especially for the new adopter.** Giving free helps in adoption and is a fundamental part of the product lifecycle. Also, economic principle of Customer Incentivisation is older than Internet and disturbing it over myths would be inappropriate and can have far-reaching implications for the users who need encouragement to adopt internet.
- Every product and service has lifecycle stages and the "**Choice" as a stage comes later than "Adoption" and this should not be mixed up** by the vested interest advocates who discourage "Free offers" by any service providers especially, by showing the fear that internet would get into trouble because of such freebies.
- Internet is bigger than any such overstated concerns on big service providers. It was, is and will remain the **leveller** despite the sizes of the online service providers.
- **Operators and internet companies should be encouraged to provide free internet services** to every nook and corner of the country rather than been discouraged on grounds of creating "walled gardens".
- The **Indian user should not be underestimated.** No one can shape their choices and opinions, or decide for them, as being claimed by some sections.
- It is after all the **user's choice** whether they want to use what is offered for free or not. Just as a user has the right to opt for a service, they even have the freedom to opt out. Thus claims by certain civil societies that once a user uses free services, they will not be able to change from these services is completely misleading.



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- Assuming that once a new user gets introduced to the internet, they will limit their access to the first website they were introduced to is incorrect. Once a user gets introduced to the internet, they will automatically be keen to view more services and sites and **ultimately prefer websites or services beneficial to them and not be limited to just one or two sites.**
- Lastly, we **do not have the right to stop new users from rural Bharat from availing free services** when we, the privileged, have reaped the benefits of Internet.

2.3.22 Jugnucraft Entertainment



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To,

Ms. Vinod Kotwal
Advisor (F&EA)
Telecom Regulatory Authority of India
New Delhi.

SUB: Counter- Comments on the Consultation Paper of Differential Pricing for Data Services via Consultation Paper No. 8/2015 Dated 9th Dec, 2015.

Madam,

With due respect, we are offering our **Counter-Comments on the Consultation Paper on Differential Pricing for Data Services**, invited by TRAI through the Consultation Paper No. 8/2015 Dated 9th Dec, 2015.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer 1:

- (i) No. The reason, to some extent, explained in the note, circulated by TRAI itself. This is because, the TRAI Note itself enumerates much more harms than benefits in its implementation.
- (ii) Everyone in this country is aware of the end results of the differential pricing on petroleum products, food and fertilizer items. The subsidies, which were provided by the Government never reached the targeted people.



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- (iii) The people, who are said to be the beneficiary cannot even read and write. The majority of the literate persons, according to the definition in India, are not aware of how to use the resources efficiently and effectively and in their own interests.
- (iv) The proposed policy is grossly discriminatory, anti-competitive, predatory, and misleading and proposed to be implemented with a view to benefit the select service providers and companies.
- (v) This policy is also against the fundamental rights of Freedom of Speech and Expression and Right to Equality, which is against the spirit of the Constitution.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer 2: Does not arise in view of the response to Question 1.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer 3:

- (i) There may be many alternative methods/technologies/business models, other than differentiated tariff plan. The one that we may suggest is that, as provision of free internet services to those, who can't afford, is a social service and if it is at all to be provided, it should be provided either through Government efforts or through Public Sector Undertakings, owned and operated by the Government.



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- (ii) This is essential, because the primary motives of the business houses are to maximise their profits rather than improving social goods.
- (iii) The interests of the business houses and the consumers are always contradictory, i.e. one will always be benefitting and flourishing at the cost of the other.
- (iv) There is no urgency for the provision of free internet services and data access to the poor and the downtrodden, when we are still unable to provide basic necessities, like elementary education, food, clothes and shelters to such a large number of our population.
- (v) As pointed out in the answer to first, provision of free internet is of no use without basic education levels.
- (vi) We are required to empower our citizens physically by feeding them appropriately and educating them sensibly with a view to help them become responsible citizens of the country in the first instance.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer 4:

- (i) The Constitution of India provides the Fundamental Rights of Equality and Freedom of Speech and Expression to all its citizens and persons, irrespective of their status, castes, creeds, regions and religions.
- (ii) The Facebook has been misrepresenting before the TRAI and the people of the country to achieve its ulterior motives of killing innovative and entrepreneurial efforts by the youths of the country by launching misleading campaigns in the electronic and print media.
- (iii) Before implementing any policy in this regard, it is incumbent on the TRAI to ensure that their policies do not infringe on basic ideals/principles, enshrined in the Constitution of India.



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In view of the above, you are requested to scrap/disband the proposed policy in the **Consultation Paper on Differential Pricing for Data Services via Consultation Paper No. 8/2015 Dated 9th Dec, 2015**.

Thanking you.

Yours faithfully

(AKASH KAMAL)

Chief Executive Officer

The Talented Indian

M/s Jugnucraft Entertainment OPC Private Limited.

Contact: 9013173722(M)

Email: ceo@thetalentedindian.com; crowndev@hotmail.co.in

N.B: We will feel privileged to any further clarification/consultation, if needed.

(This document is digitally signed and hence does not require manual signature.)

2.3.23 Citizen Forum



Citizen Forum

(registration number- S-E/41/Distt. South-EAST/2013)

To,

The Secretary

Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan
Jawahar Lal Nehru Marg, Old Minto Road
New Delhi – 110002

Sug
✓
7/1

pravisa (CRA)

President
R.S.P.Sinha
Former. C.M.D-MTNL

Vice President
R.Ashok
Former. Member
Telecom Commision
and TRAI

Secretary
A.K.Chaturvedi
Former. Advisor DOT

Treasurer
Vikas Kumar
Chartered Accountant

Subject: Response to TRAI's Consultation Paper on 'Differential Pricing for Data Services' dated 9th December 2015.

Sir,

We are thankful to TRAI for the consultation paper on "Differential Pricing for Data Services", which is very timely and contextual. Prior to responding to the queries, we would like to draw the attention of TRAI to the following points:

1) Existing consultation on net neutrality:

Many of the issues discussed in this consultation paper are already part of the discussion pertaining to the issue of net neutrality under the TRAI consultation paper dated 27.03.2015. A comprehensive view on net neutrality cannot be formed without the associated aspect of pricing of data services and it would be prudent to view all the inter-linked matters together. TRAI should come out with a comprehensive order in the interest of the industry.

2) Customer centric policies:

As in the past, we expect TRAI to take customer oriented measures so as to increase penetration of data services in the country as well as to ensure that services are made available to customers at the most appropriate tariffs. Reasonably priced data services are critical for growth of data in the country.

3) Locally hosted services:

We understand that there are significant cost savings for operators in delivering data to customers when the data is hosted locally in India, and even more so when the service is being offered through the intranet of the TSP. Locally hosted data is also easier to monitor from security point of view and is therefore in national interest.

Chairman, TRAI
Dy. No. 1716
Date 04.1.16.

17/01/16

In this regard, we urge TRAI to assess why hosting of data servers locally should not be made mandatory for all content providers. This would not only make data services cheaper in the country, but will also align with the overall objectives of the Government to promote investment in the country and meet our security requirements.

In any case, TRAI and the Government should incentivize local hosting of services by allowing operators to offer these services at lower tariffs to customers, and be able to charge higher tariffs for data hosted outside the country. We have a very good opportunity through tariff incentivisation to promote investment in the country and meet our security priorities.

4) Operator owned services:

Operators are required to provide certain essential services such as self-service, emergency services, healthcare and value added services to customers. TRAI should ensure that these are provided free of cost or at subsidized tariffs to customers.

Also, given the lower cost for operator own services which are delivered only to the operators own customers and using its own network, TRAI should also ensure that these services are made available at lower tariffs to customers. TRAI should evaluate if these services could be delivered free of cost, atleast it may enable operators to do so, for the overall benefit of customers.

5) Open Internet

In the context of the debate and noise being created in the country on net neutrality issues, we urge TRAI to formulate policies so that all content is available to customers without any blocking or throttling done by operators.

With this background, our response to the queries are provided below:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

1. TSPs should not have differential tariffs for data usage ordinarily. TRAI should monitor any deviations and allow on a case-to-case basis after ensuring that the tenets of non-discriminatory, transparency and affordability of internet access service are addressed.

2. TSPs should however be encouraged to offer data services from servers hosted within the country / locally at lesser rates. This will encourage more investment in the country and make services cheaper for customers. This will also address security priorities of the Government.
3. Also, TSPs should be given pricing flexibility for on-net services as there is lesser cost associated with these services, which the TSPs should be allowed to and encouraged to pass on to customers. This will bring access to customers at more affordable prices.
4. As in several other countries such as US, France, Norway, Singapore etc, operator own services should be left outside the purview of net neutrality/differential tariff principles, so that operators are able to offer these specialized services to their own customers using their own network for the benefit of customers.
5. There are services such as Binge On or Stream in the US that are offered to customers to encourage usage, wherein operators have passed on the benefit of lower cost of delivery to the customers. These services are well received and benefit all stakeholders, including consumers and operators.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

1. TRAI may allow differential pricing for general internet services, if at all, only on a case-to-case basis after ensuring that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed.
2. The enshrinement of net neutrality principles viz. no throttling, no illegal blocking and no paid prioritization, will enable TRAI to deal with the adverse anomalies sought to be created by other unregulated players in the market.
3. Considering that on-net / intranet services can only be offered by operators on their own network and only to their own customers, there is no question of discrimination. TRAI may allow these services to be encouraged and provided

at subsidized rates for the benefit of customers. The only issue to monitor here would be that operators do not charge these services at rates higher than general internet as the cost of these services for operators is lesser than cost involved in offering general internet services.

Question 3. Are there alternative methods/ technologies/ business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/ describe these methods/ technologies/ business models. Also, describe the potential benefits and disadvantages associated with such methods/ technologies/ business models?

1. The consultation paper has discussed some innovative and interesting business models to increase the spread of internet, which may be explored by developers and content providers.
2. Exploring new business models to increase the spread of access to Internet may be left at the hands of free market, however TRAI should monitor these developments to ensure that these comply with the overall principles laid down by TRAI, which include non-discrimination and protection of consumer interest.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

We have already discussed in the first section on Principles. There are no additional points to be raised.

Thanking You,

Yours sincerely,

For Citizen Forum



President

Copy to:

1. Shri R. S. Sharma, Chairman, TRAI
2. Dr. Vijayalakshmy K. Gupta, Member, TRAI
3. Shri Anil Kaushal, Member, TRAI
4. Smt. Vinod Kotwal, Advisor (F&EA), TRAI

2.3.24 Times Internet Ltd

**COMMENTS OF TIMES INTERNET LIMITED
ON
CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA
SERVICES
DATED 9TH DECEMBER, 2015**

Times Internet Limited's submission to the above mentioned consultation paper is in two parts, the first part is the executive summary of the response which is followed by detailed issue wise submissions in the second part.

Executive Summary:

TSPs should NOT be allowed to have differential pricing for data usage for accessing different websites, application or platform:

We are of the view that Differential Pricing for Data usage will:

- **Make the TSPs 'gatekeepers of the internet'**, rather than the access provider, by allowing them to choose and select amongst the same class of online services to be on their DP platform. Moreover, basis of such selection will be purely commercial interest. This will cause discrimination among the websites and online applications (apps) which are start-ups or low scale/ cost.
- **Start a race for controlling of internet traffic amongst TSPs.** A cheaper and popular broadband access will attract user base in large numbers for the TSPs. This will lead TSPs revenue soaring disproportionately, simply as they can offer exposure to their large user base to an internet service. There will be a natural tendency amongst the TSPs that they somehow owe a cut of advertising and content revenue simply because internet services traffic touches their network or they can divert the traffic to such internet services by giving them class exclusivity or cutting down on their competition.

- **Discourage innovation.** No scope for innovation or entrepreneurship as it will discourage the ones who cannot afford to pay additional taxes, levy or charges to enter a TSP's 'lower-priced' version of the broadband access.
- **Potentially threaten free speech and free access to information.** When a media outlet owned or commercially associated with a TSP, it will get a preferred treatment in terms of access exclusivity, speed, pricing and quality vis-à-vis its competitors or small online media outlets/ content providers. This would have a material impact on access to information in the public's interest, lack of free speech and media plurality.
- **Become anti-competitive and support only big players.** It will skew the competition by giving either platform exclusivity or access advantage to a selected few. TSPs will control which internet services is to have an attractive and easy access over others. It will initiate practices like free data for preferred partners and slow and/ or paid access for others.
- **Invasion of privacy of users.** In order to cross-subsidized their low cost broadband access, TSPs may be tempted to do away certain type of personal information of the users of its platform to the online companies for the purpose of user centred advertising.

Suggestions for measures that should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed:

- **Non-discriminatory access and open internet.** TSPs should not be allowed to influence data access to users by way of speed, pricing, or any other form.
- **No DP plans for smart phone or with unbound mobility.** Reasons:
 - Price arbitrage by retailers and urban users.
 - TSPs will only eye the data-hungry video and cloud markets of the Smart Phones.

- Fixed line or limited mobility ensures the intended usage of DP plans.

Alternative methods/ technologies/ business models, other than DPs

- **Indirect Subsidy:** Rather than subsidized plans for the broadband access at retail level, user's subsidy can be reimbursed by government after the user makes payment to its TSP.
- **Direct Subsidy:** As a part of TSP's universal service obligation, broadband access tariffs should be regulated, to be offered with subsidy, to cater to low-income and rural users.
- **Government should initiate low-cost broadband access:** Government led institution should run the low-cost broadband access schemes, this way it will be transparent, non-discriminatory and equal service to users and online services/ content providers.

Issues Wise Detailed Response:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

As this Consultation Paper suggests the concept of 'Differential Pricing for data usage' ("DP") is predominantly about discounted pricing offered by TSPs (include ISPs) for making access to internet/ digital platforms affordable for rural and lower income group users. What this connotes is that for providing the DP, the TSPs shall have the freedom of creating different versions of the broadband, where discounted version may have an inferior (limited) broadband access to certain internet content than the normal (undiscounted) version. However, there may also be a case that TSPs may charge a premium, by cross-subsidizing the discounts offered by them to the users, by charging premium from the websites/ apps to be on their discounted version owing to its popularity and potential subscriber base. TSPs will also have the option to grant free access to its users to some websites but charging for others and entailing preferential treatment of certain sources of content. Another way of cross-subsidizing the discounted broadband access is by commercially exploiting user's personal information and details that is aggregated with the TSPs.

We foresee DP having some serious issues, including breach of privacy of the users. These issues are a direct challenge to various regulatory principles/guidelines, highlighted in para 9 of this Consultation Paper ("CP"), that the Authority endeavours to uphold while scrutinizing the tariffs. DP is nothing but the 'Zero Rating' in disguise, indirectly challenging the 'Net-Neutrality'.

Internet is a platform where TSPs should provide no competitive advantage to any specific website, Apps or online services, either through differential pricing or quality or service. To put it simply, the internet should be neutral and TSPs should not provide any advantage to any particular online service. Hence, it is pertinent that in a DP environment, TSPs/ ISPs must be made responsible for ensuring a minimum quality of network for all websites/ apps/ services. Such level playing field or non-discrimination will offer entrepreneurs and startups unbridled freedom to innovate.

In the digital age, the internet traffic determines revenue for website or an app. One of the most important determining factors of how much money a website/ app can make from advertising revenue is directly proportionate to what is the amount of website traffic it receives. Apparently, more the traffic more the advertisement revenue for the website/ app.

Typically, the advertisement revenue for a website/ app would look like:

Monthly Page Views	CTR% ¹	Actual Clicks	CPC ²	Estimated Earnings
50,000	0.02	100	US\$0.73	US\$73

Whereas, the kind of websites/ apps that the TSPs wants to have it on their subsidized or incentivized broadband plans would have starting numbers of Monthly Page Views of 3 million and going to 2 billion. Facebook, which was frontrunner for zero rated plans and wants to start its own internet viz. *internet.org* or its new rechristened version 'free basics'³, officially has Daily active users (DAUs) of 936 million on average for March 2015, an increase of 17% year-over-year, its Mobile DAUs were 798 million on average for March 2015, an increase of 31% year-over-year, Monthly active users (MAUs) were 1.44 billion as of March 31, 2015, an increase of 13% year-over-year and Mobile MAUs were 1.25 billion as of March 31, 2015, an increase of 24% year-over-year⁴.

¹ Click Through Rate Percent

² Cost Per Click

³ <https://developers.facebook.com/docs/internet-org>

⁴ <http://investor.fb.com/releasedetail.cfm?ReleaseID=908022>

The other big thing is ad-supported business model and the creation of a secondary market in consumer information. Companies like Google and Facebook, both of which earn much of their revenue by selling targeted marketing opportunities, demonstrate the commercial potential of ad-supported Internet platforms.

These figures suggest that the magnitude of revenue riding on the internet traffic alone is humongous. TSPs are well aware of this and wish to cash-in on the proposition of ensuring bulk internet traffic to the websites/ apps which wants to come on-board their low tariff broadband access business. The idea of country's growth churning out of easy access to broadband loses its significance in all this and remains just good sounding marketing tagline for TSPs for their public relation campaigns and corporate social responsibility obligations.

As mentioned above, DP has a very high probability making TSPs fall for unignorably lucrative and overarching commercial gains and becoming discriminatory and anti-competitive in the process. So the direct consequences of TSPs power to make the choices for choosing their partners for their (low cost) popular broadband access are:

- ***Discrimination:***

If an unregulated DP is allowed, TSPs shall have the unlimited choice to determine which website/ apps to allow free or with low cost access to the consumers. This would also mean that a TSP may promise not to count one website/ app or group of websites/ apps against user's monthly data cap or provide such service free of cost. Such choice will allow them to even block or throttle speed by slow access, who doesn't sign up with them for their programme. This will lead to illegitimate network management techniques and discrimination that will lead to fragmentation of internet.

- ***Unfavourable to start-ups and SMEs:***

DP fundamentally limits access to all services that have not signed for DP plan with TSPs --which benefits only the larger companies. This reduces long-term competition and concentrates on dominance of only well-funded companies. Also, if DP becomes the norm, it will become a tax on the Internet industry, where start-ups and SMEs will need to pay for their properties to be available on the low cost version broadband or otherwise they will lose exposure to such a big market.

Moreover, increasing start-up costs to access customers is totally anti-competitive, making it harder for emerging entrepreneurs/young and innovative start-ups to be discovered, and creating yet another hurdle for them. DP plans put dominant global players having huge spending prowess at advantage and puts new crop of indigenous players, small and medium enterprises and local content and service developers at a significant disadvantage. Hence, accepting a framework whereby access is differently priced, and governed/controlled by a select few parties, is bad for the meritocratic platform that is the internet.

DP transfers value from consumers to shareholders, which generally leads to an increase in inequality and can therefore be inefficient from a utilitarian standpoint. This is particularly true in settings where there is no or very less competition, where single or limited players exist in each online category, even if such services come for free.

- **Against Innovation:**

DP tariffs are likely to subdue innovation, because startups will not have the financial clout to come on board the low tariff high penetration broadband plans offered by TSPs to the users. In most cases, internet based players offering communication services through applications are relatively new companies that have based their product on technological innovation in both software and hardware. Binding such communication services with licensing regimes will do nothing but dis-incentivize innovation and discourage entry of global players in the Indian market. The extent of innovation that has been witnessed over the years has been greatly aided by an open and non-discriminatory internet. Any form of regulation or licensing, which is contrary to the principle of open and non-discriminatory internet, will increase the entry cost, thereby hindering innovation and equal opportunity to start-ups to establish themselves in the market. The impossibly onerous burdens imposed by such licensing would result in many such globally developed services and apps not being launched in India and our own start-up efforts to develop local versions of such websites/ apps being killed in their early stages. The net results would be decreased consumer benefit and a massive slowdown in innovation and reduced efforts due to the regulatory cost of doing business becoming very high.

Net neutrality facilitates innovation and competition, as economic actors take advantage of the level-playing field in communication networks to launch new services. The concept of "innovation without a permit", where new entrants compete fairly with the incumbent giants is at the root of the

development of the Internet as we know it. Entrepreneurs of the Internet have become the linchpin of the emergent knowledge economy. Beyond prominent examples of companies that became huge thanks to the possibility to innovate and grow on a neutral Internet, there are thousands of smaller companies and services that represent an even bigger contribution to growth and social welfare. Free/open source software or open contents services count among the most-used services in the world, and only exist thanks to the neutral and decentralized nature of the Internet. Many other essential parts of the Internet took advantage of an open network, and became widely used all over the world only a few months after being created, because it was relatively cheap to produce and distribute their innovative services.

Obviously, powerful actors in the telecom industries have an interest in imposing their control over information and communication networks. It would be like that the last mile operator, which is the TSP, shall only decide which social networking website or e-commerce website or the for that matter news and information website its subscriber should watch. Such a scenario will have lack of media plurality issue lurking in it.

- **Against Competition:**

'DP' plans per se violates norms of competition laws. Obviously, a free or subsidized service will be a popular service and may outplay everybody else in the area of internet access, such dominant player shouldn't be allowed to decide the terms of access for its platform. This will lead to indiscrimination and personal interests & commercial gain will remain the only criteria of engagement, completely overlooking the principal of equal opportunity.

Thus level-playing fields for online service providers must be maintained. Open access must be non-negotiable and leading online service providers cannot be allowed to influence telecom operators to disadvantage their online competitors.

- **Issues of Free Speech and Media Pluralism:**

Another victim of free choice of selecting the content by the TSPs for their DP service would be the free speech. Preferential treatment in any form by the TSPs to certain online services would pose threat to innovation and free speech. The start-ups, small businesses and low-cost online media outlets will often be unable to pay to be in the popular version broadband access supported by DP.

Net neutrality is also about media plurality. If some media companies can pay so that their content loads faster or does not count against users' bandwidth cap, then those who can't pay won't have a chance to compete and be heard, this will be an issue of media pluralism. We already have Reliance's Jio launching its 4G service streaming content based on its prior agreement with specific content providers. Thus far the 4G service delivering content like any media player is not regulated by TRAI or MIB⁵. Naturally, such like TSPs will gravitate towards big content providers who will not shy away from spending big moneys to get platform exclusivity. Media plurality is important for a healthy and informed democratic society. It would be dangerous for any platform like broadband to have only limited media outlets because media, especially news and information media has the ability to influence opinions and set the political agenda.

- ***Invades Privacy:***

An issue that is often conflated with DP, but represents a valid concern in its own right, is privacy. Concerns over privacy, data quality, and fairness are especially salient when considering DP. In particular, internet service involves the aggregation, sale, and use of large amounts of personal information, often in ways that individual consumers know very little about. What if the TSPs in order to cross-subsidize their low cost access broadband starts sharing personal information about the users with online sellers? Much of this activity will facilitate personalized tracking and targeting, which creates value by helping online sellers better identify buyers' needs. The result is un-fair deals and arbitrary pricing to the online users, cleverly and lucratively inducing a user to buy or shoot up the price of an article knowing from the user's browsing history clubbed with its location and personal information that the user is very keen to buy that product.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

To ensure that the above said principles are addressed, we suggest that the policy for DP plans offered by the TSPs to have the following essential features:

- *All websites/application/online services should be equally accessible.*
- *All websites/application/online services should be accessible at the same speeds.*

⁵ Ministry of Information and Broadcasting, Government of India, which is the content regulator for television other media platforms.

- All websites/application/ online services should be accessible at the same data costs.
- No arbitrary filtering/ blocking allowed for websites/application/ online services at the TSP or Internet Gateways level.
- No setting up of Information Superhighways restricted to certain websites/application/ online services.
- No free access to certain websites/application/ online services.
- Stricter privacy and data sharing policy for TSPs.
- No cross holding or vertical integration between TSPs and websites/ apps/ online services, except in TSPs own digital platforms for their core businesses.

In addition to the above, it is also essential to remind us that the real purpose for the discounted or free broadband access is to usher innovation and growth from the rural and low-income users. However, as the commercial interests sometime overtakes the real interests, it would be necessary to have the following checks and balances in the DP policy:

- **DP Plans should NOT be made available for smart phones:**

Consumers have several tools that can be used to undermine the real purpose for the discounted or free broadband access. One of those tools is arbitrage, or the ability to buy as a rural and low-income user and using it in urban areas for non-specified purpose. Another tool is that the retailers could purchase several connections from the low-price market and resell them at a profit in the high-price market.

Once the mobility is available with the broadband then propose becomes more commercial for both the user and TSPs away from the real objective. TSPs will only eye the data-hungry mobile video and cloud markets. Even the consumers will not be able to make out which content is under DP plan and which is under the normal plan, eventually consuming data allowances in the matter of hours or set them back a few hundred rupees per month, ultimately defeating the core purpose of DP plans i.e. innovation and growth amongst the under-privileged and rural markets.

- **DP Plans only on Fixed line Broadband and Public Wi-Fi:**

The resident user is always the bonafide user, be it the home user, a shop, office or education institute. Fixed line ensures bonafide usage and constant speed. Broadband access through the

fixed line and public Wi-Fi shall ensure that the user is the intended user and at the intended place.

Standalone mobile broadband wireless modems (or wireless data cards) can also be used for but their mobility has to be restricted to periphery areas of their user's residence or work place.

Question 3: Are there alternative methods/ technologies/ business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/ describe these methods/ technologies/ business models. Also, describe the potential benefits and disadvantages associated with such methods/ technologies/ business models?

We are of the view that methods/ technologies/ business models for the TSPs to achieve the objective may remain the same as they have for their normal services. However, to achieve the intended object of DP plans, we recommend two models for subsidizing the DP plans:

- **Indirect Subsidy:** Like the subsidy as in for the domestic LPG connections. Where the user pays for the connection like any other normal connection and then the Government pays the subsidy directly in to his bank account.

- **Direct Subsidy:** This can be done directly by the TSPs, where the connections are given on subsidized rates only. The subsidy or discount can be released to TSPs/ ISPs as per the public policy, in this regard, one of the option can be the Universal Service Obligation Fund⁶ as a vehicle for this purpose.

Lastly, it would not be a good idea to allow institutionalized free internet programmes like 'free basics', 'Airtel Zero' or any such like zero ratings services to ride on the DP schemes. Howsoever philanthropic the approach may be, eventually in corporatized schemes, commercial interests are bound to prevail over all other interests. What is not desired is that the corporations have a tight control over how we access websites and services. A free and open internet is the single greatest technology of our time and control should not be at the mercy of some corporations or institutions. Only a free and open internet promotes the spread of ideas and drives entrepreneurship. A free and open internet protects freedom of speech.

⁶ <http://www.usof.gov.in/usof-cms/home.jsp>

The idea of free or affordable internet services is simplistic enough to be driven by the government and public institutions either on their own or with the help of TSPs and other corporates, atleast by this way the internet can remain truly 'free and open'.

2.3.25 Robosoft Technologies Pvt Ltd



Date: 06-Jan-2016

Ref. No.: RT1/LMR/1516/0008

SUB: Net Neutrality

Dear Sir / Madam.

Robosoft Technologies is a mobility solutions partner helping companies craft mobile & digital experiences in a connected world. We work with leading global & Indian corporate houses and several startups across Consumer Mobility Enterprise Mobility and Games & Entertainment segments. At Robosoft, we have built over 1400 mobile apps across platforms, many of which are consumer favourites downloaded and used by millions. We work with NDTV, PayTM, Viacom 18, ESPN, Sony, ICICI to name a few. Over 200 of our apps have been featured in the 'New & Noteworthy' section of the Apple App Store.

We have also incubated and developed two independent group product companies, viz., Global Delight and 99Games who have their own IPs in the mobile apps domain. Many of the apps and games conceived, developed and marketed by us have gone on to become popular globally – a true manifestation of the 'Make in India, made for the world' approach. One of our homegrown products from Udupi, is a mobile game on the iOS platform called Star Chef. It has gone on to cross over \$5mn revenues in a year from highly competitive global markets. We believe such a success would not have been possible if the end consumers had a 'restricted' access to web and app content.

At Robosoft, we partner closely with businesses for whom a mobile app is often at the centre of their core business offering – a news app, a bank, a financial wallet, an e-commerce company, a television channel, a healthcare company are all examples. A mobile app is a critical component of the end user experience for such businesses. The end consumer of such mobile apps needs to have unfettered choice in accessing these apps.

We would urge you to protect Net Neutrality, and not allow telecom operators to manipulate how consumers consume content on the Internet by instituting anti-neutrality practices. We strongly believe in the principle of Net Neutrality and urge you to ensure that the efforts of some oligopolistic telecom operators and large Internet companies do not jeopardize our larger overriding priorities of innovation and freedom of expression, to ransom. A structure must put into place to ensure that providers of Internet access (telecom operators and ISPs) are not in a position to pick which site or service on the Internet win: that choice must be of the consumer's alone.

Without net neutrality, developers like us would be unable to thrive either as mobile design & engineering partners to businesses or as entrepreneurs building mobile products for the global market place.

Page 1 of 4

Robosoft Technologies Pvt. Ltd.

Our submission:

At the start of our submission, we'd like to reiterate the core principles involved in the definition of Net Neutrality:

"Net neutrality requires that the Internet be maintained as an open platform, on which network providers treat all content, applications and services equally, without discrimination".

To elaborate:

1. All sites and apps must be equally accessible:

ISPs and telecom operators should not block certain apps and sites, just because they don't pay them a revenue share. No gateways to the Internet should be allowed, and no preferential listing of certain sites, whether via commercial arrangements or not.

2. All sites must be accessible at the same speed (at an ISP level):

This means no speeding up of certain sites because of business deals. More importantly, it means no slowing down some sites.

3. The cost of access must be the same for all sites (per Kb/Mb or as per data plan):

This means no "Zero Rating", or differential rating for different sites, apps or services. In countries like India, Net Neutrality is more about cost of Internet access than speed of Internet access, because we don't have fast and slow lanes: all lanes are slow.

At the core of this debate is the issue of how we let one business (a telecom operator) regulate the consumer's ability to access another (app or website), given that the availability of providing Internet access (spectrum) is not unlimited. A genuine free market requires restrictions on the ability of large predatory companies, whether multinational or otherwise, to create monopolies.

Herewith our answers on the specific questions raised by TRAI:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No, Telecom Service Providers (TSPs) should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.

Openness is the biggest strength of the internet. The ease with which people can access and share information on the web has been the force behind the internet's growth. Price discrimination will break the internet into multiple smaller parts and will unfairly benefit some applications and services that can be accessed at a cheaper price - or for free. The practice of discriminatory pricing will not only impede the growth of internet but it also goes against the agnostic, common carrier character of the telecom operators, whose role should be to carry information via their infrastructure without discrimination. If telecom operators are allowed to have differential pricing for data usage, it will significantly limit the universe of applications and services that can be accessed by users and strip the internet of diversity.

Price discrimination harms customers. Differential pricing is also likely to result in opaque billing practices among telecom operators, which will eventually lead to unexpected charges.

India's vibrant startup ecosystem is also placed at risk if discriminatory pricing is permitted. The Internet provides a level playing field for all irrespective of whether it is a billion-dollar company or a fledgling startup, allowing the best product to find customers. Allowing differential pricing will lead to a situation where companies that are flushed with money can strike deals with internet service providers to make access to their services cheap or otherwise act in a manner to harm their competitors. This will eventually lead most small startups to shut down.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Telecom operators will begin acting as gatekeepers of content if differential pricing is permitted. Once that happens, non-discrimination, transparency, affordable internet access, competition and market cannot be achieved.

There is a big risk of unclear non-discrimination standards among content providers resulting because of differential pricing. It will also increase the probability of litigation. Smaller companies will find it extremely difficult to negotiate deals with telecom companies and will be excluded. Further, there are significant costs and delays involved in assessing behaviour on a case-by-case basis, which provides an environment where larger players have more resources in approaching the regulator or government.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, several alternatives exist other than differentiated tariff plans or zero rated services that are practical to implement and will provide access to the Internet to millions of Indians who cannot afford it due the costs of data. Access to more and improved broadband infrastructure should be the first priority, and should drive the Government's ongoing discussions on the BharatNet/NOFN project and its efforts to create a better environment for access providers to invest and better use infrastructure.

Other models include ideas to "equal rate" content, so that users are empowered to get a limited taste of the full Internet within a data cap, or other models where ads or other support helps facilitate access to the open web.

For example, practices already exist in the app world, where many mobile games and other apps offer a benefit in lieu of watching an ad or allowing for ads to be placed on the app.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

As stated before some TSPs and Facebook have rolled out services and extended them during the midst of the present consultations, backed by large marketing and advertising budgets. Facebook has even used its own platform to push Facebook users to market their

lobbying response to the present consultation with ambiguous phrasing. Some users who are using this form have been misled into believing they are supporting net neutrality. This is different from a person independently going on a website, filling in their name and email address and sending a response.

Furthermore, the Government and the TRAI must act soon on the larger effort of passing a comprehensive and legally enforceable regime for net neutrality in India. This must be a priority, particularly given the important impact it has on Indian startups and technology developers.

In conclusion: Focus should be on improving access without compromising Net Neutrality and increasing competition in Internet access. The government should institute policies that force healthy competition among telecom operators, so that consumer quality of service is forced to go up, and consumer experience of the Internet in terms of speeds of access and latency reduces.

We would urge you to protect Net Neutrality, and not allow telecom operators to manipulate how consumers consume content on the Internet by instituting anti-neutrality practices. There must be:

1. No licensing or registration of Internet companies, whether communications or non-communications based.
2. No manipulation of speed, availability (via packaging of individual sites) or cost of Internet access (via Zero rating or by making some services such as messaging or Internet calling more expensive).

Yours sincerely,



Rohith Bhat
MD & CEO

2.3.26 Dua Consulting

Differential Pricing for Data Services

Introduction

The internet is at present, a major growth driver for the Indian economy and is a critical tool that leads to proliferation of access to information, knowledge, public records, etc. This, internet, ensures transparency. Our view is that proliferation of internet is something which is kind of given, and the penetration of internet is something which must increase manifold and at a faster rate, both in terms of availability and speeds, in order to meet the key objectives of transparency and dissemination of knowledge at a pace not seen hitherto. For ubiquitous availability of internet with speed and to everyone requires investments, both by Telcos and some investments by the Government of India. The internet has been the gateway for the conduct of commerce, communication, education, entertainment and other valuable forms of engagement with the world at large. Internet for all is in addition to Roti Kapda aur Makan.

When we talk about “broadband highways” as a priority for the new Government, and as has been highlighted in the recent ‘Digital India’ initiative, we mustn’t lose sight of the basic premise on how roads or highways in the traditional sense of the term have been built. Roads can be state roads, state highways or national highways. Depending on the nature of the road, we have the system of toll charges wherein different class of vehicles pay differential toll charges. So, a truck would pay differently vis-a-vis a two-wheeler. Why do we levy such charges? The answer lies in the fact that it is the Government in collaboration with the infrastructure developer that builds these roads. The truckers do not invest in the ‘highways’ or play a part in building these ‘highways’. Similarly, the content service provider does not play a part in the creation of the digital highway infrastructure. The service provider is a mere one user of this highway, amongst many other users.

There has been a lot of noise raised by the internet evangelists, consumer rights and free speech espousers on net neutrality. However, there seems to be a lot of misplaced notions floating around on net neutrality. For example, the idea that absence of net neutrality impedes on the concept of an open internet is misconstrued. In an open internet, the consumer gets to exercise choice over whichever sites and services permitted by law, regulation and security

considerations, etc., he wishes to access. However, this doesn't imply that the same charges are applicable on all types of service used by the consumer.

Network neutrality is not an absolute concept. The regulator should look to regulate, by function, not the type of technology or infrastructure that is being used. Any regulatory framework should follow certain principles that seek to promote transparency, innovation and policy reform.

It should be market specific and not TSP/ISP specific. Zero rating should be allowed with some regulation and not only on the content but also on the pipe/download. If the purpose is to promote access, then instead of "zero rating", there should be a more "equal rating" practice wherein certain amount of free data with unrestricted access to any content.

It is laudable for someone other than the ultimate consumer to bear the cost of the data charges in the interest of driving internet penetration to unconnected regions of India. However, that should not impinge upon the consumer choice in limiting what constitutes 'basic internet services'. Basic internet services as a public good cannot be deemed to imply access restricted to entities or websites that have clout or financial power. Access cannot be used to exercise a subversive/unethical practice. For example, a "Zero Rating" plan to drive use of E-Gov services for the benefit of the citizenry in India isn't the same as a zero rating plan that merely facilitates access to a large scale content/social media website. Government can do prioritization of citizen services or zero rating, where the services are free for all users irrespective of the access network used by them.

A selective zero rating system is against the actual notion of what constitutes digital inclusion or digital equality. It is bad for economic inclusion. It is bad for the ability of new entrepreneurs to grow onto the global scale. It is bad for the long term health of the Internet. Should one e-commerce entity be allowed to pay a mobile operator, effectively to gain an advantage over competitors, who might not be able to afford the same fees? This can lead to discrimination within a bandwidth category. Thus, these need to be examined, more on a case-by-case basis.

We can also take the example of airlines charging different fares for different category of seats. However, this doesn't come at the cost of a discriminatory pricing within the category. Legitimate price discrimination is different from an anti-competitive practice or denial of service.

All data is seen to be transmitted at a certain price, now whether that price is "zero" or anything else, consumers must be afforded the choice to pick the content based on the quality of that content, not the financial power and business partnerships of the provider. This way, new entrepreneurs can still reach any and all users on the Internet, even if they are a few people working in a co-working space with no ability to subsidize data charges. Such an 'equal rating' practice has been put in place by Mozilla in tie-up with Orange in several African and Middle Eastern markets. The regulator would be well advised to study these models while determining efficacy and motives behind a subsidized data pack. There are some examples of Bangladesh, Sri Lanka, Philippines where they have achieved this goal by many innovative methods. e.g. voucher system for internet access in Sri Lanka, free wi-fi in Philippines etc.

We cannot lose sight of the fact that TSPs have made investments in establishing networks and providing services to consumers. A tariff design for a data plan isn't shorn of the fundamentals that it compensates a TSP adequately and the consumer doesn't end up paying a price which is unreasonable.

The Regulator must be cognizant of the tariff rebalancing that needs to be looked at vis-à-vis data with a 'same service same rules' principle followed. Tariff plans offered by TSPs/ISPs must conform to the principles of Net Neutrality set forth in guidelines issued by the Government as Licensor. TRAI may examine the tariff filings made by TSPs/ISPs to determine whether the tariff plan conforms to the principles of Net Neutrality.

Issues for Consultation

In light of our views expressed hereinabove, our humble submission to the Regulator on the questions posed by the Regulator are as follows:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

<Combined Answer for 1,2>

There has been a lot of noise raised by the internet evangelists, consumer rights and free speech espousers on net neutrality. However, there seems to be a lot of misplaced notions floating around on net neutrality. For example, the idea that absence of net neutrality impedes on the concept of an open internet is misconstrued. In an open internet, the consumer gets to exercise choice over whichever sites and services permitted by law, regulation and security considerations, etc., he wishes to access. However, this doesn't imply that the same charges are applicable on all types of service used by the consumer.

TSPs should be allowed to have differential pricing for data usage plans for use of differing platforms, applications and websites. However, such pricing plans should not be anti-competitive in nature (as per Section 3 (4) of the Competition Act, 2002). Commercial relations between a TSP and content provider should be such so as not to result into a abuse of dominance situation.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these

methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

You can't have your cake and eat it (too)' – This old adage holds true when we talk about network neutrality, or net neutrality. The end goal that the Government is looking to achieve must not be forgotten by the internet activists who are making a hue and cry over the damage that the absence of net neutrality can cause. Ensuring cheap and quality internet access to maximum number of Indians is of paramount importance to the Government. In this vision, however, it is not the OTT providers that would play a crucial role, but the telecom companies, as they are the infrastructure developers in the true sense. The telecom operators are responsible for paying taxes to the Government, managing an artificially created spectrum scarcity, paying huge sums of money for whatever limited quantum of spectrum is available in the market through an auction driven mechanism and also paying other incidental charges such as the USOF (Universal Services Obligation Fund) contribution.

There are already enough obligations which are placed on TSPs and this should be minimized and replaced with horizontal regulations that apply across the board to all service providers, providing similar services. We recommend that a broad regulatory framework based on the principle of "same service, same rule" for ensuring level playing field. Such framework ensures sustainable competition, safeguard network investments and will enable well balanced regulatory environment for all players in the digital eco system irrespective of what the medium of technology used to deliver content to users is.

All data is seen to be transmitted at a certain price, now whether that price is "zero" or anything else, consumers must be afforded to choice to pick the content based on the quality of that content, not the financial power and business partnerships of the provider. This way, new entrepreneurs can still reach any and all users on the Internet, even if they are a few people working in a co-working space with no ability to subsidize data charges. Such an 'equal rating' practice has been put in place by Mozilla in tie-up with Orange in several African and Middle Eastern markets. The regulator would be well advised to study these models while determining efficacy and motives behind a subsidized data pack. There are some examples of Bangladesh,

Sri Lanka, Philippines where they have achieved this goal by many innovative methods. e.g. voucher system for internet access in Sri Lanka, free wi-fi in Philippines etc.

We cannot lose sight of the fact that TSPs have made investments in establishing networks and providing services to consumers. A tariff design for a data plan isn't shorn of the fundamentals that it compensates a TSP adequately and the consumer doesn't end up paying a price which is unreasonable.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The Regulator must be cognizant of the tariff rebalancing that needs to be looked at vis-à-vis data with a 'same service same rules' principle followed. Tariff plans offered by TSPs/ISPs must conform to the principles of Net Neutrality set forth in guidelines issued by the Government as Licenser. TRAI may examine the tariff filings made by TSPs/ISPs to determine whether the tariff plan conforms to the principles of Net Neutrality. Legitimate traffic management practices may be allowed but should be "tested" against the core principles of Net Neutrality. General criteria against which these practices can be tested are as follows:

- TSPs/ISPs should make adequate disclosures to the users about their traffic management policies, tools and intervention practices to maintain transparency and allow users to make informed choices
- Unreasonable traffic management, exploitative or anti-competitive in nature may not be permitted.
- In general, for legitimate network management, application-agnostic control may be used. However, application-specific control within the "Internet traffic" class may not be permitted.

The Regulator must be cognizant of the tariff rebalancing that needs to be looked at vis-à-vis data with a 'same service same rules' principle followed. Tariff plans offered by TSPs/ISPs must conform to the principles of Net Neutrality set forth in guidelines issued by the Government as Licenser. TRAI may examine the tariff filings made by TSPs/ISPs to determine whether the tariff plan conforms to the principles of Net Neutrality.

2.3.27 Progressive Policy Institute

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December 28, 2015

To: Ms. Vinod Kotwal, Advisor (F&EA),
Telecom Regulatory Authority of India

From: Dr. Michael Mandel
Progressive Policy Institute
Washington DC, USA
Mmandel@progressivepolicy.org

Thank you for the opportunity to comment on Consultation Paper No. 8/2015, “Consultation Paper on Differential Pricing for Data Services,” and to answer the questions raised there. The Progressive Policy Institute (www.progressivepolicy.org) is an independent, innovative and high-impact nonprofit think tank founded in 1989. Based in Washington DC but with a global orientation, PPI has a long legacy of promoting break-the-mold ideas aimed at economic growth, national security and modern, performance-based government.

In March 2015, PPI examined the question of differential pricing of data services, or as it sometimes known, “zero-rating.” The paper, “Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries,” can be found at http://www.progressivepolicy.org/wp-content/uploads/2015/03/2015.03-Carew_Zero-Rating_Kick-Starting-Internet-Ecosystems-in-Developing-Countries.pdf. It is also attached to this response.

Our main conclusion is that differential pricing has two benefits. First, it may lower the cost of accessing the Internet for many people, as noted on page 6 of the Consultation paper.

Second, and arguably more important, because differential pricing allows more local citizens access the Internet, local content and service providers have a bigger market and more incentive



to expand their Internet offerings—for example, by collecting and disseminating agricultural prices. As local content offerings become more valuable, that in turn gives users more incentive to buy full data plans, creating a virtuous circle and jump-starting the local Internet ecosystem.

We will briefly excerpt the main conclusions of the paper:

1. Developing or poorer regions of a country such as India can get stuck in a low-connectivity equilibrium, where there are relatively few broadband customers and few local Internet-based businesses to serve them. How, then, can we jumpstart the local internet ecosystem to move from a low-connectivity equilibrium to a high connectivity equilibrium where the number of users with data plans is higher and the region has viable local Internet-based businesses that both generate jobs and provide relevant content and services to mobile users? As more people connect to the Internet, local content and service providers will create and expand existing content to meet demand. This will boost growth in the local economy, which in turn will generate greater demand for local content and enable more people to connect to the Internet. This is a transition that many developed countries made in the late 1990s and early 2000s. How can we accelerate this transition in developing regions today?
2. One approach for jumpstarting local Internet ecosystems where connectedness is low is a practice known as “zero-rating,” or differential pricing. Under this program, mobile operators provide its customers with access to certain online content, or package of websites, for “free,” in that such content does not count against monthly data caps. There are several variations of differential pricing programs, many of which do not involve any exchange of funds among firms. One type of differential pricing outside the scope of this paper is where content providers directly reimburse operators for foregone data costs is called ‘sponsored data.’ Our paper contemplates programs more like Internet.org or Wikipedia Zero where content providers do not directly compensate operators for lost data revenue.
3. The power of zero-rating or differential pricing to nourish an Internet ecosystem in developing regions comes from its potential to increase connectivity by both people and businesses quickly and at low-cost. First, free access to popular sites like Google, Twitter,

- Wikipedia, and Facebook encourages more people to sign up for data plans, and enables greater data freedom to explore local content.
4. Second, the increase in demand for local content spurs local businesses and entrepreneurs to create new online products and services—for example, information on agricultural prices, typhoon warnings, or even wait times at local stores and government offices. Moreover, the higher share of population online justifies efforts of government agencies to go digital, which in turn encourages more business and individuals to join the Internet ecosystem. Taken together, differential pricing can effectively jump-start a virtuous feedback loop that moves the local economy into a high-connectivity equilibrium.
 5. Zero-rating or differential pricing has already been adopted by mobile operators in developing countries including the Philippines, Turkey and across Sub-Saharan Africa. And although these programs are relatively new, early indications show more people are connecting to the Internet in these countries.
 6. The alternative approach is for governments to intervene directly, by providing subsidies to either people or businesses. Both have extensive histories of being employed in developing regions, with mixed success.
 7. Some governments in developing countries have provided free broadband access to encourage greater adoption and improve the local business climate for content creation. In Macedonia, for example, the “Rural Broadband in 680 Locations” project has provided free WiFi access in 680 rural locations across the country since 2009. A World Bank evaluation considered the program to be successful at enabling greater access to agricultural and education information, and public online services.
 8. Governments can also provide subsidies to businesses, often in the form of what are generically known as ‘universal service funds.’ These government-controlled funds provide money to the private sector to build out broadband networks in poor or remote areas where there is no compelling business case. However, while popular, this approach has had limited success. According to a 2013 survey of 69 such funds, half reported little to no activity. The funds were collected but have yet to be utilized (see paper for citation).
 9. In shifting to a high-connectivity equilibrium, a differential pricing approach has several advantages over direct government subsidies. First, differential pricing can jumpstart an Internet ecosystem at a faster and significantly lower cost. Direct government subsidy

programs can be very costly, and spread out over many years. They may also be harder to contain, especially programs that fund public broadband networks or subsidize Internet-capable devices. That's because mobile broadband technology is constantly evolving, as are the devices that run on the networks. It is very expensive to successfully build, operate, and maintain government-owned broadband networks, especially when increased public-take up of broadband is not guaranteed. Even in developed countries, government-owned broadband networks have a very mixed record of success. Differential pricing is cheaper because mobile operators subsidize the costs to provide zero-rated data. They internalize the costs through their billing processing operations. Moreover, even if these operators are government-owned, there are typically no direct payments to the zero-rated content creator.

10. Second, with differential pricing, an Internet ecosystem can flourish relatively quickly, because such offerings can be more easily implemented and maintained, or adjusted according to public response. It is much easier, and cheaper, for example, to extend the zero-rated offering beyond a trial period than it is to increase the amount of a monthly public subsidy.
11. Note that our definition of differential pricing or zero rating assumes that there is no compensation from content providers to the telecom operators. Under these conditions, there is **no** incentive for telecom operators to restrict users to the walled gardens of the zero-rated websites. Indeed, if the users only stay within the walled gardens and do not end up buying more data, the telecom operators will end up losing money and dropping the differential pricing. This principle vitiates many of the anti-competitive concerns.
12. Differential pricing or zero-rating does open up the possibility of certain unfair practices. For that reason, we propose the following core principles for differential pricing programs:

1. Transparency—all differential pricing offerings should ban secret agreements between content provider and mobile operator.

2. Non-exclusivity—there should be no agreement that prohibits multiple operators from offering the same zero-rated content. This will mitigate fears of anti-competitive behavior.

- 3. Local content**—when possible, mobile operators should also zero-rate some basic local content, such as local government services or local healthcare and weather alerts.
 - 4. Evaluation**—regular data collection and reporting from the mobile operators will help governments understand the effectiveness of differential pricing.
13. It would be a mistake for developing regions to dismiss the potential of differential pricing. Instead, there are ways governments debating the merits of zero-rating or differential pricing could think about core principles to make the practice more effective. Until these regions in low-connectivity equilibriums successfully make the transition to high-connectivity, it would be wise to keep all economy-boosting options on the table.

Thank you for your consideration

Dr. Michael Mandel
Chief Economic Strategist
Progressive Policy Institute.

Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries

BY DIANA CAREW

MARCH 2015

The power of the Internet has redefined the global economy for the 21st Century. As of 2014, over three billion people around the world were connected. The corresponding boom in Internet-based retailers, news and information providers, and online entertainment and video companies has been just as impressive.¹ Businesses go where the customers are, and increasingly the customers are online or mobile.

Unfortunately, the online revolution is lagging in many of the least developed parts of the world. Consider that as of 2014, fewer than 30 percent of Africa's 1.1 billion population used the Internet.² At the same time, relatively few African businesses have participated in the Internet business boom. Less than one percent of all existing domain name registrations in 2013 originated from Africa, meaning African-based businesses have very little local or global presence on the internet.³

The problems are multiple. Building a broadband infrastructure to all homes, especially in rural areas, is too costly for many low-income countries. And mobile broadband service, while more broadly available, is also relatively expensive to provide and high-priced compared to incomes. As a result, broadband markets are limited in many poor and developing areas. In 2013, for example, there were 20 mobile broadband subscriptions per 100 people in the Philippines, and just three for every 100 people in Kenya.⁴

At the same time, a low level of connectedness keeps the local Internet ecosystems stunted. Entrepreneurs are unwilling to start new Internet-based businesses because there aren't enough customers online. Conversely, without local Internet-based businesses providing relevant information, content, and services, potential customers have less incentive to invest in expensive data plans for their smart phones.

About the author

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Consider the obstacles facing a potential local business that would collect agricultural prices across a poor country, and post them online. Such Internet businesses have increasing returns to scale—expensive to collect the information in the first place, but relatively cheap to provide it to more and more customers. That means such a business—which would be very beneficial to farmers—is far easier to start and far more profitable if the pool of potential customers is large. But if the pool of potential customers is small, the business may never get started, and there will be even less reason for poor mobile phone users to buy a data plan.

The online revolution is lagging in many of the least developed parts of the world.

In other words, developing countries can get stuck in a low-connectivity equilibrium, where there are relatively few broadband customers and few local Internet-based businesses to serve them. How, then, can we jumpstart the local internet ecosystem in developing countries to move from a low-connectivity equilibrium to a high connectivity equilibrium where the number of users with data plans is higher and the country has viable local Internet-based businesses that both generate jobs and provide relevant content and services to mobile users? As more people connect to the Internet, local content and service providers will create and expand existing content to meet demand. This will boost growth in the local economy, which in turn will generate greater demand for local content and enable more people to connect to the Internet. This is a transition that many developed countries made in the late 1990s and early 2000s. How can we accelerate it in poor and developing countries?

This paper explores one approach for jump-starting local Internet ecosystems where connectedness is low—a practice known as “zero-rating.” Under this program, mobile operators

provide its customers with access to certain online content, or package of websites, for “free,” in that such content does not count against monthly data caps. There are several variations of zero-rating programs, many of which do not involve any exchange of funds among firms. One type of zero-rating outside the scope of this analysis is where content providers directly reimburse operators for foregone data costs is called ‘sponsored data.’ This paper contemplates programs more like Internet.org or Wikipedia Zero where content providers do not directly compensate operators for lost data revenue.

It’s important to note here that this paper focuses mainly on the use of zero rating in poor and developing countries, and the arguments are laid out with those situations in mind. In future work, we will explore the ways that zero-rating is useful in developed countries, and especially among less-connected populations.

The power of zero-rating to nourish an Internet ecosystem in poor and developing countries comes from its potential to increase connectivity by both people and businesses quickly and at low-cost. First, free access to popular sites like Google, Twitter, Wikipedia, and Facebook encourages more people to sign up for data plans, and enables greater data freedom to explore local content. Second, the increase in demand for local content spurs local businesses and entrepreneurs to create new online products and services—for example, information on Ebola outbreaks, typhoon warnings, or even wait times at local stores and government offices. Moreover, the higher share of population online justifies efforts of government agencies to go digital, which in turn encourages more business and individuals to join the internet ecosystem. Taken together, zero-rating can effectively jump start a virtuous feedback loop that moves the local economy into a high-connectivity equilibrium.

Zero-rating has already been adopted by mobile operators in poor and developing countries, including the Philippines, Turkey, India, and across Sub-Saharan Africa. And although these programs are relatively new, early indications show

more people are connecting to the Internet in these countries.

However, zero-rating has some detractors. Some argue for banning the practice, claiming that it violates net neutrality principles by prioritizing select content. Others argue that free access to select content is too limited to provide the digital literacy skills needed to fully participate in the data-driven economy.

Still, this paper argues that given the promise of early indications, it seems bad policy to squash the potential of zero-rating, especially in countries trapped in a low-connectivity equilibrium. Instead, this paper proposes several ways to enhance the potential effectiveness of zero-rating as a tool for growth for poor and developing communities. That includes being non-exclusive across mobile operators and transparent. We also suggest regular evaluation and reporting of zero-rating programs, to better inform mobile operators and relevant policymakers of the actual risks and rewards.

By banning zero-rating, poor and developing countries would deprive themselves of a possible avenue for economic growth and prosperity. They are closing a pathway for their citizens and businesses to harness the power of the Internet, moving them to a high-connectivity equilibrium. In the language of economics, that would mean forgoing one of the greatest positive externalities of having a vibrant Internet ecosystem: economic and social mobility.

LOW CONNECTIVITY EQUILIBRIUM

In a low-connectivity equilibrium, people and businesses have little motivation to connect to the Internet. A lack of access to Internet-based consumers keeps businesses away from online expansion and sidelines aspiring tech entrepreneurs. On both the consumer and business side of the market, being connected comes at a high cost and low marginal return.

A low-connectivity equilibrium is prevalent in many poor and developing countries. People have little incentive to spend precious income on data plans, given the lack of valuable content. It's no

accident that, of the estimated 4.5 billion people worldwide still unconnected to the Internet, 90 percent—over 4 billion—are in the developing world.⁵

With low-connectedness, businesses are limited to their existing consumer base, and have little incentive to invest in creating online platforms for their products. Internet entrepreneurs have no motivation to transform their ideas into new startups, lacking the promise of growing profits or the ability to get seed money. The dearth of business formation and growth traps the local economy in an unconnected low-growth state, without access to global online markets.

Advanced countries have about 84 active mobile subscriptions per 100 people, compared to about 21 per 100 people in developing countries.

Similarly, government agencies have little incentive to go digital if there are too few citizens with the capability to connect online. Why should they spend precious resources setting up webpages and digital access to services if only a small portion of the population have access?

It is easy to see why some countries get stuck in low-connectivity equilibrium, even as the benefits of being connected are great. A major reason for this is cost. Even in areas where fixed or mobile broadband is accessible, the price for a mobile broadband subscription is simply too expensive for many. According to one recent estimate, people in developing countries with mobile phones pay between 8-12 percent of their average monthly income on mobile connectivity, and that is often just for voice and text.⁶

Consider that a mobile data plan in the Philippines costs on average the equivalent of \$17 a month,

which does not seem like much. Yet this constitutes almost 10 percent of the per capita monthly average national income, according to International Telecommunications Union. That ranks the country as 87th out of 110 countries on affordability for mobile broadband.⁷ It is not obvious to the millions who remain unconnected that it is worth spending a large share of their income on something that may not be essential. And without the online customer base, it is not obvious to businesses that they need to spend the time and money to develop an Internet presence. Thus we have a negative reinforcing cycle.

HIGH-CONNECTIVITY EQUILIBRIUM

Conversely, other countries in the global data ecosystem are highly connected. In a high-connectivity equilibrium, people and businesses are integrated online, constantly feeding off each other to create new content and services that enhance consumer well-being. The result is a strong foundation for economic growth and shared prosperity.

Many advanced countries are in a high-connectivity equilibrium. These countries have enjoyed rapid growth in the number of online businesses, mobile subscriptions, and tech-related job creation. According to a 2014 report, developed countries account for over 80 percent of domain name registrations, which all websites must have.⁸ They have about 84 active mobile subscriptions per 100 people, compared to about 21 per 100 people in developing countries.⁹ High-growth tech clusters are sprouting up across the United States, and in leading global cities like London and Sydney, creating millions of high-wage jobs.¹⁰

That's because in a high-connectivity equilibrium, businesses and entrepreneurs thrive in a vibrant digital marketplace. They are able to meet strong consumer demand for online content and services through an ever rising number of apps, online retailers, social media forums, and new products unique to the Internet.

Some of today's largest companies around the world would never have been as successful had it

not been for a highly connected population. Some companies, like Apple and Samsung, produce sophisticated smartphones and other Internet-able devices. Others, like Amazon, provide consumers with a one-stop retail experience. Search and software giants like Google and Microsoft empower consumers and businesses with essential tools and services. All of these companies feed off each other's growth in a high-connectivity equilibrium.

Indeed, the power of online commerce has translated into an enormous rise in data-related consumption and trade. PPI has previously written on both these topics, showing just how important the Internet has become to driving productivity and national incomes.¹¹ In fact, the profound pace of data-driven innovation has been so rapid, researchers are still developing ways to accurately measure the Internet's impact on government economic statistics.

Another important part of high-connectivity equilibrium is having strong investment in the build-out of high-speed broadband networks. Such robust investment is evident in many developed countries, including the United States, whose private telecommunications and cable sector invests billions annually in fiber installation and high-speed 4G/LTE mobile networks. Overall, annual capital expenditures of mobile operators in developed countries well outpaces the developing world.¹²

SHIFTING FROM A LOW TO HIGH-CONNECTIVITY EQUILIBRIUM

It is possible to move from a low- to high-connectivity equilibrium. After all, developed countries were able to make this transition in the late 1990s and early 2000s. These countries also continue to enjoy a sustained momentum in the large share of the population purchasing a monthly mobile data plan, as the bevy of available online content and functionality grows and becomes more relevant in everyday life. In the United States, for example, there are more wireless connections than people, with many connecting to the Internet through multiple devices.¹³

The shift from a low-connectivity to high-connectivity equilibrium in developed countries occurred more organically than in developing countries. That's because a relatively large share of the population in developed countries had enough income that they could afford to sign-up for the Internet. It took a lower initial benefit from going online—less available online content—to convince many citizens in the developed world to spend their income on a fixed broadband connection. This led to an easy transition to mobile broadband plans once they became available.

In high-connectivity Internet ecosystems, consumers and businesses feed off each other to create new content, generating income, jobs, and more demand.

Some researchers also credit the rise in Internet demand in developed countries to a few initial “killer apps.” These offerings were widely believed to have helped influence on early Internet adoption. For example, the proliferation of social media is credited with encouraging people to spend on an Internet connection. Starting with online chat rooms and Compuserve, and continuing on through America Online, MySpace, Facebook, Twitter, Reddit, and LinkedIn, social media has transformed how people communicate, get the news, and create their own content to share.¹⁴ It has connected traditionally harder to reach segments of the population, like those in rural areas and the elderly, who want a low-cost way to stay in contact with family and friends.

In these high-connectivity Internet ecosystems, consumers and businesses feed off each other to create new content, generating income, jobs, and more demand. Since the introduction of the iPhone, the number of available iOS apps increased from 800 in July 2008 to a staggering 1.3 million in September 2014.¹⁵ The number of



Android apps in the Google Play store is just as high, if not higher. The rising demand for online video has resulted in companies designing an interactive watching experience across devices, with consumers able to watch movies, listen to music, and even catch their favorite shows on their tablet, phone, or TV.

GETTING FROM LOW TO HIGH-CONNECTIVITY

How can developing countries shift to a high-connectivity equilibrium? There are several forms of intervention that can encourage the transition. Each approach has its advantages and disadvantages, but the effectiveness will ultimately depend on how well it is able to jumpstart the Internet ecosystem. That is, how successful it is at getting more people and businesses connected to the Internet, by lowering the cost of access while encouraging more local content.

One approach is for governments to intervene directly, by providing subsidies to either people or businesses. Both have extensive histories of being employed in developing countries, with mixed success.

In developing countries, government subsidies are often used to get people to act in certain ways.

A well-regarded example is the Bolsa Familia program in Brazil, which gives poor families money if they vaccinate their children and send them to school.¹⁶

Some governments in developing countries have provided free broadband access to encourage greater adoption and improve the local business climate for content creation. In Macedonia, for example, the “Rural Broadband in 680 Locations” project has provided free WiFi access in 680 rural locations across the country since 2009. A World Bank evaluation considered the program to be successful at enabling greater access to agricultural and education information, and public online services.¹⁷

Governments can also provide subsidies to businesses, often in the form of what are generically known as ‘universal service funds.’ These government-controlled funds provide money to the private sector to build out broadband networks in poor or remote areas where there is no compelling business case. However, while popular, this approach has had limited success. According to a 2013 survey of 69 such funds, half reported little to no activity. The funds were collected but have yet to be utilized.¹⁸

Although it's still too soon to assess the impact of many zero-rating programs, early results are promising.

Another approach to shifting to a high-connectivity equilibrium is more indirect. It involves the government allowing the private sector to offer Internet content people value at low-cost. Here, the private sector is providing the subsidy to consumers to increase the number of people purchasing a data plan, which will increase the amount of online content being created.

One such indirect approach is known as a practice called “zero-rating.” Zero-rating is where mobile operators offer select online content for free, in

that accessing it will not count against any monthly data caps (hence, it is “zero-rated”). In some cases, the mobile operator may offer zero-rated content to people even without data plans.

The idea behind zero-rating is simple: to get more people connected by providing access to popular websites, and to provide greater freedom to use data for local content, increasing demand. That is, when certain content is zero-rated, particularly high-demand services like Google and Facebook, people are free to use a higher percentage of their existing data cap on other content. This will jumpstart the local Internet ecosystem. And since the success of zero-rating is sparked by low-cost access to popular online content, it follows that the main sites being offered to date include social media giants Facebook and Twitter, along with Google and Wikipedia.

Zero-rating is widely offered across many developing countries. In fact, a recent study found that 45 percent of global mobile operators offer some form of zero rating. This includes offerings in many of the countries with the lowest incomes and broadband adoption rates, stuck in a low-connectivity equilibrium, like Tanzania, Cameroon, Ivory Coast, India, Moldova, Uzbekistan, and Pakistan.¹⁹

Zero-rating can take several forms, depending on the mobile operator. It can be offered on a temporary basis, over a few months, or it can be permanent. The content being zero-rated is also at the discretion of the mobile operator, which ranges from one high-demand website to several sites that may include local content.²⁰ Zero-rating is generally not monetized, so that there is typically no payment between the mobile operator and content provider. But there is usually a legal agreement between content provider and operator, that delineates terms of use and could include provision of technical assistance for implementation.²¹

ADVANTAGES OF ZERO-RATING

In shifting to a high-connectivity equilibrium, a zero-rating approach has several advantages over direct government subsidies. For developing countries that may have scarce resources, these

advantages are important in considering ways to effectively jump-start local Internet ecosystems.

First, zero-rating can jumpstart an Internet ecosystem at a faster and significantly lower cost. Direct government subsidy programs can be very costly, and spread out over many years. They may also be harder to contain, especially programs that fund public broadband networks or subsidize Internet-capable devices. That's because mobile broadband technology is constantly evolving, as are the devices that run on the networks. It is very expensive to successfully build, operate, and maintain government-owned broadband networks, especially when increased public-take up of broadband is not guaranteed. Even in developed countries, government-owned broadband networks have a very mixed record of success.

Zero-rating is cheaper because mobile operators subsidize the costs to provide zero-rated data. They internalize the costs through their billing processing operations. Moreover, even if these operators are government-owned, there are typically no direct payments to the zero-rated content creator.

Second, with zero-rating, an Internet ecosystem can flourish relatively quickly, because such offerings can be more easily implemented and maintained, or adjusted according to public response. It is much easier, and cheaper, for example, to extend the zero-rated offering beyond a trial period than it is to increase the amount of a monthly public subsidy.

Third, zero-rating comes with significantly less government control. That not only reduces the burden on governments with limited resources, but it also limits the possibility of mismanagement. Without a large cash transfer program, there is much less room for misallocation or waste of funds, or worse, corruption.

For example, a 2013 opinion survey covering seven African countries found a dramatic impact from the availability of more information on the Internet. When asking people what had changed in communications over the last five years, it

found that the Internet and greater access to information online "are interconnected as wider media generally drives a wider set of viewpoints and information[,] with the Internet acting as a backstop where people can get information not provided by traditional media or actually restricted by Government."²²

The rise in Internet users in Kenya is also helping drive the creation of more local online content.

Finally, although it's still too soon to assess the impact of many zero-rating programs, early results are promising. In several developing countries where mobile operators have already offered zero-rated content, Internet ecosystems are taking off. Mobile operators are reporting an impressive rise in mobile data plan subscriptions and mobile data consumption.

The Philippines, for example, a country whose mobile operators actively engage in zero-rating, has recently begun to enjoy a prosperous Internet start-up culture. A basic search online shows a large and wide variety of Filipino Internet companies, offering services like digital queuing,²³ selling products like folding bicycles, and helping citizens monitor their electricity use in real time. Tech incubators are springing up, and injecting Internet businesses with capital.²⁴

Further, the Philippines has seen rapid growth in the population connecting to the Internet, including a double-digit rise in the last year.²⁵ So successful was a temporary offering of zero-rated Facebook content (known as Facebook Zero) by one of its main mobile operators, that it was later reinstated. According to reports, the original three-month program offered by Globe Telecom, a major carrier, led to a doubling of the company's mobile data user base.²⁶ The Globe's latest annual report also shows the number of mobile subscribers increased by 16 percent year over year, 74 percent stronger growth than in the preceding year.²⁷

Of course, the tremendous growth in Internet startups and Internet users cannot be directly attributed to the country's various zero-rating programs, but they certainly contributed. The Globe's annual report, for example, touts the program as a core component of its services offering.

Perhaps some of the most promising examples of early zero-rating success in jumpstarting Internet ecosystems are in Africa. Many African countries have mobile operators that offered some form of zero-rating, starting as early as 2010.

Without any exposure to the Internet, there is no chance of moving from a low-connectivity to a high-connectivity equilibrium.

Within the first year offering zero-rated content, the evidence of increased Internet adoption across Africa—using new subscriptions to Facebook as a proxy—was remarkable. According to oArfrica, a data service that tracks Internet progress in Africa, the number of Facebook users across the entire African continent increased by an average 114 percent.²⁸ This includes a 4,000 percent increase in Central African Republic and a 2,000 percent increase in Chad and Somalia.

Certainly an increase of Facebook subscriptions does not mean more Africans are purchasing mobile broadband plans, or that more people creating Facebook accounts are initiating local Internet ecosystems. But it appears to be serving as an important catalyst on both fronts. According to one take on a 2009 Inveneo conference:

The consensus of group, marketing and technical experts at African ICT companies, was that Facebook was creating demand for their services. Current clients wanted faster Internet connectivity to download all the images and video sent their way via Facebook, and more technology (cameras, video &

image editing software) to create content for their Facebook pages. All the chatter about Facebook accounts was also driving new customers to buy computers and invest in Internet connectivity. "I need to get Facebook," is becoming a common refrain at retail computer stores.²⁹

Egypt, in particular, has seen an impressive rise in their Internet economy over the last few years. While there may or may not be a connection, Egypt's participation in zero-rating programs began several years ago, and its main mobile operator Orange began offering Facebook Zero in 2012. Preliminary reporting showed a massive rise in customers connecting to the Internet, with 350,000 new subscriptions in the first month.³⁰

Concurrently, Egypt's businesses have made a dramatic shift to go online. According to data compiled by the United Nations Conference on Trade and Development, over 2008-2012 the share of urban businesses using the Internet increased from 29 to 56 percent, while the share of rural businesses online increased from 9 percent to 38 percent.³¹ The rise in rurally-located businesses on the Internet, serving the more vulnerable populations in terms of Internet connectedness, is especially promising.

Undoubtedly, the rapid adoption of Internet-based business models by businesses in urban and rural parts of the country was influenced by the rising number of people connecting to the Internet. Over the last year alone, the number of Internet users in Egypt rose 10 percent.³² Taken together, this suggests the beginnings of a flourishing Internet ecosystem that could shift the country into a high-connectivity equilibrium.

Progress in Africa on creating Internet ecosystems in countries that have employed zero-rating is not limited to the northern part of the continent. In Kenya, for example, another country whose mobile operators offered Facebook Zero, the number of Internet users is steadily rising. In 2014, the number of Kenyans connecting to the Internet increased by a whopping 16 percent.³³

The rise in Internet users in Kenya is also helping drive the creation of more local online content. According to an excerpt from the 2014 Ericsson Mobility Report:

New business opportunities that have been created by the Internet have been boosted by consumers' increased access via mobile phones. This has led to the development of new business models. In Kenya, Mozambique, and Nigeria, TV and media services are increasingly being accessed using smartphones...influencing the development of local and regional content. Innovations such as this give rise to further market trends such as multiscreen consumer behavior. The rise in sophistication of social networking platforms has played a role in the growth of mobile traffic.”³⁴

These early indications of successful development of Internet ecosystems in countries with a low-connectivity equilibrium point to a promising role for zero-rating programs. As more data continues to be collected and reported, it is possible we will see further success on the development of these and other Internet ecosystems in countries where zero-rating is available.

CRITICISMS OF ZERO-RATING

There are critics who oppose using zero-rating as an approach to shifting to a high-connectivity equilibrium. These critics argue it will do little to benefit the local population or economy, and that it could even harm competition in local markets.

First, critics of zero-rating see it as a form of content prioritization.³⁵ Some opponents, such as Susan Crawford, claim it discriminates against the creation of local would-be content providers of similar services.³⁶ In this scenario the Internet ecosystem is not stimulated, because businesses are unable to compete with the few sites that receive preferential treatment. This view posits a zero-rating spiral, where any business that wishes to succeed will have to negotiate their own zero-rated deals with operators. This would keep local content developers out of the market, or at the very least discourage creation of non-zero-rated content.

Fear of discriminatory practices is why countries like Chile have already banned zero-rating.³⁷ Other developing countries that are considering similar measures are doing so on the grounds that any prioritization is a violation of net neutrality.

Core principles encourage public and government trust in mobile operators' intentions when pursuing zero-rating programs.

Second, opponents of zero-rating argue that the shift to a high-connectivity equilibrium may not happen if consumers are unable or unwilling to go beyond the free content. Here, zero-rating forms a “walled garden” around the Internet, also referred to as a separate “Internet for poor people.”³⁸

The underlying presumption is that if people can't afford a data plan regardless of zero-rated content, even if they see the relevancy of having Internet access, then zero-rating is irrelevant. The ecosystem will never get off the ground, leaving people with a fragmented slice of the Internet. In this scenario, instead of bridging the digital divide, zero-rating will widen it, ultimately doing more harm than good.

These zero-rating opponents also point to evidence in some developing countries that people already believe sites like Facebook constitute “The Internet.” According to one Quartz article, “Facebook is literally becoming the Internet.” It cites the overwhelming share of Filipino citizens on Facebook as a share of those using the Internet, and details how a leading handset manufacturer even includes Facebook’s logo in its advertising.³⁹

Interestingly, however, the same article also explains why these claims of “Facebook being the Internet” are exaggerated. Facebook has penetrated just 6.5 percent of the population in Asia, and less

than 5 percent in Africa.⁴⁰ Moreover, it is not clear why increased use of social media—and any other zero-rated content—is negative. That could actually be a sign of the zero-rating’s success in these countries at getting more people and businesses online.

Ultimately, exposure to ‘some Internet’ is far more likely to be a gateway to increased data consumption than to block Internet usage or reduce it. Without any exposure to the Internet, there is no chance of moving from a low-connectivity to a high-connectivity equilibrium. That makes it all but assured people will not be able to learn the digital skills they need to participate in the digital revolution.

Zero-rating also cannot work without basic broadband infrastructure in place, particularly for mobile broadband.

Moreover, people and businesses in poor and developing countries stand to gain the most from becoming connected. They are in some ways even more reliant on being connected than people in developed nations, and stand to lose out on more social and economic opportunities without it.

The popularity of social media sites like Facebook and Twitter is not the problem with zero-rating—it is an opportunity. According to a recent Pew survey, “Once people have access to the internet, they tend to engage in social networking.”⁴¹

Not counting popular social media content against data caps will give people the freedom and incentive to explore local content and services. And instead of competing with the social media giants for customers, local enterprises can work with them as part of the larger Internet ecosystem. They can take advantage of the ability for people to use any zero-rated social media platforms, as an opportunity to reach potential customers. They can create their own social media pages for customers to follow, and

even advertise their latest goods and services, at a relatively low-cost.

ENHANCING ZERO-RATING THROUGH POLICY

Rather than ban zero-rating, countries should follow certain core principles that will enhance its ability to successfully ignite a local Internet economy. That is, a set of characteristics for zero-rating programs to incorporate, as highlighted by the successes demonstrated in the preliminary evidence.

These principles will still enable the many shapes and sizes of zero-rating programs currently in practice. A one-size-fits-all approach to zero-rating simply does not make sense given the large variance in underlying social and economic demographics of the target low-connected populations.⁴²

Rather, these principles should incorporate lessons from current practice, to establish a base set of features that should be common to all zero-rating programs. We believe this will give future programs the best chance of becoming a successful ecosystem jumpstart, while addressing some of qualms voiced by zero-rating critics. Such principles encourage public and government trust in mobile operators’ intentions when pursuing zero-rating programs.

For example, we propose the following core principles for zero-rating programs:

1. Transparency—all zero-rating offerings should ban secret agreements between content provider and mobile operator.
2. Non-exclusivity—there should be no agreement that prohibits multiple operators from offering the same zero-rated content. This will mitigate fears of anti-competitive behavior.
3. Local content—when possible, mobile operators should also zero-rate some basic local content, such as local government services or local healthcare and weather alerts.
4. Evaluation—regular data collection and reporting from the mobile operators will help governments understand the effectiveness of zero-rating.

These principles will help foster a positive feedback loop for local economic development. For example, offering some zero-rated local content will entice content creators to go online faster, and it will show low-connectivity consumers the relevance of local content.

Regular reporting and evaluation of the outcomes of zero-rating programs will not only provide a better foundation for technology policy in developing countries, but will also enable mobile operators to adjust their zero-rating offerings as experience suggests. It will also boost transparency, which addresses many of the criticisms raised by zero-rating opponents.

With these principles, governments in developing countries should continue to allow zero-rated offerings, as a complement to other subsidy programs to encourage broadband adoption already in place. That means policies such as net neutrality—a strict approach to regulating a free and open Internet—should not be constructed in low-connectivity countries in a way that prohibits future zero-rating programs.

Of course, zero-rating is only one part of how developing countries can shift from a low to high-connectivity equilibrium. Zero-rating should be used in conjunction with other policies and programs aimed at cultivating thriving local Internet ecosystems.

Such policies include strong protections for data privacy and security. This is a hot topic in developed and developing countries alike. Striking the right balance between consumer protection and enabling data-driven innovation, through a combination of legislation and industry standards, is essential to maintaining public trust and safety. People are more likely to remain unconnected if they feel it is too risky to share personal information on the Internet.

At the same time, governments should also acknowledge the importance of Internet freedom. If online content is artificially censored, or if governments enforce strict content rules, there will be less consumer demand to access the Internet.

Zero-rating also cannot work without basic broadband infrastructure in place, particularly for mobile broadband.⁴³ Developing governments in



low-connectivity countries must support the build-out of broadband networks by creating national broadband plans and following through on them, and when applicable, making spectrum available for high-speed mobile broadband networks and Wi-Fi.

Governments in low-connectivity countries should also prioritize policies that encourage private investment in broadband networks. It is very expensive for the government to own, manage, and maintain broadband networks. Evidence from the experience of developed countries suggests robust private investment in high-speed broadband networks has enabled much of the tremendous growth in apps, videos, and other high-bandwidth mobile data traffic.

Moreover, governments should refrain from imposing Internet access taxes, or “connectivity taxes.” This includes import taxes on mobile phones, and Internet connection and usage taxes. Increasing the cost of going online will discourage people from purchasing data plans, which could undermine the effectiveness of zero-rating.

Finally, governments in developing countries must also continue and build on efforts to ensure adequate digital literacy skills across their population.⁴⁴ Such training must start early, in schools and at home. This includes efforts to better prepare teachers, and it includes making sure schools have access to the Internet.

A FUTURE OF HIGH-CONNECTIVITY

A country trapped in a low-connectivity equilibrium faces serious challenges in terms of future growth and prosperity. As the data-driven economy continues to govern global growth and high-wage job creation, these countries risk being completely left out of the Internet's tremendous social and economic opportunities.

Fortunately, it is possible for countries trapped in a low-connectivity equilibrium to make the transition to high-connectivity. However, some approaches

may work better than others, and one in particular may come with a cheaper price tag and more public trust: zero-rating.

In particular, this paper explains why zero-rating may be the most viable and low-cost approach in moving to a high-connectivity equilibrium. It has the power to boost local content and local demand for online goods and services, and early indications of its effectiveness are promising.

That's why, at the stage, it would be a mistake for developing countries to dismiss the potential of zero-rating. Instead, there are ways governments debating the merits of zero-rating could think about core principles to make the practice more effective. Until these countries in low-connectivity equilibriums successfully make the transition to high-connectivity, it would be wise to keep all economy-boosting options on the table.

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44. Matthew Shears, “No. 208 Net Neutrality, Zero-Rating, and Development: What’s the Data?,” Internet Governance Forum, Center for Democracy and Technology, September 3, 2014: http://www.intgovforum.org/cms/wks2014/index.php/proposal/view_public/208.



About the Progressive Policy Institute



The Progressive Policy Institute (PPI) is an independent research institution that seeks to define and promote a new progressive politics in the 21st century. Through research, policy analysis and dialogue, PPI challenges the status quo and advocates for radical policy solutions.

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Preamble

Facebook respectfully offers these comments on the Telecom Regulatory Authority of India's ("TRAI's") Consultation Paper on Differential Pricing for Data Services ("Consultation Paper").¹ For many years now, our company has been actively implementing our mission—to give people the power to share, and to make the world more open and connected. That mission dovetails well with the Indian government's overarching policy goal of Digital India. As a key part of that mission, Facebook has been entering into zero rating partnerships with carriers around the world to make Facebook services and other content available to consumers over their mobile devices without incurring data charges. These initiatives include Free Basics, which is available in 35 countries around the world.

Facebook has carefully structured its Free Basics initiative to serve the needs of unconnected people, and the entire Internet as a whole, since everyone benefits when more people come online:²

- i. Free Basics is non-exclusive. It is available to all operators on the same terms and conditions. Any operator can sign up and launch Free Basics on its own without any intervention from Facebook.
- ii. Free Basics is an open and non-discriminatory platform. Any content owner can participate as long as it meets the same technical criteria, which are openly published.³
- iii. Free Basics is free to both users and content owners. No user is charged for accessing the content available on Free Basics on a participating network. No content owner is charged for participating in the platform.
- iv. Free Basics is transparent. All of the technical standards are published and available online.
- v. Facebook does not pay carriers for the data people consume through Free Basics.
- vi. Facebook does not make money from Free Basics; it is not paid by content providers, carriers, or even advertisers, as there are no advertisements within the Facebook experience on Free Basics.

With no payment by consumers to the carrier for their access to Free Basics, no payment by Facebook to the carrier for the cost of free access, and no payment to Facebook of any kind, all of Facebook's zero-rated services, worldwide, are truly non-commercial on all sides.

The result of Facebook's Free Basics and related connectivity initiatives? These efforts have helped to bring more than fifteen million people online who otherwise would not be, with more coming online every day. These consumers gain access to online content that they

¹ Facebook and its affiliates offer various popular online services, including, e.g., Facebook Messenger, WhatsApp, and Instagram.

² Declaration of Jeffrey A. Eisenach, Ph.D., Telecom Regulatory Authority of India Consultation Paper No. 8/2015, ¶¶ 12, 15 (Dec. 30, 2015) ("Eisenach Decl.")

³ Free Basics: Participation Guidelines, <https://developers.facebook.com/docs/internet-org/participation-guidelines> (last visited Jan. 6, 2016).

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otherwise may not be able to afford, and in accessing that content, they come to understand more of what the Internet has to offer. Most upgrade to paid access—the majority of Free Basics users pay to access Internet content outside of Free Basics in their first month of use, and the number keeps rising over time. These arrangements therefore act as an on-ramp to the Internet. It is this on-ramp that Facebook has an interest in seeing flourish.

Many in India and elsewhere are aware of the benefits of Free Basics. Indeed, Facebook invited people in India to show support for Free Basics, both through Facebook and by running a “missed call” campaign (for those people who are unconnected). The results show that more than 11 million people sent TRAI an email supporting “digital equality” and Free Basics. Although these were not specifically framed as responses to the Consultation Paper’s questions on differential pricing, this strong endorsement of Free Basics demonstrates that Indians support innovative approaches to access and look to TRAI to ensure that telecommunications regulation helps advance the goals of Digital India by accelerating access rather than discouraging it.

Some have attacked Free Basics as a violation of net neutrality. These opponents say that one of the purported tenets of net neutrality is a ban on zero rating. This is incorrect.

Facebook is a strong supporter of net neutrality and believes that it is critical to the Internet’s continued dynamic growth. There is no inconsistency in supporting the core principles of net neutrality—including restrictions against blocking and throttling content—and offering zero-rated services that benefit consumers and promote competition. Most regulators agree. Zero rating is permitted in the vast majority of jurisdictions around the world. Those jurisdictions that have engaged in extensive deliberation over zero rating, including the E.U. and the U.S., have concluded that adoption of net neutrality rules does not require banning zero rating. We agree that differential pricing programs should be reviewed on a case-by-case basis, and that evidence of distortion to competition should be given careful consideration. But merely repeating that zero rating violates net neutrality does not make it so.

Facebook answers below the specific questions presented for comment in the Consultation Paper. In short, Facebook strongly agrees with TRAI that there are many different ways to expand Internet access and use to the benefit of consumers, carriers, and their communities.⁴ Due in large part to the enlightened forbearance of TRAI, differential pricing arrangements have been allowed to flourish in India. And they are working here, as they are working in many other countries around the world. With a track record of increasing Internet access and use, differential pricing programs should be recognized as tools for economic development and encouraged within a flexible regulatory environment.⁵

Consistent with the approach taken in most other countries around the world, Facebook also believes that differential pricing plans should be evaluated case by case, based on a number of criteria. That evaluation shows that many categories of differential pricing offer unalloyed benefits in expanding digital literacy, boosting Internet adoption, and promoting content diversity all at once. This is especially true of zero rating, and particularly non-commercial zero rating

⁴ Eisenach Decl. ¶ 4.

⁵ *Id.* ¶¶ 2-4.

programs where neither the consumer nor the content provider pays the carrier for data carriage. Differential pricing, and especially zero rating, should remain an essential tool in the work towards Digital India and getting the one billion unconnected Indians online.

I. *Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?*

The short answer is yes. Differential pricing, as the term is used in the Consultation Paper, should generally continue to be allowed.⁶ Such arrangements have been offered in India, as they have been elsewhere, for several years. The first response to claims that programs like Free Basics could have unwanted consequences in the future is to ask if similar programs have caused any harm in the past. There is no evidence of any such harm, either to Indian consumers who have enjoyed an economic benefit, to developers who continue to grow in number and ambition, or to carriers who continue to compete vigorously and draw more paying data subscribers through these plans. There is a similar absence of harm in the 35 countries where the Free Basics program operates.

It is an axiomatic principle of regulatory intervention that well-functioning services offering popular consumer benefits should not be restricted without concrete proof of harm. The opponents of zero rating may offer vocal speculation, but their concerns are unaccompanied by hard evidence, and they cannot even minimally bear that burden of proof. To the contrary, as shown below, the benefits of differential pricing are supported by concrete evidence in India and throughout the world. As for the supposed downsides, not only are they unproved; the available evidence suggests they do not exist.

A. **There is substantial evidence to back up the benefits of differential pricing**

Economists and analysts, who have studied the effects of differential pricing, and in particular zero rating, have shown that zero rating spurs Internet adoption without any market-distorting effects.

For example, a study of mobile market effects in Chile, the Netherlands, and Slovenia,⁷ both while zero-rated plans were widely used and after regulators in those countries banned or restricted their use, concluded that there was no evidence that consumers limited their access to the zero-rated content or that the practice resulted in any adverse market effects. In fact, the

⁶ By its terms, the 1999 Tariff Order non-discrimination requirement reaches only “discriminat[ion] between subscribers of the same class.” Thus, that prohibition would not appear to reach zero rating or sponsored data programs, since all subscribers pay the same price (zero), and are subject to the same terms, for the same class of service. In light of the narrow scope of treatment of the Tariff Order, it was no surprise that TRAI’s March 2015 Consultation Paper on a Regulatory Framework for Over-the-top (OTT) Services addressed zero rating as a practice that does not implicate price discrimination but rather as a *non-price* mechanism.

⁷ The Netherlands and Slovenia are the only two among the 28 E.U. countries to presently have a ban on zero rating. These bans, however, have likely been superseded by the recently passed E.U.-wide net neutrality legislation. See below at 6.

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study concludes that consumers have been hurt by the regulators' ban on zero rating.⁸ In the authors' words: "[i]t cannot be observed that zero rating has reduced innovation in any of the countries. I[f] anything bans on the practice have hurt users the most."⁹ As another study observes, prohibiting zero rating would deprive consumers of several potential benefits.¹⁰

Similarly, various non-commercial zero rating plans have been in effect in many African countries for several years without causing any market distortion. As one paper states: "[p]erhaps some of the most promising examples of early zero-rating success in jumpstarting Internet ecosystems are in Africa. Many African countries have mobile operators that offered some form of zero-rating, starting as early as 2010. . . . These early indications of successful development of Internet ecosystems in countries with a low-connectivity equilibrium point to a promising role for zero-rating programs."¹¹

These studies are consistent with Facebook's own experience with zero-rated applications: Facebook knows of no evidence that zero-rated plans have been associated with any adverse effects on the mobile Internet ecosystems, including with respect to their users. In fact, the evidence shows the exact opposite.

B. Differential pricing arrangements promise dramatic benefits for Indian consumers, and any purported harm is speculative

The benefits of differential pricing, and especially zero rating, are greater still in countries with demographic and geographic hurdles to Internet adoption.¹² General all-access plans are often too expensive for significant portions of the population, especially for them to try for the first time. In contrast, zero-rated offerings create an on-ramp to the Internet. Once online, the consumer builds an understanding of the Internet's broader offerings and benefits. Ultimately, the entry of a greater proportion of the population into the Internet economy enhances economic growth.

Facebook has witnessed first-hand how zero rating plans can jump start Internet adoption. More than 15 million people have been able to come online as a result of Facebook zero-rated offerings around the world. As a result, providing people with access to free basic services, new users in markets where Free Basics has launched are coming onto mobile networks at an average rate that is 50% faster than they otherwise would. In other words, if a mobile network were

⁸ Roslyn Layton and Silvia Calderwood, *ZERO RATING: Do Hard Rules Protect or Harm Consumers and Competition? Evidence from Chile, Netherlands and Slovenia*, SOCIAL SCIENCE RESEARCH NETWORK 32 (Aug. 15, 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587542.

⁹ *Id.*

¹⁰ Eisenach Decl. ¶ 4.

¹¹ Diana Carew, *Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries*, PROGRESSIVE POLICY INSTITUTE 8-9 (Mar. 2015), http://www.progressivepolicy.org/wp-content/uploads/2015/03/2015.03-Carew_Zero-Rating_Kick-Starting-Internet-Ecosystems-in-Developing-Countries.pdf.

¹² Eisenach Decl. ¶ 16.

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bringing on 10,000 new people per month before launching Free Basics, on average it would bring on 15,000 new people per month after launching Free Basics. Facebook expects that the increase in adoption may be even greater in countries such as India where the hurdles to adoption are higher. What is more, the beneficiaries of that adoption are often disadvantaged categories of the public: low-income communities, rural residents, women and minority groups.¹³ Recognizing the connection between zero rating and Internet adoption, almost half of mobile operators around the world offer some type of zero-rated service.¹⁴ As Professor Eisenach observes, this increased adoption enhances the value of the network both to the mobile operator and to all network users, and allows the operator to ultimately spread the costs of its network to a broader subscriber base.¹⁵ Data from more than five years of other programs that offer free access to Facebook, WhatsApp and other services confirm this assessment.

Contrary to the speculation offered by some opponents, the benefit of dramatically expanding a country's Internet adoption base does not come at the cost of narrowing the content the adopters use. In fact, the contrary is true. Zero rating leads to the use of broader and more diverse online content. Users of zero-rated content do not end up in "walled garden" versions of the Internet:

- As a recent paper from the Brookings Institute concluded, increasing local demand for Internet content leads to more competitive markets with more diverse content.¹⁶
- More than half of the people who come online through Free Basics around the world are paying for data and accessing the full Internet after the first 30 days.¹⁷

The most telling evidence in this regard stems directly from Facebook's experience here. In India, of the people who have joined the Free Basics trial, after just one month, there are 8 times more people who have paid for, and are using, the full Internet than there are who have chosen to continue only using Free Basics.

Scholarly research has likewise concluded that "with respect to diversity of expression and related concerns, it is difficult to construct a scenario under which increasing access to online

¹³ *Id.* ¶ 20.

¹⁴ Anne Morris, *Report: 45% of Operators Now Offer At Least One Zero-Rated App*, FIERCEWIRELESSEUROPE (July 15, 2014), <http://www.fiercewireless.com/europe/story/report-45-operators-now-offer-least-one-zero-rated-app/2014-07-15>.

¹⁵ Eisenach Decl. ¶¶ 15, 20.

¹⁶ Darrell M. West, *Digital Divide: Improving Internet Access in the Developing World through Affordable Services and Diverse Content*, CENTER FOR TECHNOLOGY INNOVATION AT BROOKINGS (Feb. 2015), http://www.brookings.edu/~/media/research/files/papers/2015/02/13-digital-divide-developing-world-west/west_internet-access.pdf.

¹⁷ *One Year In: Internet.org Free Basic Services* (July 26, 2015), FACEBOOK, <http://newsroom.fb.com/news/2015/07/one-year-in-internet-org-free-basic-services/>.

information and adoption of digital communications services would be harmful to online speech. While regulatory authorities should remain vigilant in monitoring business practices, broad-based bans or restrictions on zero rating plans are far more likely to harm consumer welfare than improve it.”¹⁸

C. Key jurisdictions have joined India in not prohibiting zero rating or sponsored data programs

Consistent with their benefits and lack of downsides, zero rating and sponsored data plans do not implicate discrimination under Indian law, for the simple reason that, as mentioned above, they do not implicate “discrimination between subscribers of the same class.” Likewise, both the U.S. and the E.U.—the two jurisdictions with the most rigorous open Internet regimes—have shown similar restraint towards zero rating and sponsored data plans, and neither regime treats such arrangements as per se unlawful discrimination. Many other jurisdictions have also taken a similar approach. Appendix 1 provides a brief overview of certain net neutrality regimes worldwide and their application to zero rating.

In the United States, the Federal Communications Commission (“FCC”) does not regulate the relationship between carriers and content providers as a telecommunications service, and zero rating is not evaluated under the standard antidiscrimination provision of the U.S. Communications Act. While the FCC has established a separate rule against prioritizing traffic in exchange for payment or other benefits, zero rating is not subject to that rule either. Zero rating and sponsored data programs are instead subject to a flexible general conduct rule—case-by-case evaluation.¹⁹ Indeed, the FCC Chairman, Tom Wheeler, has recently spoken favorably of a plan that exempts certain types of data from consumer data usage plan limits and is open to all qualifying content, describing it as “highly innovative and highly competitive.”²⁰ We understand that the FCC will be reviewing this and other such plans, consistent with its case-by-case evaluation approach.

Similarly, the E.U. has adopted a permissive regime for zero rating, and has rejected any categorical restriction. Pan-European rules do not prohibit zero rating so long as it is not accompanied by prioritization of the relevant traffic on the network itself. The E.U. adopted these permissive rules notwithstanding objections by the Netherlands and Slovenia—the only two among the 28 E.U. countries that had banned individual zero rating offers. After enactment of the E.U. rules, any E.U. country’s categorical ban on zero rating offers has become impermissible. In this way, the E.U. treats zero rating on par with the United States: so long as consumers are not

¹⁸ Jeffrey A. Eisenach, *The Economics of Zero Rating*, NERA ECONOMIC CONSULTING 1 (Mar. 2015) <http://www.nera.com/content/dam/nera/publications/2015/EconomicsofZeroRating.pdf>.

¹⁹ *Protecting and Promoting the Open Internet, Report and Order on Remand, Declaratory Ruling, and Order*, 30 FCC Rcd. 5601, 5666-67 ¶ 151 (2015). While the FCC referred to sponsored data plans as “sometimes called zero-rating,” it did not define or discuss zero rating in detail. *Id.*

²⁰ Dawn Chmielewski, *T-Mobile’s Binge On Service ‘Innovative,’ but FCC Chairman Keeping an Eye on It*, RECODE.NET (Nov. 20, 2015), <http://recode.net/2015/11/20/t-mobiles-binge-on-service-innovative-but-fcc-chairman-keeping-an-eye-on-it/>.

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being hurt by a particular program, carriers are free to deploy zero rating to provide their subscribers with the packages that they want.²¹

And many other countries, while lacking specific open Internet regimes, have construed their existing laws as permitting zero rating: Bangladesh, Kenya, Nigeria, South Africa, Myanmar, Nepal, Tanzania, and Zambia are some examples. Indeed, Free Basics has been explicitly supported or even championed by government officials or regulators in an overlapping list of countries—Bangladesh, Cambodia, Colombia, Democratic Republic of Congo, Panama, Peru, Rwanda and the Philippines.²²

The truth is that zero rating benefits users, carriers, and their communities. TRAI should continue its wise forbearance policy and disregard unsupported, and indeed counterfactual, speculation.

II. *Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?*

In light of the substantial and uncontested evidence of benefits, and the lack of proof of any downsides, TRAI should at most adopt an approach of case-by-case evaluation for differential pricing arrangements of the type discussed in the Consultation Paper. In conducting such an evaluation, TRAI should weigh a number of simple criteria:

- *Connectivity.* Does the plan help get more people connected? How many more can the plan be estimated to usher into the digital world?
- *Non-Discrimination.* Does the arrangement discriminate between different subscribers of the same class?
- *Free to Subscribers.* Does the subscriber pay nothing for the arrangement?
- *No payment by content provider.* Does the content provider pay the carrier in the form of cash, ad placements, coupons, rebates, or other consideration? If so, is the same arrangement open to other content providers on comparable terms?
- *Non-Exclusivity.* Is the content available to all carriers on the same terms and conditions? Are other carriers free to enter into an arrangement with a particular content provider or platform? Is the carrier free to enter into the same, or similar, arrangements with other content providers, or with other content platforms?

²¹ See Press Release, Roaming Charges and Open Internet: Questions and Answers, EUROPEAN COMMISSION (Oct. 27, 2015), http://europa.eu/rapid/press-release_MEMO-15-5275_en.htm.

²² See Appendix 1.

- *Independence/Non-Affiliation.* Is the arrangement between a carrier and content provider that are affiliated with one another, or is it between independent entities?
- *Openness.* Is the content platform open to all content providers that qualify under objective standards?
- *Transparency.* Does the carrier disclose in clear terms the term of the offering, its scope, whether the content provider is paying for the data carriage, whether the content provider is affiliated with the carrier, and when and how the customer will know when he or she transitions from zero-rated content to content that will count against her data plan?

Restrained application of these criteria would secure the benefits of differential pricing arrangements while also ensuring that any speculative concerns about zero rating remain just that—speculation. Notably, even if someone could concoct a theory of non-price discrimination in connection with zero rating, and even if Indian law were changed to reach such supposed discrimination, application of these principles would be enough to avert any risk in that area, too.

Some have charged that zero rating involves discrimination for and against included and excluded content providers. Any such concern would be completely dispelled by the prudent application of the non-exclusivity criterion suggested above. So long as a carrier participating in a zero rating program is not bound by an exclusivity clause, the carrier is free to enter into similar (or the same) arrangements with other content providers, or platforms of content providers.

Similarly, any risk of discrimination against carriers that are not party to a differential pricing arrangement with a particular content provider is warded off if other carriers, too, are free to enter into a similar arrangement with that content provider.

III. *Question 3: Are there alternative methods/ technologies/ business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/ describe these methods/ technologies/ business models. Also, describe the potential benefits and disadvantages associated with such methods/ technologies/ business models.*

A meaningful evaluation of various free service arrangements and their impact on competition and openness is aided by breaking them down into two general categories:

- *Commercial zero rating plans,* also known as sponsored data plans, where the content provider pays the carrier for the exemption of certain data from data caps or allowances. The payment may be in cash or may take other forms, such as coupons, rebates, or ad placement at the cost of the content provider. This category would include the Consultation Paper’s proposed coupon program.
- *Non-commercial zero rating programs,* in which the carrier makes certain data exempt from data caps or allowances without payment from the content provider for the data. These plans translate into unalloyed benefits for the consumer.

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They present no monetary hurdle for the end user to overcome, and without the prospect of payment, the carrier elects to offer zero-rated content for the value proposition it presents for its customers.²³ They survive only if they are delivering the content those consumers want and the arrangement adds value for the carrier. These are key drivers for a more competitive market.

Both of these categories may have a role to play in an Internet adoption-friendly ecosystem. For example, both can be used to achieve the objective of providing free Internet access to consumers. Facebook believes in choice—the availability of different solutions that serve the needs of consumers and operators in different ways. At the same time, some of the programs present competition-related concerns that must be analyzed but are not present when the carrier receives neither money nor an affiliate benefit from the arrangement.

In addition, alternative models—such as “universal coupons” provided by content providers redeemable on any carrier or simply free bandwidth—are unlikely to be effective methods for connecting the unconnected in the long term.

First, some have advocated for a rule that would require content providers who wanted to provide zero-rated services to offer a universal coupon—where a consumer exchanges a coupon issued by a content provider for free access to that specific content on any carrier. Such a rule would be, in effect, a “must buy” requirement on content providers for Internet access. Similarly, a rule requiring that zero-rated content be cost-free across “all carriers” compels the content provider to buy Internet access from every operator, regardless of the price. Not only would this amount to a regulation of content providers themselves, which would exceed the relevant jurisdictional authority, it would be contrary to traditional tariffing practices—which ordinarily do not compel anyone to become a customer and to purchase from a tariff.

Further, universal content-provider coupons would be economically unsustainable.²⁴ Issuance and redemption associated with such a model would be operationally challenging and costly to implement for content providers, consumers, carriers and their local agents. A universal coupon program would be more burdensome than sponsored data arrangements, as content providers would have to offer and carriers would be forced to accept the coupon. Zero rating plans, on the other hand, achieve the same result of bringing more people online, at no cost to the government, the content provider, or the consumer.

Second, free bandwidth is a potential complement, but not a substitute, for zero rating. While free bandwidth comes without content restrictions, its benefits are likely limited because of

²³ Facebook does not pay carriers for the cost of providing free access under the Free Basics program. The only money spent by Facebook is devoted to programs intended to raise awareness of Free Basics’ availability to those that might benefit from it.

²⁴ Commentators in favour of providing a direct benefit to consumers for free Internet have suggested that it would cost 2400 crore a year. See Nandan Nilekani and Viral Shah, *Free Basics Is a Walled Garden: Here's a Much Better Scheme — Direct Benefit Transfer for Internet Data Packs*, Times of India (Jan. 1, 2016), <http://blogs.timesofindia.indiatimes.com/toi-editorials/free-basics-is-a-walled-garden-heres-a-much-better-scheme-direct-benefit-transfer-for-internet-data-packs/> (recommending use of Universal Service Obligation fund).

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other limits that the carrier would need to place on the service (*e.g.*, data caps, limited time, speed limitations) or the extremely limited amount of bandwidth that the carrier could afford to provide. Consumers watching video can quickly consume an extraordinary amount of bandwidth—leading to the necessity of some kind of limitation. And consistent with TRAI’s recent rulemaking on data usage, a free data program, capped at a certain megabyte threshold, has greater potential for consumer confusion and inadvertent data usage than a plan premised on free use of certain applications—particularly for those who are new to the Internet. If the services people choose are not optimized for low bandwidth connections, and people do not clearly understand the bandwidth cost associated with their activity, they could quickly run through their free data by watching half a video. This would not show someone the full power of the Internet, so people would be unlikely to become full-time Internet users.

In the absence of exclusivity or affiliate deals, non-commercial zero rating plans have all of the strengths, and none of the weaknesses, of commercial zero rating plans and these alternative models. The subscriber does not pay for access; the content provider does not pay the carrier for the cost of providing that access; and the content provider does not make money from the zero rating program. There are no walls around the garden—in fact, most subscribers affected by the free service choose to upgrade to full paid access.

As noted above, Facebook has carefully structured its most recent initiative, Free Basics, to extend the benefits of zero-rated services to a broader set of Internet content. And Facebook has taken significant precautions that ward off any possible concern with differential pricing arrangements in general:

- Free Basics is non-exclusive for operators. It is available to all operators on the same terms and conditions, and all operators can offer both Free Basics and any other service, including zero-rated services, it wants. And an operator can sign up and launch Free Basics on its own without any intervention from Facebook.
- Free Basics is also non-exclusive for content providers. The Free Basics platform is open and non-discriminatory as to all content providers meeting objective, freely available technical criteria.
- Free Basics is free to both users and content owners. No one is charged for accessing the content on Free Basics. No content owner is charged for participating in the platform.
- Free Basics is transparent. All of the technical standards are published and available on line.
- Facebook does not pay carriers to exempt its content from usage limits.²⁵
- Facebook does not make money from Free Basics; it is not paid by content providers, carriers, or even advertisers, as there are no advertisements within the Facebook experience on Free Basics.

²⁵ See footnote 23 above.

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In sum, any concerns about other differential pricing arrangements should not extend to Free Basics, which satisfies all relevant factors, connects the most people at no cost, and is a win/win/win for Internet adoption, digital literacy and content diversity.

IV. *Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?*

The goal of Digital India is rightly the lodestar guiding TRAI's decision making. It should continue to be. Pockets of Internet adoption are not enough. Despite tremendous strides, the statistics are well known and the road is long. Eighty percent of a country's population translates into many people in any country. In India, it means one billion Indians are still bereft of Internet access. One billion access plans need to be activated.²⁶ Zero rating should remain an essential tool in aiding TRAI's still enormous task. Facebook remains enthusiastically committed to deploying this tool and helping connect the remotest of Indian villagers to the Internet, under TRAI's aegis.

Facebook applauds TRAI's initiative to go behind labels and analyze separately each category of differential pricing. Facebook also commends TRAI on its willingness to act carefully and methodically in assessing the benefits that differential pricing offers to both current and potential users of the Internet. A scalpel, not an ax, is what is needed. Facebook also applauds the broader, separate inquiry undertaken by TRAI into the appropriateness of open Internet rules. Facebook supports strong net neutrality rules, including prohibitions on blocking, throttling, and paid prioritization. As explained above, these rules should be accompanied by flexible, case-by-case evaluation of differential pricing arrangements.²⁷

²⁶ While India has a very large absolute number of broadband subscribers, it is still ranked 142nd in terms of broadband penetration globally (below some of its neighbors)—making it among the Least Connected Countries—and has the lowest connectivity when compared to the other BRIC countries. See, e.g., *The State of Broadband 2015*, BROADBAND COMMISSION FOR DIGITAL DEVELOPMENT (Sept. 2015), <http://www.broadbandcommission.org/documents/reports/bb-annualreport2015.pdf> (ranking India 131st in fixed broadband subscriptions per 100 capita, and 155th in mobile subscriptions per 100 capita); *Measuring the Information Society Report*, INTERNATIONAL TELECOMMUNICATION UNION (2014), http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2014/MIS2014_without_Annex_4.pdf (ranking India 129th in the ICT Development Index).

²⁷ The Consultation Paper asks whether differential pricing could lead carriers to try to charge extra for certain content. Facebook agrees unambiguously that such a practice would be problematic. Extra charges are inherently harmful to the consumer and likely to be applied to the content that the consumer most wants to access. But such an attempt could only be enforced by throttling or blocking content that consumers did not agree to pay extra to access. And it is this blocking or throttling of content that would be a violation of, and should be prohibited under, any open Internet rules ultimately adopted.

APPENDIX 1

OVERVIEW PAPER FOR TRAI NET NEUTRALITY REGIMES AND APPLICATION TO ZERO RATING

1. Introduction

Zero rating is the practice of providing access to certain online content or services (such as a mobile app or website) free of data charges. This paper provides an overview of the current status of net neutrality regulations in certain jurisdictions around the world. Please note that the list below is not exhaustive, and that these regimes are both complex and subject to interpretation and amendment.

Please find below observations of certain regulatory schemes outside of India:

- 1.1. Comprehensive net neutrality regimes are by and large a relatively recent development on the international landscape. *Countries that have enacted net neutrality rules have generally found that zero rating plans may be permitted under those rules; while allowing zero rating offers to be reviewed on a case-by-case basis, these regulatory regimes do not categorically bar zero rating.*
- 1.2. Generally, net neutrality ensures that broadband access providers do not exercise any gatekeeper role to block and otherwise unreasonably discriminate against content. There does not appear to be any jurisdiction that construes net neutrality in such a manner as to require operator parity.
- 1.3. This is certainly true of the rules adopted by the Federal Communications Commission (“FCC”) in the United States and the European Union’s recent Net Neutrality Regulation (Regulation (EU) 2015/2120). The FCC has endorsed a case-by-case review of zero rating plans, while rejecting an outright ban. Furthermore, as will be discussed below, the FCC Chairman observed that a zero rating plan that resembles the Free Basics platform in significant respects was pro-competitive, innovative, and in effect consistent with net neutrality principles. Similarly, the E.U. Net Neutrality Regulation adopted a permissive regime for zero rating and rejected any categorical restriction. Netherlands and Slovenia (who each have comprehensive net neutrality legislation) raised concerns that their national rules, under which regulators in those countries have previously banned individual zero rating offers, would breach the Net Neutrality Regulation’s treatment of zero rating. In response to the Dutch and Slovenian concerns, the E.U. legislature has indicated that national legislation in these countries should be interpreted in line with the Net Neutrality Regulation. In practice, this means that any broad national policy that categorically bans zero rating offers would be impermissible under the new Net Neutrality Regulation. In taking the positive decision not to ban zero rating, the E.U. legislature has acknowledged at various stages that zero rating offers may be pro-competitive, and that an automatic ban on zero rating also could stifle innovation.
- 1.4. In other geographical regions, such as Latin America (“LATAM”), those countries that have adopted net neutrality regimes have done so on a high-level principled basis to ban activities such as blocking, throttling and/or slowing down of traffic. For the most part, these regimes do not contain outright bans on zero rating offers, and many zero rating offers exist across these markets.

- 1.5. The overwhelming majority of countries have not adopted specific net neutrality regimes as the existing legal regimes provide sufficient protection against truly distortive behaviour by operators without stifling innovative offers that enable smaller competitors to enter the market. This is certainly the trend in most African jurisdictions, and is achieved, for example, by a combination of general non-discrimination provisions, pricing caps, universal service obligations and/or anti-trust regimes that seek to identify truly abusive behaviour that is not otherwise objectively justifiable.
- 1.6. By contrast, there are only a handful of jurisdictions (e.g., Chile, Netherlands, and Slovenia) that have at some point banned zero rating offers. As discussed below, even in these three countries, the zero rating bans appear to be out of line and incompatible with subsequent rules and enforcement practice. This is contrary to erroneous reports that suggest a greater number of countries restrict zero rating.¹

2. Overview of key net neutrality regimes:

2.1. U.S.

In new net neutrality rules adopted earlier this year, zero rating is not banned and is reviewed on a case-by-case basis. The FCC determined that strong net neutrality protections do not prohibit zero rating and expressly declined to ban zero rating practices in the U.S. The FCC has elected not to ban zero rating based, in part, on the benefits zero rating programs have for both competition and consumers – particularly those using mobile services. In its decision, the FCC also cited arguments that zero rating models increase choice and lower costs for consumers.

Accordingly, the FCC reviews zero rating practices on a case-by-case basis under a “*no-reasonable interference/disadvantage*” standard. Under this standard, zero rating practices are permissible as long as they do not unreasonably interfere with or unreasonably disadvantage the ability of consumers to access the Internet content and services of their choosing, or of edge providers to reach consumers using the Internet.

The FCC Chairman, Tom Wheeler, has voiced support for a plan that exempts certain types of data from consumer data usage plan limits and is open to all qualifying content. That plan closely resembles the structure of Free Basics—both of them are open to any content providers who want to participate, as long as they meet the programs’ technical guidelines. In response to questions about whether the former complies with the FCC’s net neutrality rules, Chairman Wheeler complimented the plan, calling it “*highly innovative and highly competitive*”—strongly suggesting that the program comported with net neutrality principles. We understand that the FCC will be reviewing this and other such plans, consistent with its case-by-case evaluation approach.

2.2. E.U.

The E.U. Net Neutrality Regulation also does not ban zero rating. As noted above in paragraph 1.1, zero rating was debated hotly as part of the legislative development of the Regulation and an outright ban was expressly rejected by the E.U. legislature. Similar to the

¹ <http://timesofindia.indiatimes.com/tech/tech-news/Zero-rating-What-are-countries-doing-about-it/articleshow/47001571.cms>.

position in the U.S., a rule of reason approach should be followed to avoid dangerous stifling of innovation and competition. Zero rating offers can be reviewed on a case-by-case basis but only where this type of zero rating commercial practice—i.e., taking a number of factors into account, including scale of such offers on the market and other market factors—leads to a situation where end-users' choice is materially reduced in practice. An automatic, categorical ban on all zero rating offers by individual member states, such as the Netherlands and Slovenia, will no longer be permitted under the Net Neutrality Regulation. Additionally, the E.U. legislature has recognised that zero rating offers can bring benefits for competition and innovation (e.g., connected cars, e-Health/telemedicine, etc.). Zero rating offers are an inherent part of daily life across the EU. Nearly all mobile network operators, ISPs, cable and satellite providers have, for some time now, provided some form of zero rating offers in the market.

2.3. LATAM

Several LATAM jurisdictions have adopted net neutrality rules. However, the rules do not specifically relate to/ban zero rating offers. For example, we understand the following to be the case:

2.3.1.Argentina

The Argentinian Digital Law (2014) requires content, apps, and services to be provided to all users without restriction, discrimination or blocking. Although we are cognisant of the fact that Argentina is currently consulting on additional regulations in this area, at present we understand that the relevant net neutrality provisions in the Argentinian Digital Law mean prices should not be determined based on content (i.e., no price discrimination). We are not aware of any examples of the regulator having banned zero rating offers on the market under this law. We understand that there are a number of zero rating offers in the market from mobile network operators (e.g, Claro's offer, launched in May 2015, which allows users to send SMS and use data after the voice/internet bundle has been exhausted).²

2.3.2.Bolivia

The relevant rules contain merely a broad principle of technology neutrality and do not apply to zero rating offers.

2.3.3.Brazil

Brazil's Internet law addresses network neutrality by requiring operators to treat traffic equally from a technical standpoint. In other words, while it prohibits filtering, traffic shaping and blocking, the law protects companies' freedom to create commercial offers as long as it does not affect the technical restrictions above.

The law does not prohibit zero rating, and zero rating offers do exist in the market. In fact, many operators have been offering zero rating services for the last five

² <http://www.claro.com.ar/portal/ar/pc/personas/movil/pospago/>.

years in Brazil. Three out of the four largest Brazilian carriers (Claro, TIM and Oi) are offering or have offered zero rating plans to Brazilian consumers, and the Brazilian Telecommunications Authority (“ANATEL”) has been openly in favour of such offers. Additionally, ANATEL’s vice-president, Marcelo Bechara, has also recognised the need for Brazil to have as a priority the opportunity to provide Internet to 100 million people who are currently unconnected, regardless of the type of access they are granted. And in the context of Free Basics, he has stated he personally considers that the model does not violate net neutrality principles.³

We are also aware that during the consultation process on Brazil’s Internet Law (Law 12,965/2014) earlier this year (the consultation process ended 19 May 2015), some of the contributions from public and private entities set out the necessity of determining some exceptions to the net neutrality principle and the need for network management to guarantee the adequate functioning and lending of the services, among others.⁴

2.3.4. Colombia

While the relevant net neutrality legislation (Law 1450 of 2011) prohibits outright blocking of content, it does not apply to zero rating offers. We understand that zero rating offers exist in the market on both a categorical basis (e.g., all social media services or all dating websites) and on an individual application basis (specific service).

2.3.5. Chile

Despite initial media reports, Chile has not issued a blanket ban over zero rating. In April 2014, the regulator issued a circular that cited Article 8.2 of net neutrality regulations prohibiting arbitrary discrimination, and defined as “*arbitrary*” any prioritization or discrimination that affects contents or applications of a “*similar nature*.” This establishes that Internet access providers cannot discriminate between content and applications that provide similar services (for example, zero rating one social media app without zero rating others), but this is not a ban on zero rating. In fact, in a subsequent clarification, the regulator said that the circular was meant to apply to bundling of social media with voice and data plans, and is not meant to be generalized to other services. In the meantime, operators continued to offer zero rating and special promotional offers. A number of zero rating offers continue to exist in the market and have been developed alongside the regulator in such a way that the offers do not discriminate between specific apps, but extend to all apps of a similar nature. This is similar to Free Basics, which is open to any app or service that meets the program’s technical guidelines (i.e., there is no minimum/maximum number on apps, including apps in specific subject categories), and Free Basics is designed to encourage maximum participation of as

³ http://sinttel-es.org.br/novo/wpcontent/uploads/2015/07/resumo_noticias_Sinttel-ES_01072015.pdf

⁴ For further information: <http://signaltelecomnews.com/contribuciones-piden-que-la-reglamentacion-no-enyese-al-marco-civil-de-internet-en-brasil/>; <http://www.telesintese.com.br/consulta-da-anatel-termina-com-147-contribuicoes/>.

many different apps and services as possible, with a focus on innovative, locally relevant content.

2.3.6. Mexico

The relevant provision in the Mexican legislation (Telecoms Law) is one of non-discrimination. Although the Mexican telecoms authority is currently developing regulations to implement the net neutrality provisions in the Mexican Telecoms Law, this has not yet occurred, and to date, no specific bylaws or guidelines on the subject of zero rating have been issued.

2.3.7. Peru

Draft net neutrality legislation is expected to be adopted shortly. The framework in the legislation distinguishes broadly between three categories of measures: (i) clearly arbitrary measures such as blocking and throttling, (ii) measures that are clearly non-arbitrary; and (iii) measures that, depending upon their application, may have the potential to be arbitrary. Zero rating is not categorised as a clearly arbitrary measure. Indeed, the regulator (“OSPITEL”) specifically acknowledged in its report accompanying the draft legislation (No. 347-GPRC/2015) that zero rating offers such as Free Basics can bring benefits to customers and the economy as a whole, and that the project has been rolled out successfully in a number of other LATAM jurisdictions where net neutrality rules exist without giving rise to a regulatory issue under those rules. OSPITEL also points out the fact that even in a number of jurisdictions where net neutrality principles have been adopted, such as Brazil, Colombia, Chile, Ecuador, and Mexico, zero rating is not currently prohibited, and various operators in these countries have active zero rating offers. OSIPTEL’s report also states that arrangements like zero rating have benefited consumers and have been beneficial for competition.

2.4. Africa / EMEA

As noted above, we are not aware of any African jurisdiction that has seen the need to adopt specific rules governing net neutrality. The launch of innovative services / offers has flourished in Africa, with jurisdictions such as **Kenya**, **Nigeria**, **Tanzania** and **Zambia**, which represent some of the fastest growing Internet-connected nations in the African continent. These markets accommodate a number of zero rating offers (e.g., South African OpenWeb’s recent November offer where free mobile data is provided with certain home broadband ADSL packages, and Nigerian provider Kaymu’s current partnership with the MTN network to enable users to shop via its mobile app without incurring any data costs. According to Kaymu, “*high data costs are a major barrier for entry into the e-commerce space,*” and “*the decision to zero-rate data usage on the Kaymu mobile app was necessary to drive internet usage and education.*” Free Basics has enabled operators and content developers to spark innovation and Internet adoption in those countries where it has launched. It has also assisted in a number of key areas such as improved health awareness (e-Bola), support of young girls/women in becoming key players in their communities, and overall promotion of innovation in the ICT sector.

2.5. Asia

The ability to offer innovative free services has been an important contributing factor to opening up certain economies in Asia and sparking growth. For example, **Nepalese** consumers have expressed clear preference for free services available from NCell (including Free Basics, and NCell's offer for customers to browse its website and e-care services free of cost for its customers), which might motivate other operators such as NTC to offer more competitive packages. **Bangladesh**'s Telenor has seen huge take-up of its WowBox service—part of Telenor's “Internet for All” corporate strategy—with take-up of the specific app having reached the 1.5 million user mark at the end of October/start of November. Another interesting jurisdiction is **Myanmar**, where the ability of users to access free online services has led to tangible benefits across a number of sectors (e.g., tourism, and overall growth in market economy).

Countries Where Free Basics Has Launched and Public Statements by Government Officials in Support of Free Basics

Below is a list of countries where Free Basics has launched and is permitted (excluding India). Public statements made by regulators or government officials in support of Free Basics are listed below.

1. Colombia

President Juan Manuel Santos of Colombia: “Internet.org [Free Basics] aims to provide access to millions of people deprived of the internet due to its cost. It aims to offer access and make the internet available. And that can have fantastic, positive effects in terms of promoting equality and education. Any Colombian with a mobile phone, no matter how simple it is, will now have access several contents like information about farming, health and education. Many services will be available to Colombians that, otherwise, would not have access.”

2. Peru

Peru’s Minister of Communications, Jose Gallardo Ku: “Internet.org [Free Basics] will allow people to access a set of basic services and will give the government the opportunity to offer useful information about agriculture, gender, and youth issues, among others . . . This is another example of how partnerships between the public and private sector can yield amazing results and help with development.”

3. Cambodia

Kan Channmeta, Secretary of State, Ministry of Posts and Telecommunication: “The new [Free Basics] partnership is in line with the government’s policy of encouraging more people to go online. Our policy is aimed at increasing Internet connectivity in Cambodia.”

4. Panama

President Juan Carlos Varela of Panama: “This digital tool [Free Basics] will not only connect people for free, but also strengthen the development of an efficient and modern electronic government.”

5. Rwanda

Jean-Philbert Nsengimana, Rwanda’s Minister for Youth and ICT: “The introduction of Freebasics.com . . . will enable Rwandans to have free web access to a variety of popular websites on the internet. With categories ranging from education, jobs, to local information, we are confident that Rwandans will have a service that they can be proud to use and benefit from.”

6. Bangladesh

Press coverage of the State Minister’s remarks regarding mobile operator Robi’s launch of Free Basics in Bangladesh: “State minister for ICT Division Zunaid Ahmed Palak . . .

said all other mobile operators should follow the footstep of Robi to enable the people with the power of internet.” Link: Robi internet users to get free access to 25 websites.

7. Democratic Republic of Congo

Deputy Prime Minister Thomas Luhaka Losenjola, Telecommunications and New Technologies: “I support the Tigo-Facebook partnership, and the availability of free access to Internet.org [Free Basics] and to Facebook. My wish is to see the adoption of this and all innovative technologies that drive the Democratic Republic of the Congo’s re-emergence.”

8. Maldives

Hon. Umar Naseer, Minister of Home Affairs: “Affordable access to information is crucial to the well-being of our citizens. And what can be more affordable than being free? Free Basics, I understand will do just that.”

9. Philippines

President Aquino : “President Aquino today added his signature to the Connectivity Declaration, marking his commitment to join world leaders in making universal internet access a reality in the Philippines. Studies show that internet access can help lift people out of poverty through access to critical health, economic and education services. As part of this effort, we are working with partners such as Facebook, the country's major telecommunications operators (Smart and Globe) and nonprofit organizations to connect more Filipinos to valuable internet services and public information such as the Online Official Gazette of the Republic of the Philippines through Free Basics. This has benefitted our people, like Riza Mae Tachado from Culasi Antique, who used Free Basics to complete her studies and earn a university degree when her island was hit by a typhoon. It is stories like this that fuel our commitment to do what we can to help as many Filipinos as possible get connected to basic services to help them improve their lives”.

2.3.29 Computer Society of India



Computer Society of India



Response to TRAI Consultation Paper on Differential Pricing for Data Services

*A meaningful input from India's oldest
and largest IT Professional Body.*

5 January 2016

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Preamble

The Technical Advisory Group (**TAG**) of the Computer Society of India(CSI) comprises of experts from among CSI Fellows, CSI Capacity Building Task Force and selected representatives from Industry, Academy, Research and Training organisations and Computer users at large that are CSI members.

TAG was assigned the task of studying the TRAI 'Consultation Paper on the Differential Pricing for Data Services'. Further, they were asked to report on the Impact of 'Free Basic' on IT Community in case it was ever implemented.

TAG confined its research and study strictly on the merits and demerits of compromising on Net Neutrality.

Their findings are presented in the pages that follow.

InterNet Facts:- CSI Observations

1. India has already achieved 354 Million InterNet Connections of which 213 Million are Mobile InterNet connections. Net Connectivity in India is second only to China
2. InterNet usage is growing steadily and its growth is directly related to fibre optic cable network.
3. There is no data available to prove that cost of usage is the main delaying factor in growth as compared to limitation in connectivity.
4. India's InterNet usage charge is among the most affordable in the world. Affordability has never been a major growth deterrent.
5. In our understanding, free accessibility to the InterNet did not originate from Indian users but it is a creation of a section of the industry.
6. While InterNet providers may offer differential rates and services, access to legally permitted content is available without restriction or limitation.
7. E-Governance centric Citizen services, banking, and e-commerce facilities over the Net are persuading new users to subscribe.
8. Knowledge upgrade, e-learning, virtual classes, online test and certifications, research and many OTT services open to choice without restrictions.
9. All InterNet providers have a level playing field.

Net Neutrality:- CSI Recommendation

1. Free Basics, proposed by Facebook will result in the public losing free access to contents of choice on Internet.
2. Facebook will determine what is a basic service. If the proposal of Facebook is implemented, the public will have access only to Facebook and its partners. Other services will be either not available or will become expensive, as someone has to pay for the free service. Because of these reasons, Free Basics, offered by Facebook, is not acceptable.
3. Facebook will also have access to the data of a large number of Indian citizens. They promise to keep it only for 90 days; but 90 days is a long time in this digital era. There is also no guarantee that they will not keep it with them in some condensed or digested form.
4. Providing access to the data of a large number of our citizens to foreign company is as serious as the problem reported in the first paragraph.
5. It is not that we are against the access to Internet. As a matter of fact, we believe that the basic Internet access should be made available to everyone free of cost; and it should be provided by an instrument of the state. We need protocols that allow different service providers to plug into this free Internet and provide their offers, possibly at different costs and at different speeds, with or without advertisements. This will allow the public to pick and choose what they want at whatever cost they are ready to pay.
6. The Computer Society of India supports Net Neutrality. Being the largest professional body of IT professional in the country, CSI with 71 Chapters and 540 Student branches represents a large number of Internet users and voice their collective views and opinions on matters that affect IT community.

About CSI:

1. Through its 71 CSI-Chapters and 540 CSI-Student-Banches in AICTE accredited Technical Colleges spread all over India, CSI conducts training and workshops, seminars and conferences on a regular basis.
2. Being the largest Not-for-Profit IT professional Society in India, CSI's mission is to empower every citizen to be Net-savvy, and upgrade IT expertise of professionals on a continuous basis and to support research and innovation.
3. From its inception in 1965, CSI has been supplementing the Capacity Building activities of the Government using its large pool of professional body of technical experts.
4. CSI's direct or online training services, mostly free or at affordable costs are of benefit to the poorest of the poor and in the remotest destinations within our country.
5. CSI also support Start-ups through its 'Germinate' activities and offers advisory services on IT related topics to Industry and Government



Computer Society of India

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2.3.30 Internet Democracy Project

New Delhi, 7 January 2015

To,

Mr. Vinod Kotwal,
Advisor (F&EA),
Telecom Regulatory Authority of India,
New Delhi

Dear Mr. Kotwal,

Thank you for the opportunity to comment on TRAI Consultation Paper No. 8/2015, on Differential Pricing for Data Services.

Please find below the response from the Internet Democracy Project (www.internetdemocracy.in) to this Consultation Paper.

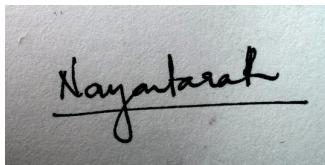
The Internet Democracy Project is a Delhi-based civil society initiative that works for an internet that supports freedom of expression, democracy and social justice through research, advocacy and debate in India, and beyond.

We have highlighted some of these concerns in our submission to TRAI's Consultation Paper No. 2/2015, and we hope that they are taken into consideration as well.

Please do let us know if you need any further clarifications regarding our submission.

Thank you and yours sincerely,

For the Internet Democracy Project,



Nayantara Ranganathan,
Programme Manager- Freedom of Expression,
Internet Democracy Project

TRAI Consultation Paper No. 8/2015
Internet Democracy Project Submission

At the outset, TRAI notes, in the consultation paper, that its regulatory approach has been one of forbearance, and regulatory interventions whether ex-post or ex-ante, are exceptions which are made where consumer interest has to be protected and orderly growth of the sector ensured.

TRAI also identifies that its mandate is to strike a balance between achieving wider access to the internet on the one hand and ensuring that the manner in which this wider access is provided does not violate the principles of non-discrimination and transparency on the other [paragraph 3 of Consultation Paper].

For providing wider access, differential pricing of data packs has been touted by some as a workable business model. While it would succeed in widening the market for data services by enabling more people to access a limited set of websites and services, and this at reduced or no cost, this would create an inferior quality of access. In this submission, we argue that further empowering Telecommunication Service Providers [TSPs], or enabling platform entities to curate a menu of websites and services at an attractive price does not bode well for either the principle of non-discrimination or for transparency.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

A: In oligopolistic markets of limited resource of spectrum in India, TSPs have significant market power and they should not be allowed to have differential pricing for data services for accessing different websites, applications or platforms.

A. Price discrimination violates the principle of non-discrimination

The Telecommunication Tariff (Thirty Third Amendment) Order of 2004¹ clarifies the interpretation of the principle of non-discrimination. It says that differential tariffs assuming the nature of vertical price squeeze would not be permissible.

¹ See <http://www.trai.gov.in/WriteReadData/UserFiles/mpci/amend8dec.pdf>

"An operator with significant market power can often squeeze the margins of competitors by raising wholesale prices (upstream market) paid by competitors while at the same time lowering retail prices (downstream markets) on competitive services. Such 'squeezes' on the margins of competitors imposed by the pricing strategy of the operator with significant market power could materially affect competition."

- Competition among applications/content providers is materially affected

In the Indian mobile telephony market, TSPs are oligopolies with significant market power, and operating with finite competition, providing access to a limited resource. Price discrimination vests enormous decision-making power in these private players, whose choice of the suite of applications and websites will not necessarily be aligned with consumer interests. Making them arbiters of usefulness and relevance to a large number of persons with potentially diverse needs would not necessarily align with public interest, and unless there is perfect competition, regulatory interventions will be needed.

TSPs may choose to tie-up with affiliated companies in the application/content provider layer, over other competing players who may not be similarly advantaged. TSPs could require that content providers be exclusively available over their price differentiated packs and not over data packs of other networks. Besides, a large number of non-commercial endeavors like personal websites and campaigns are not likely to participate in such platforms, and are shut out from accessing a large number of customers/users.

The same harms that vertical integration brings can materialise in scenarios where TSPs are tying up with content providers that TSPs are not previously affiliated with. TSPs could potentially use price discrimination to extract "oligopoly rents" from the content providers' side of the market, which is a highly competitive side. This might not necessarily be a monetary price that is extracted, but might for example entail requiring applications and content providers to not offer services like VoIP that threaten TSPs' traditional voice offering. TSPs prioritising content for their differentially priced cheaper data service packs gives TSPs an incentive to throttle non-participating content. TSPs in other parts of the world have been disingenuous in this regard.² By increasing input costs for content providers and requiring them to apply to

² See <https://www.techdirt.com/blog/netneutrality/articles/20151231/18201233216/t-mobile-is-flat-out-lying-throttling-video-even-though-it-says-not.shtml>

participate in platforms and conform to technical specifications that might not be directly related to consumer interests, TSPs could impose non-monetary burdens.

The consultation paper points out that there may be more than one form that differential pricing might take. The different forms of data tariff offerings that have found mention³ in the paper are all united in their anti-competitive effect for reasons explained above.

- Mediated access creates information control and this discriminates between the quality of access that those who can pay and those who can't pay get, threatening consumer interest.

The National Telecom Policy of 2012 aims to ensure that India transforms the socio-economic scenario through accelerated equitable and inclusive economic growth by laying special emphasis on providing affordable and quality telecommunication services in rural and remote areas.⁴ The National Telecom Policy, thus, does not see any conflict or compromise between affordability and quality of telecommunication services.

If the Internet has proved to be empowering for many of its users, its free, open and secure nature is at the core of this. In India, the majority of Internet users will be accessing the Internet through a mobile phone. Though the Internet experience of consumers is increasingly mediated by corporations and governments irrespective of the mode of access, this is especially true for mobile Internet. This means that if the empowering potential of the Internet is to reach mobile-first and mobile-only users as well, ensuring that their experience of the medium is as **free, open and secure** as possible becomes essential.

It could be argued that app stores which are tied to platforms like Android or iOS limit competition, and price differentiated or zero-rated platforms will be no different in effect. The mobile app environment is surely not as free as the

³ Paragraph 8 of Consultation Paper "*Under one form, the service provider selects the content, which is offered free or bundled together at reduced rates. In another form, one content provider creates a platform where other content providers can apply, and be selected. The platform creator then partners with service provider(s) to provide free internet access to participating content providers, for the subscribers of those service providers.*"

⁴ See <http://www.trai.gov.in/WriteReadData/userfiles/file/NTP%202012.pdf>

internet experience available through browsers on personal computers. But this difference in the free, open and secure nature of the internet between what is possible over mobile phones and on personal computers via browsers will be further exacerbated. At the moment, users atleast have a choice amongst a range of applications, notwithstanding the barriers app stores and 'rating' of apps pose.

- Consumer behaviour is shaped by first-movers and switching costs for consumers will be high

Any regulation aimed to benefit a billion people should improve awareness of the benefits of a free, open and secure Internet. For users of data packs, this means the awareness of 'the ability to connect, consume, create, collaborate and correct (content)— all in equal measure'⁵, and not be limited to passively consuming certain popular services.

Introducing new users to a limited set of websites/applications makes them likely to be reluctant to switch to a competitor. This is the nature of a lot of applications and services on the internet. This is to a certain extent even true of mobile phone numbers, where there are costs in switching to other network providers. So even in markets with sufficient competition, content providers who are first movers would have an advantage over the late-comers and winners could be decided dependent on who the dominant TSPs tie up with.

- Making TSPs or platform entities gatekeepers would have serious implications for freedom of speech

In many parts of the world including in India, mobile internet has played a big role in active citizenship and has facilitated people's political participation. If TSPs or platform entities are gatekeepers to a large number of persons of similar demographic, there is a real possibility of blocking certain kinds of news media or content when it suits the TSP/platform entity to do so. The existence of such points of control is itself a matter of concern. This has precedent in different parts of the world. During a labour dispute in 2005, members of the Telecommunications Union in Canada were unable to access a website

⁵ See <https://medium.com/hacks-hackers-africa/taking-free-basics-in-kenya-for-a-spin-87d2a6e9e5a0>

disseminating the union's views because the ISP Telus had blocked access to it.⁶ Such situations could be worse with vague and opaque participation guidelines.

Classifying differentially priced data packs on the basis of pre-decided criteria is better than deal-based differential pricing, but would still not be desirable as that kind of information control would make the data services available only marginally better than pre-existing cable TV networks. This also runs the risk of treating consumers differently from service or content providers by assuming that consumers cannot also provide content or services, which may actually sanction network operators to reduce the choices available to consumers as well as undermining the empowering potential of the Internet for its users.

B. Price discrimination affects innovation

Regulation should seek to incentivise, and not disincentivise innovation towards lower-bandwidth applications. By TSPs precluding service types like VoIP, development of lighter VoIP applications are discouraged as they would still threaten the TSP's revenues. Further, incentives for start-ups and existing businesses to build services specifically targeted at those with limited bandwidth would also be affected, as they could instead acquire this consumer base by tying up with TSPs to be on differentially priced cheaper platforms.

Having a level playing field and non-preferential treatment also encourages new users to contribute content apart from being passively consumers of the internet, leading to innovation that understands local needs. A seamless experience that the Internet currently provides, encourages exploration and discovery on the part of users as well as furthers innovation on the part of business, the social sector and government.

Further, if the target population for zero-rated packs are indeed low-income groups including illiterate parts of the population, local language material consumable through the medium of videos should not be discouraged, but worked around.

While it is reasonable to expect that new users of differentially priced data packs would find value in paying for access to the wider open internet and eventually pay and get out of the price differentiated packs and walled gardens, there is a likelihood that a large portion of the Indian population would not be able to afford the larger

⁶ See www.publicknowledge.org/pdf/pk-net-neutrality-attach-20060206.pdf

internet and access it. TSPs would likely increase prices of all-access packs if 'altruistic' and 'access-boosting' motivations are all located in cheaper or zero-rated packs.

C. Price discrimination violates the principle of transparency

As price differentiation is done in the name of improving affordability for semi-literate and illiterate populations, it is important to ensure that such packs don't result in fraudulent or opaque billing of users. While TRAI can issue strict guidelines imposing penalties to TSPs/zero-rated platforms, its capacity to enforce these penalties might be diminished from the heavy regulatory burden this brings. This has previously been the case with measures taken with respect to VAS guidelines.⁷ However, transparency is important not only in the context of billing, but also important when it comes to terms of use and data protection. In a model where users are not charged money for the data they consume, platforms curating the menu of websites and services can be expected rely on harvesting user data from consumer acquisition, and this often happens under extremely non-consensual and opaque ways.

In conclusion to the question, in the interest of consumer protection and competitiveness and innovation in the internet ecosystem, differential pricing should not be allowed. There is a lot of room for mis-leading policies and disingenuous, surreptitious prioritisation of content and applications. Neither TSPs nor platform entities should be allowed to indulge in price discrimination.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

A: As explained in the response to Q. 1, the very nature of vesting carriers with power to determine what the suite of applications would contain is discriminatory and the sustainability of such endeavours is premised on lack of transparent terms of access, as the harvesting of user data and behaviour is what the applications would be after.

While certain services would be affordable to access, the benefits of a free and open internet would be lost. Competition and market entry would be compromised, and input costs for new application providers would be higher. Besides, only commercially

⁷ See <http://www.medianama.com/2015/03/223-trai-regulations-on-vas-need-more-teeth-amba-kak/>

oriented services would reach the users of such services. Innovation, especially in the area of creating lighter and affordable technologies for access would be disincentivised.

The principles that TRAI aspires to uphold are all at the risk of being compromised.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

A: There are alternative methods, technologies and business models through which the problem of affordable access can be tackled, without compromising on the free, open and secure nature of the internet.

- Earned data/equal rating

As explained by the Alliance for Affordable Internet⁸, earned data is where “*instead of directly purchasing data, the user receives data in exchange for performing some action. Such actions include , completing surveys, or other marketing services on certain apps. It can also include purchasing specific services or handsets from carriers. Typically, this data can be used to access any site or service, though in some cases the data is only to be used for a specific site.*”

Grameenphone, in partnership with Mozilla provides 20MB of free data each day for customers who purchase a Symphony handset and use the Grameenphone app Wowbox.⁹ This is an example of a business model that can be sustainable in lowering data costs for users.

Gigato is an app offering in India that offers data rebates to upon using particular apps for a certain amount of time.¹⁰ Apps like mCent let users earn data in exchange for completing surveys, watching videos or contributing to other marketing-related activities.¹¹

⁸ See <http://a4ai.org/the-impacts-of-emerging-mobile-data-services-in-developing-countries/>

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

Content providers who can afford to spend such promotional costs have an advantage over their competitors who cannot afford this input cost. However, in giving a rebate of free data to browse as the user pleases, the harm of walled gardens is eliminated. Unlike classic price differentiation, equal rating would not work to obfuscate awareness of the internet as a medium also for decentralised alternatives to platforms and corporations.

- Spectrum use

Efficient use of spectrum by regular audit of spectrum usage and de-licensing additional frequency bands for use in backhaul would help in the goal of providing wider access to the internet. These reforms have also been on the cards for a while as recorded in the National Telecom Policy 2012.

The use of white spaces should be promoted without causing harmful interference to the licensed applications in specific frequency bands.

The ultimate profitability of TSPs should not be a value against which all other values are measured. At a time when numbers indicate that profits of telcos are increasing and 100 million users have come online in the last year¹², these factors should be considered before accepting claims by telecom companies that they need more incentives to build better infrastructure.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

A: Although it might be beyond TRAI's mandate, options like utilising the Universal Service Obligation Fund for providing capped data packs in the form of direct benefits might be more suited to solve the problem of wider access to the internet and deserve serious consideration by appropriate authorities.

¹² See <https://twitter.com/rsprasad/status/682130503688794112>

2.3.31 IPRG ICT Policy n Research Group

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TRAI Consultation Paper No. 8 / 2015 on Differential Pricing for Data Services, dated 09 December 2015

Response by IPRG - ICT Policy & Research Group

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TRAI Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 1:

Yes, differential pricing for data usage for accessing different websites, applications or

platforms should be permitted. Differential data pricing and /or Zero Rating schemes have numerous benefits for consumers, telecom operators, and content providers.

Differential Data Pricing and Zero Rating schemes permit optimization of scarce resources and greater consumer choice, especially for consumers at the “Bottom of the Pyramid”. Zero Rating schemes are especially beneficial in “Connecting the Unconnected”, and getting non-users to try out the internet without incurring costs or getting bound in long-term contracts.

There are numerous Differential Pricing / Zero Rating Schemes in operation in the world, with approximately 45% of telecom operators / internet service providers worldwide offering one or more Zero Rated schemes. Several African operators have been offering such schemes since 2010. In the U.S., T-Mobile offers its data plan subscribers zero-rated access to more than 25 online music services, including iHeartRadio, Pandora and Spotify.

Most European countries do not prohibit Differential Pricing or Zero Rating Schemes; the only exceptions being Netherlands, Finland, and Slovenia. The European Union voted on this issue in October 2015, and resolved not to prohibit Zero Rating schemes. USA does not prohibit Zero Rating schemes, but examines them on a case-by-case basis.

There is a lot of misconception among the public about Zero Rating schemes. In economic theory parlance, these are not Zero Sum Games, but instead, are complex games in Multi-Player Optimization in Dual Markets or in Multiple Markets.

There are three classes of players in this complex Multi Player Optimization Game:

- 1) Access (Telecom) Service Providers / Internet Service Providers. {Such as, but not limited to, Airtel, Vodafone, Idea, Reliance, Tata, Aircel, BSNL, MTNL, etc.}
- 2) Consumers, who access the internet via the Telecom Service Providers. These consumers can again be subdivided into (i) high data users, (ii) low data users, and (iii) those who do not yet have access to the internet. This last category could be brought online through suitable incentives such as zero rated schemes.
- 3) Content providers {Such as, but not limited to, Social Networking sites such as Facebook, Google+, Twitter, YouTube; Email service providers and search engines such as Yahoo, Hotmail, Google; E-Commerce sites such as Amazon, Flipkart, Snapdeal; Messenger Services such as WhatsApp; Yahoo Messenger; websites of newspapers, etc.}

The consumers pay subscription fees (such as per MB or per GB, pre-paid or post-paid, under various data pack schemes) to the telecom access providers in order to access content provided by the Content providers.

The content providers earn their revenues from advertisements and / or from subscription fees.

The content providers may - or may not - enter into commercial arrangements with the Telecom Service Providers.

A further complication is that content providers, in some cases, deal directly with end customers, such as by offering them coupons for discounted or free products or services.

In multiple-player games / markets, it is often in the interest of one category of players to either partially or wholly subsidize another category of players.

Consider the analogy of a newspaper, its readers, and its advertisers, which is a Dual Market.

Readers purchase the newspaper, paying a price to the newspaper.

Advertisers advertise in the newspaper, paying an advertisement fee to the newspaper.

Thus, the newspaper collects revenues from both readers and advertisers. But the demand / price elasticities of these vary greatly.

The advertisement rates are determined by the number of readers, as well as by the quality of the readership.

In almost all instances, the larger the number of readers, the higher are the advertisement fees that the newspaper can command from its advertisers.

In almost all instances, the larger the number of readers, the greater is the benefit to the advertisers.

The newspaper can increase its number of readers by lowering its subscription price, or even giving it away for free (Analogous to Zero Rating).

The increase in the number of readers enables the newspaper to command a higher advertisement fee from its advertisers.

Even though the advertisers pay more to the newspaper, the benefits they obtain from reaching a larger audience far outweigh the increased advertising fees they pay to the newspaper.

The question that can be raised is that if a particular newspaper can give its copies away for free, that it may succeed in driving other newspapers out of the market, who may not be able to match its free offer. However, in a competitive market such as India, with ease of entry, this would not be a major consideration. There is nothing to prevent other competing newspapers from following the same strategy.

The benefits / value to society as a whole would be maximized by having:

A large number of newspapers, each with a large number of subscribers, who pay little to nothing.

A large number of advertisers, advertising in numerous newspapers.

Low barriers to entry for starting a newspaper, and free competition among newspapers.

Few to no restrictions by a newspaper that an advertiser can advertise only in it, and not in competing newspapers.

Few to no restrictions that a newspaper can reject an advertiser who is willing to pay the advertising fees it demands.

Advertising rates to be determined by market forces.

The questions posed in this TRAI Consultation paper are analogous to the above newspaper-reader-advertiser analogy.

Zero Rating Schemes

IPRG believes that zero rating programmes offer efficient means of enhancing the economic well being of consumers in the telecom and information technology markets. These help expand the market, and are particularly beneficial in emerging markets and low penetration markets where there is a large population of uninitiated and new users. Therefore, while regulators should monitor market practices, it is important to realize the any broad bans or restrictions on zero rating schemes are quite likely to harm consumer welfare significantly.

It is further to be noted that the banning of zero rating would result in the poor and developing nations blocking sure avenues of growth and prosperity. The people and businesses who need the internet the most would be the greatest sufferers as they would be prevented from harnessing the internet. Telecom and IT are well established to have very high power of externalities and for providing connectivity-derived benefits through multiplier effects, greatly lowering transaction costs and transaction times, and increasing the velocity of business.

IPRG recommends that Indian content providers be provided incentives to develop Zero Rated public service content in local Indian languages, such as health information, agricultural information, legal information, etc.

The above views held by IPRG have also been expressed by Jeffrey A. Eisenach, NERA

Economic Consulting, USA, as well as by Diana Carew, The Progressive Policy Institute (PPI), USA.

Reference: The Economics of Zero Rating, by Jeffrey A. Eisenach, NERA Economic Consulting, National Economic Research Associates Inc., USA, March 2015.

Reference: Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries, by Diana Carew, The Progressive Policy Institute (PPI), Washington, DC, USA, March 2015.

TRAI Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 2:

The IPRG believes that all consumers should have the ability to access any lawful content they desire, without any restrictions or hindrances. Operators should not be permitted to deliberately prevent access to any lawful content, nor to intentionally throttle access speeds of content they 'dislike'.

IPRG recommends that operators should be required to submit to TRAI their consumer tariff schemes as well as their arrangements / contracts with content providers. TRAI should monitor tariff plans to ensure that consumer interest is kept paramount, and that dominant platforms do not unduly take advantage of their dominant market share, and / or their gatekeeper status.

Even though courts in several countries have held in numerous instances that exclusive commercial arrangements or differential pricing are not necessarily illegal or discriminatory, IPRG recommends that exclusive agreements between operators and content providers should be scrutinized carefully by TRAI. This oversight is especially required in the case of content belonging to or created by the telecom operator / ISP.

IPRG recommends that telecom operators / ISPs be strongly encouraged to zero rate government services, public interest services, health services, weather information, disaster information, etc.

IPRG recommends that Affirmative Action Incentives could also be provided for development of zero rated content from India, in local Indian languages, or those developed by disadvantaged members of society.

In the event that there is *prima facie* evidence that dominant platforms or operators are taking undue advantage of their gatekeeper status or dominant market position, the matter can be examined by the Competition Commission of India.

At present, there is not enough empirical evidence from anywhere in the world that operators are abusing their “gatekeeper” positions to the detriment of either consumers or of competing platforms.

TRAI Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

No Response

TRAI Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 4:

The focus of the government should be to bring as many Indian citizens online at as low a tariff as possible. According to a World Bank study (which has been endorsed by ICRIER), a 10% increase in broadband penetration will lead to a 1.5% increase in GDP.

The Indian government should concentrate on building infrastructure, encouraging

the rollout of mobile broadband networks, and on providing government services, public interest services, health information, disaster relief information, weather information, etc. These should be provided at zero cost by operators to the public at large.

The issues of tariffs, especially Zero Rating Schemes, are best left to market forces.

If there is *prima facie* evidence that an operator is taking advantage of its dominant market power, the matter can be examined by the Competition Commission of India.

Concerns have been raised among the public and in the media that Zero Rating schemes will restrict freedom of expression in that people will believe that a few sites constitute the entire internet. Also, there has been speculation in the media that Zero Rating schemes would not allow small Indian online start ups to compete with corporations who are on Zero Rating platforms.

IPRG believes that both these concerns are totally misplaced. The Indian market is characterized by a large number of telecom operators / ISPs, and is arguably one of the most fiercely competitive in the world. Further, there are numerous sources of information, news, views, and opinions easily accessible in India in terms of websites, television channels, newspapers, magazines, etc.

In fact, in numerous countries, Zero Rating schemes have enhanced freedom of expression rather than curtailed it. The most popular Zero Rated content tend to be social networking platforms (such as, but not limited to, Facebook, Twitter, Wikipedia, YouTube, etc.) where subscribers are also content creators simultaneously. The evidence from political movements in several countries (such as Arab Spring) is that zero rating of social media platforms greatly expands freedom of expression and political freedom.

These above viewpoints of IPRG have also been expressed by Jeffrey A. Eisenach, NERA Economic Consulting, USA.

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- 1) Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries, by Diana Carew, The Progressive Policy Institute (PPI), Washington, DC, USA, March 2015.
- 2) The Economics of Zero Rating, by Jeffrey A. Eisenach, NERA Economic Consulting, National Economic Research Associates Inc., USA, March 2015.
- 3) ZERO RATING - Do hard rules protect or harm consumers and competition? Evidence from Chile, Netherlands and Slovenia, by Roslyn Layton, Center for Communication Media and Information Technologies, Aalborg University, Copenhagen, Denmark, and Silvia Elaluf Calderwood, London School of Economics, UK. August 15, 2015.

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2.3.32 Center for Democracy and Technology

January 7, 2016

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Dear Ms. Kotwal:

The Center for Democracy & Technology thanks the Telecom Regulatory Authority of India (TRAI) for initiating its consultation on differential pricing for data services. The attached paper, *Zero Rating: A Framework for Assessing Benefits and Harms*, discusses a range of zero-rating arrangements and considerations for evaluating their potential effects on the open Internet, broadband adoption, and related policy goals. Although the paper does not deal exclusively with zero rating in India, we hope TRAI finds the paper helpful in its very important inquiry into differential pricing.

Please let us know if you have any questions or need any further information.

Sincerely,

Erik Stallman
General Counsel and Director, Open Internet
Center for Democracy & Technology

ZERO RATING: A Framework for Assessing Benefits and Harms

EXECUTIVE SUMMARY

Discussions around zero rating settle into three basic positions on whether and under what circumstances network operators should be permitted to exempt certain Internet traffic from otherwise-applicable usage-based pricing. Opponents of zero rating maintain that discriminatory pricing of different types or sources of Internet traffic violates net neutrality's core tenet of content and application agnosticism and therefore should be prohibited. Proponents hold that zero rating is an efficient form of price discrimination that benefits network operators, edge providers, and users by lowering costs and providing incentives to "get online." Between these perspectives is a view of zero rating as a commercial arrangement in varying degrees of tension with net neutrality, but that nonetheless may confer benefits that outweigh the potential harm caused by this tension.

This paper proposes a framework for advancing the discussion of this middle ground. It approaches zero rating in a manner similar to other key questions in implementing and applying net neutrality laws and regulations, such as network management, usage-based pricing, or specialized services that rely on the same infrastructure as the "public" Internet while serving a separate function. Answering these questions often takes a multi-factored and fact-specific approach. Drawing in part from those approaches, the framework sets forth factors to help determine whether a specific arrangement conveys potential benefits and minimizes inconsistency with or harm to net neutrality such that, on balance, the arrangement benefits users of the open Internet.

Part One of the paper defines zero rating and discusses its connection to metered data plans. This paper focuses on zero rating in the context of mobile broadband, where the justifications for usage-based pricing are clearer than in the fixed wireline context, and where the practice is more ubiquitous. Part Two provides a brief overview of zero-rating arrangements, construing the term broadly to include nearly any agreement or unilateral action by which certain traffic is exempted from otherwise applicable metered pricing.

Part Three discusses zero rating's relationship to net neutrality and broadband adoption. In some circumstances, zero rating and other exemptions from usage-based pricing may resemble other departures from a strict understanding of net neutrality that are permitted because they inflict negligible harm on the open Internet's end-to-end content and application agnosticism while providing meaningful benefits. Although zero-rating arrangements may supply a number of "spillover" benefits, from a broadband policy perspective the most compelling justification for any departure from a policy of nondiscrimination is increased broadband adoption. There is a strong case to be made for zero rating as a tool to spur interest in and adoption of broadband Internet access, but fully evaluating that case will depend on more comprehensive data than currently available.

Part Four proposes a framework for evaluating zero rating's impact on the open Internet and broadband adoption by looking both to a specific zero-rating arrangement's influence on edge providers and users, as well as attributes of the broadband market in which that arrangement is offered. With respect to edge providers, the overriding concern is the potential for market distortion as edge providers are either excluded from preferential arrangements or coerced to modify their content and services to benefit from them. Thus, whether arrangements are exclusive (particularly exclusive to affiliates of the network operator), sponsored, or limited to particular sources or types of content and applications are all highly relevant considerations. For users, the ability to maintain the control of the content and services they access or create via the Internet is the overriding consideration. User choice in selecting zero-rated content, the availability and cost of metered content, and the transparency of zero-rating arrangements are significant factors in determining whether zero rating can spur broadband adoption and access to the open Internet. Finally, whether zero rating will serve as an on-ramp to "full" Internet access or a roundabout of curated offerings that users exit only at great effort and expense, if at all, depends on some fundamental attributes of the broadband market: existing levels of adoption and deployment, competition, and digital literacy and education.

Many of these factors are interdependent. For example, highly competitive markets are likely to have lower costs and more choice for Internet access generally. Accordingly, the paper does not specify an "approved" zero-rating arrangement or particular terms that would insulate it against scrutiny. However, the paper offers general recommendations about zero rating and its relationship to net neutrality and broadband adoption:

- Exclusive or affiliate-only arrangements should not be undertaken;
- Sponsored data arrangements should be disfavored;
- Eligibility to participate in a zero-rating arrangement should not depend on degrading security or sacrificing user privacy;
- Both the edge provider-facing and user-facing terms of zero-rating arrangements should be transparent;
- Zero rating as a broadband adoption strategy should be accompanied by both technical assistance for edge providers and digital training and education for users; and
- Regulators should clarify the terms and process by which they will assess zero-rating services.

The Center for Democracy & Technology hopes this framework contributes to the broader discussion of the potential benefits and harms of zero rating. At the same time, the lack of comprehensive data on zero rating's relationship to user behavior and broadband adoption cramps that discussion. The paper thus concludes with a series of proposed research questions that may advance our understanding of zero rating's relationship to net neutrality and broadband adoption, and more fully inform the policy choices that flow from it.

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Introduction

The 2014 Internet Governance Forum (IGF) featured one panel on zero rating. It was lively and substantive, with panelists and intervenors raising significant questions about the asserted benefits and harms of zero rating. The 2015 Internet Governance Forum featured at least six separate panels where zero rating was at issue, including the plenary session. Zero rating is attracting increased attention as both a business practice and a matter of regulatory interest with regard to its potential effects on many different players in the Internet ecosystem, the Internet itself, and broader questions related to both Internet access, adoption, and economic opportunity.

Zero rating has been cast as both an existential threat to the open Internet¹ and a near-guaranteed means of kick-starting broadband deployment and adoption to bring about a “high connectivity equilibrium” in developing markets.² The Center for Democracy & Technology’s (CDT) perspective lies between these two ends of the spectrum. Zero rating—a commercial arrangement among network operators and edge providers³ under which some of a user’s traffic “costs” or “counts” and some does not—deviates from a strict understanding of net neutrality, under which all traffic is treated equally. At the same time, whether zero rating can coexist with an open Internet, and whether benefits of zero rating outweigh its harms, are context-specific inquiries.

The purpose of this paper is to provide a framework for conducting those inquiries in the context of mobile broadband service. It identifies a number of plan-specific factors (such as exclusivity and transparency) and external factors (such as market conditions) that may be helpful in examining zero-rating plans. As a general matter, the more “open” a zero-rating arrangement is in terms of provider participation and customer access, the less likely it is to distort specific markets for edge providers, interfere with user choice, or harm Internet openness generally. External factors also help determine the potential benefits and harms of zero rating. For example, in areas where broadband adoption rates are low, zero rating may play a greater role in spurring broadband deployment, adoption, and use. But where there is little facilities-based competition or regulatory oversight, the potential harms to consumer choice and innovation are greater.

¹ Susan Crawford, *Zero for Conduct*, Backchannel (Jan. 7, 2015), <https://medium.com/backchannel/less-than-zero-199bcb05a868?curator=MediaREDEF#.ak5e90155>.

² Diana Carew, *Zero Rating: Kick-starting Internet Ecosystems in Developing Countries*, Progressive Policy Institute (March 2015), available at http://www.progressivepolicy.org/wp-content/uploads/2015/03/2015.03-Carew_Zero-Rating_Kick-Starting-Internet-Ecosystems-in-Developing-Countries.pdf.

³ The term “edge provider” refers to “content, application, service, and device providers because they generally operate at the edge rather than the core of the network.” Preserving the Open Internet, *Report and Order*, 25 FCC Rcd 17905 (2010). An end user is typically understood to be a consumer of edge provider offerings but can certainly be an edge provider in her own rights.

While this paper proposes specific recommendations for zero-rating arrangements (such as non-exclusivity), any assessment of zero rating programs must acknowledge the limited information available about their impact on adoption, user behavior, and metered substitutes. The more information and hard data we have about zero-rating regimes already in place, the easier it will be to assess current and future harms and benefits. The paper thus concludes with several research questions that may lead to a better-informed discussion of zero rating.

1 Zero Rating and Usage-Based Pricing

1.1 A Working Definition of Zero Rating

Zero rating has been defined as both an industry practice and a description of the content and services made available pursuant to that practice. Two recent papers exploring zero rating define the term as “the practice of not charging data to a mobile broadband subscriber’s contract,”⁴ or as the “services that do not incur data costs and are exempt from data usage counts[.]”⁵ Similarly, this paper uses the term *zero rating* broadly to refer to both commercial arrangements and unilateral decisions by network operators pursuant to which Internet Protocol (IP)-delivered traffic is exempted from usage-based pricing.

Implicit in many definitions of zero rating is the assumption that some IP-delivered traffic is metered or subject to caps and overages from which the zero-rated traffic is exempt. But this will not always be the case. Some mobile providers offer a fixed set of services without requiring customers to subscribe to a data plan giving them access to the broader or “public” Internet.⁶ Such arrangements present slightly different potential benefits and harms than zero-rating arrangements that exempt certain traffic from usage-based pricing tied to a subscriber’s data plan. In the latter case, zero rating will tend to influence a user’s choices among different content sources or destinations on the Internet. However, when a consumer does not have broadband Internet access, but can access only a subset of zero-rated content or services, zero rating more closely resembles a

⁴ Roslyn Layton & Silvia Elaluf Calderwood, *Zero Rating* 2 (Aug. 15, 2015) (“Layton and Calderwood”), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587542.

⁵ Carolina Rossini & Taylor Moore, *Exploring Zero Rating Challenges: Views From Five Countries* 1 (July 2015) (“Rossini and Moore”), available at: https://www.publicknowledge.org/assets/uploads/blog/Final_Paper-Jul_28-TM.pdf.

⁶ See Reliance’s “Freenet” information at: <http://www.rcom.co.in/Rcom/personal/internet/internet-org.html>. Also note that the paper will use the term “Internet access” to mean “Broadband Internet Access Service” as defined in Protecting and Promoting the Open Internet, *Report and Order on Remand*, 30 FCC Rcd 5601 ¶ 187 (2015) (“Open Internet Order”) (“A mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service.”)

“specialized service” that offers something less than full Internet access, but relies on the same infrastructure to provide it.⁷

1.2 Metering, Caps, and Overages

Usage-based pricing, whether through metered data or a combination of data caps and overage charges, is the *sine qua non* of zero rating. A provider can offer zero-rated content and services without offering broadband Internet access, but zero rating with truly unlimited broadband would make little sense. In the absence of some form of usage-based pricing, all traffic is effectively zero-rated with no need for an agreement with or affirmative action by the carrier.

Usage-based pricing can take many different forms: metered data usage, data caps and overage charges, or hard data caps that lead to either throttling or loss of access after they are exceeded. The one commonality across all forms of usage based pricing is that, absent a zero-rating arrangement or action taken by the carrier, sending or receiving Internet traffic has a cost associated with it. This cost can come in the form of prepayment for a set allotment of data usage, pay-as-you-go metered usage, or the combination of a fixed cap for data usage, along with a cost or penalty associated with exceeding that cap.

Usage-based pricing has been justified as a way to manage and prevent network congestion and, more persuasively, as a way to recover the costs of building and operating broadband networks from “heavier” users of those networks who place a higher value on their broadband service. Usage-based pricing has also been roundly criticized for creating artificial scarcity on broadband networks.⁸ Critics contend that this artificial scarcity deters Internet use generally, as users ration their online activity to reduce or avoid costs.

A detailed assessment of the relative merits and drawbacks of usage-based pricing is outside of the scope of this paper. However, given that usage-based pricing is a more common practice in wireless than wireline networks, and on wireless networks has a clearer (though not unproblematic) connection to legitimate network management interests, this paper focuses on zero rating in the mobile environment. As usage-based pricing becomes more ubiquitous in the mobile environment, carriers will increasingly consider different exemptions, including zero rating.

⁷ Neither the FCC’s Open Internet Order, *supra*, n.6, nor the European Union’s Telecom Single Market Regulation (Council Regulation 2015/2120 (Nov. 25, 2015) O.J. (L 310/1)) defines “specialized services,” but both distinguish Internet access from services that use the same infrastructure but neither provide nor substitute for Internet access.

⁸ Danielle Kehl & Patrick Lucy, *Artificial Scarcity: How Data Caps Harm Consumers and Innovation* (June 2015), available at https://static.newamerica.org/attachments/3556-artificial-scarcity/DataCaps_Layout_Final.a7ef6b9029da4dd29324757e5710b903.pdf.

2 Overview of Zero Rating Arrangements

There are at least as many arrangements offering relief from usage-based pricing as there are usage-based pricing methods. Some studies classify these arrangements according to which party “initiates” or “sponsors” the arrangement.⁹ Other studies classify arrangements according to how a mobile device owner obtains unmetered data.¹⁰ Given the diversity of plans and the difficulty of assessing the business relationships therein, this focus on zero rating and similar data cap exemptions from the user’s perspective is a useful one. The following overview of zero-rating plans generally follows that approach, starting with those plans involving the lowest user-investment thresholds. It is by no means exhaustive and some arrangements fall in more than one category. However, this list presents the most common and commonly discussed forms of zero-rating arrangements.

2.1 No Purchase Necessary

Zero-rating arrangements in which users may obtain unmetered access to IP-delivered applications, content, or services without purchasing a data plan from the carrier, requiring only a functional device and an active SIM card, are some of the most discussed instances of zero rating. While it is the network operator, not the edge provider, that elects to zero rate the application or content, some edge services have been designed in part for inclusion in zero-rating arrangements, including those offered without accompanying Internet broadband access (although they are available to broadband subscribers as well). Examples include:

- **Free Basics by Facebook.** Free Basics (formerly Internet.org) is a zero-rated platform created by Facebook to promote mobile Internet access and Facebook usage in developing markets. Free Basics is currently available in 32 countries.¹¹ In addition to Facebook’s own applications, Free Basics provides access to any third-party websites and applications that comply with

⁹ See, e.g., Jeffrey A. Eisenach, *The Economics of Zero Rating* 2 NERA (March 2015) (“Eisenach”), available at <http://www.nera.com/content/dam/nera/publications/2015/EconomicsofZeroRating.pdf>.

¹⁰ See Alliance for Affordable Internet, *The Impacts of Emerging Mobile Data Services in Developing Countries Research Brief No. 1: Models of Mobile Data Services in Developing Countries* (Nov. 2015) available at: http://1e8q3ql6vyc8l1g8l3h3md6q5f5e.wpengine.netdna-cdn.com/wp-content/uploads/2015/11/MeasuringImpactsofMobileDataServices_ResearchBrief1.pdf.

¹¹ Internet.org, *Where We’ve Launched*, <https://info.internet.org/en/story/where-weve-launched/> (last visited Nov. 30, 2015). Free Basics was recently suspended in both India and Egypt, although for different and, in the case of Egypt, unspecified reasons.

the platform's technical and participation guidelines.¹² Those guidelines include file size limitations and other restrictions (such as disallowing VoIP or video) that permit the service to run on low-bandwidth connections. In Cambodia, for example, Free Basics provides access to Dictionary.com, Wikipedia, Bing, and government and nonprofit websites.¹³ Free Basics also allows users to comment and upload user-generated content subject to similar application and file-size limitations. Traffic to and from those partners is routed through Facebook proxy servers. Unless an edge provider specifies otherwise, Facebook encrypts traffic between the proxy servers and end users in both directions. The traffic is temporarily decrypted on the proxy server, but Facebook stores only the domain name (not the entire URL) and the amount of data transferred.¹⁴ Facebook partners with mobile operators to integrate Free Basics into their mobile service plans. Operators zero rate Free Basics traffic for their subscribers and, as stated on Facebook's website, "developers do not pay to be included, and operators do not charge developers for the data people use for their services."¹⁵

- **Wikipedia Zero.** This application offers access to the mobile version of Wikipedia with a banner indicating that the data charges for the visit are being covered by the mobile carrier.¹⁶ Apart from the banner, the service is identical to Wikipedia's mobile application available to all subscribers. The Wikimedia Foundation has articulated a set of operating principles that participating carriers must agree to, including no exchange of payment.¹⁷ Carriers like DigiCel offer Wikipedia to subscribers without data plans.¹⁸

2.2 Included with Data Plan

Some network operators offer zero-rated access to select services along with the purchase of certain data plans or packages. The data included in these deals may be voluntarily covered by the carrier or sponsored by an edge provider. Examples include:

¹² See Internet.org, *Participation Guidelines*, <https://developers.facebook.com/docs/internet-org/participation-guidelines>.

¹³ Valencia Toh, *Free Basics by Facebook Is Now Available in Cambodia*, Geeks in Cambodia (Oct. 28, 2015) <http://geeksincambodia.com/free-basics-by-facebook-is-now-available-in-cambodia/>.

¹⁴ Internet.org, *Enhancing Security and Privacy of Free Basics*, (Sept. 24, 2015), <https://info.internet.org/en/2015/09/24/enhancing-security-and-privacy-of-free-basics/>.

¹⁵ See Internet.org, *Platform*, <https://www.internet.org/platform>.

¹⁶ See Wikimedia Foundation, *Wikipedia Zero*, https://wikimediafoundation.org/wiki/Wikipedia_Zero.

¹⁷ Wikipedia Zero Operating Principles,

https://wikimediafoundation.org/wiki/Wikipedia_Zero_Operating_Principles.

¹⁸ See Digicel, *Wikipedia at Zero Cost*, <http://www.digicelgroup.com/aw/en/mobile/great-deals/wikipedia.html>.

- **T-Mobile Music Freedom and Binge On.** Mirroring the offer previously implemented by the company in Europe, in 2014 T-Mobile implemented in the U.S. a program offering unlimited music streaming from services like Pandora, iHeartRadio, iTunes Radio, and Rhapsody that does not count against the user’s data allowance. Users may suggest other music streaming platforms they would like to see added to the program.¹⁹ Recently, T-Mobile added “Binge On,” a similar arrangement for certain streaming video providers.²⁰ Edge providers do not compensate T-Mobile for inclusion in the program, but they must meet certain technical requirements, including offering a lower-resolution version of streamed video than in their native applications.
- **AT&T Sponsored Data.** Under this arrangement, “data charges resulting from eligible uses will be billed directly to the sponsoring company” rather than to the user incurring the charge.²¹ AT&T’s current list of sponsored data providers include both application providers like KINGSOFT Office and companies like Aquto, that manage sponsored data and data rewards plans for third-party application providers.²²
- **Opera Sponsored Web Pass.** Opera Web Pass is a third-party service that helps mobile carriers package, price, and market broadband service. The “Opera Mini” browser is designed for mobile networks and compresses Internet content by as much as 90 percent, allowing carriers to provide mobile broadband even if they face significant capacity constraints.²³ Among the content available via the browser, Opera’s “Sponsored Web Pass” facilitates sponsored zero-rating arrangements between carriers and third parties.

2.3 Earned Data: Rewards for Interaction with Sponsored Traffic, Data Plan Required

Certain arrangements between carriers and application providers give users data “rewards” or “credits” for engaging with certain content. Users can apply these credits to Internet traffic to or from any source accessible via that carrier’s network. Some of these

¹⁹ See T-Mobile, *T-Mobile is Setting Music Free*, <http://www.t-mobile.com/offer/free-music-streaming.html>

²⁰ See T-Mobile, *Introducing Binge-On*, http://www.t-mobile.com/offer/binge-on-streaming-video.html?icid=WMM_TM_Q415BNONGONU_MA7S1MSR1S93355.

²¹ See AT&T, *AT&T Introduces Sponsored Data for Mobile Data Subscribers and Businesses*, <http://www.att.com/gen/press-room?pid=25183&cdvn=news&newsarticleid=37366&mapcode=> (“AT&T Sponsored Data”).

²² A list of AT&T Sponsored Data Providers can be found at <http://www.att.com/att/sponsoreddata/en/index.html#tab2>.

²³ See Opera, *Opera Mini for Operators*, <http://www.operasoftware.com/products/operators/opaer-mini>

arrangements involve the carrier working directly with the advertiser, whereas others place a third party between the carrier and the edge provider to manage the service and relationship. These arrangements also may involve sponsorship by a party other than the carrier. Some examples include:

- **AT&T Data Perks.** In 2015, AT&T presented a zero-rating offer that rewards subscribers with general-purpose data when they sign up for services, view advertising, download new apps, or purchase something at an e-commerce site. These data rewards, which may be used to access any Internet-delivered content or service, accumulate in users’ “Data Perks” accounts and may be transferred into their AT&T wireless account anytime. Some advertisers pay a third-party for delivering ads, and that party then pays AT&T for the mobile data awarded to customers.²⁴
- **Gigato.** This India-based application provider monitors users’ interaction with a suite of partnering applications and rewards users by depositing data rewards directly into their carrier accounts, based on how long they engage with the partner apps.²⁵ The Gigato app also features a “discovery stream” that displays promotions for partnering applications that are not downloaded on a subscriber’s phone. The platform is open to any and all applications and network operators. At least eight application providers have joined Gigato, including social networking and music streaming services.

2.4 Combined with Other Services and Products

Rather than coupling zero-rated data with the purchase of a SIM card or select data plans, some device and service providers subsidize the use of mobile data combined with their product or service. In these cases, zero rating serves to make the device or service more attractive or valuable to the consumer. Examples include:

- **Amazon Whispersnet.** This wireless 3G network features many of the same attributes as sponsored data arrangements: Amazon entered into agreements with wireless carriers to deliver content (e-books, mainly) to Kindle e-readers without the user incurring any costs or even having to sign up to a mobile data

²⁴ See AT&T, *Data Perks*, <http://www.att.com/att/dataperks/en/index.html>, see also Phil Goldstein, *Report: AT&T to launch new sponsored data program in tandem with Aquo*, Fierce Wireless (June 11, 2015), <http://www.fiercewireless.com/story/report-att-launch-new-sponsored-data-program-tandem-aquo/2015-06-11>; AT&T Sponsored data, *supra* n.21.

²⁵ See Gigato, <http://www.gigato.co/>.

plan at all.²⁶ In the United States, AT&T provides the 3G access, but access beyond the first 50 MB per month is limited to Amazon.com, Wikipedia, and the Kindle store.²⁷ Given that a typical e-book is between 1-5 MB, that service would suffice for delivering books and periodicals to a Kindle e-reader but could be exhausted quickly if used to access bandwidth-intensive content.

- **Acesso Grátis Bradesco Cellular.** Discussed at length in a recent Frost & Sullivan white paper, Acesso Gratis Bradesco Cellular is an arrangement between a major bank and mobile carriers in Brazil under which Bradesco Bank sponsors the data its customers use when conducting banking transactions online.²⁸ Here, zero rating provides an incentive for the bank's customers to conduct more of their banking activity online.

3 Zero Rating, the Open Internet, and Broadband Adoption

3.1 Net Neutrality: The Basics

At its core, net neutrality is a principle of end-to-end content and application agnosticism: in a decentralized, “neutral” network, network operators make no distinction as to the source, destination, or type of traffic that travels over their infrastructure. A commercial arrangement or unilateral action by a carrier that differentiates the treatment of Internet traffic based on its source or destination is inconsistent with that principle of agnosticism. Similarly, discrimination between certain applications or categories of applications is inconsistent with that agnosticism. Thus, for example, a chief criticism of the open Internet provisions in the European Union’s Telecoms Single Market Regulation²⁹ is the charge that the Regulation’s express allowance of different treatment for different “classes” of traffic (such as voice, video, or email) means that the Regulation neither embodies nor protects net neutrality.³⁰

Net neutrality is generally understood as a technical principle concerning action taken directly by the network operator to affect the flow of traffic across its network, but there

²⁶ See Michael Kozlowski, *How Amazon Whispernet for Kindle 3G Really Works*, GoodReader (July 9, 2014), <http://goodereader.com/blog/electronic-readers/how-amazon-whispernet-for-kindle-3g-really-works>.

²⁷ See Mari Sibley, *AT&T and Amazon Cap Kindle Whispernet*, Zats Not Funny (July 25, 2012), <http://zatznotfunny.com/2012-07/att-and-amazon-clamp-down-on-kindle-whispernet/>.

²⁸ Frost & Sullivan, *Sponsored Data: Connecting the Unconnected* 14 (2015) (“Frost & Sullivan”), available at: http://digitaltransformation.frost.com/files/2014/4128/9470/FS_WP_QUALCOMM_090215_MC-CAM_v4.pdf.

²⁹ Telecom Single Market, *supra* n.7.

³⁰ See Barbara van Shewick, *Europe is About to Adopt Bad Net Neutrality Rules. Here’s How to Fix Them.* (Oct. 22, 2015), <https://medium.com/@schewick/europe-is-about-to-adopt-bad-net-neutrality-rules-here-s-how-to-fix-them-bbfa4d5df0c8#.1ee9nt2gl>.

is no reason it should not reach commercial discrimination as well. The network operator instituting a surcharge or discount to a user for accessing particular traffic may favor or prejudice that traffic in much the same way as the network operator speeding it up or slowing it down. Moreover, some forms of discrimination involve both technical and commercial aspects. For example, paid prioritization, where a network operator accepts payment to manage its network in a way that benefits particular traffic, is technical discrimination based on a commercial arrangement. Likewise, some forms of zero rating require zero-rated applications or sites to comply with certain technical requirements.

Aside from embodying a foundational technical principle of the Internet, net neutrality also promotes other values of an open Internet, such as free expression and access to information. As CDT has previously noted, Internet neutrality requirements address the risk that network operators will distort competition and reduce opportunities for free expression online.³¹ They ensure that the Internet “continues to promote openness, innovation, and human rights as the role the Internet plays in world economies, governance and public discourse grows even larger.”³²

3.2 Net Neutrality Exceptions

Although both technical and commercial discrimination are inconsistent with a strict understanding of net neutrality, in practice both are permitted to some degree. For example, the Federal Communications Commission’s Open Internet Order contains bright-line (that is, clear, objective, and capable of *ex ante* application) prohibitions on blocking and throttling content, applications, or services, but also has an exception for “reasonable network management.”³³ That exception allows carriers to mitigate instances of sustained network congestion and address specific needs of particular network technologies.³⁴

Both the EU’s Regulation and the FCC’s Order contain flexible standards for the consideration of certain practices or agreements that do run directly contrary to bright-line prohibitions. The EU’s rule states broadly that agreements and practices “shall not limit the exercise of the rights of end-users” to “access and distribute information and content, use and provider applications and services, and use terminal equipment of their choice.”³⁵ The FCC’s Order has a somewhat more fleshed out general conduct rule against practices that “unreasonably interfere with or unreasonably disadvantage” end-

³¹ See Center for Democracy & Technology, *The Importance of Internet Neutrality to Protecting Human Rights Online* (Oct. 1, 2013), available at: <https://cdt.org/files/pdfs/internet-neutrality-human-rights.pdf>.

³² *Id.* at 2-3.

³³ Open Internet Order, *supra* n.6, at ¶¶ 15-16.

³⁴ *Id.* at ¶ 34.

³⁵ Telecom Single Market Regulation, *supra* n.7, Article 3.1-2.

user choice or “edge providers’ ability to make lawful content, applications, services, or devices available to end users.”³⁶

3.3 Net Neutrality and Zero Rating

Across jurisdictions with some form of net neutrality regulations, there is a diversity of approaches toward zero rating.³⁷ Chile banned zero-rating programs in April 2014, finding that mobile data plans with free access to social media applications like Facebook and Twitter violated the non-discrimination clause of the country’s 2010 net neutrality regulations. These regulations require that telecommunications providers “shall offer to each user an access service to the Internet or connection to the Internet access provider, in each case, that do not arbitrarily distinguish content, applications or services, based on the origin source or the property of them.”³⁸

Shortly after this decision, Wikimedia Foundation approached the Chilean regulatory authority about the ban’s effect on non-profit endeavors like Wikipedia Zero. The authority expressed that there was a clear distinction between initiatives like Wikipedia Zero and the commercial practices prohibited before, and clarified that its order was intended to ban the specific practice of bundling zero-rated social media access with voice and data plans offered at that time by local operators, but was not meant to be generalized or applied to other cases.³⁹ Thus, even outright prohibitions of zero rating have accommodated exceptions.

The FCC’s Order does not address zero rating in detail but expressly subjects sponsored data arrangements to the general conduct rule, which considers factors such as end-user control and effects on competition, innovation, investment, and broadband deployment.⁴⁰ The Order aims to permit experimentation with new commercial arrangements that may lead to more competition, user choice, and broadband investment, while ensuring that they do not harm the open Internet. That determination with respect to any particular arrangement is contextual and hard to predict. Although FCC Chairman Tom Wheeler initially heralded T-Mobile’s Binge On as “highly innovative and highly competitive,”⁴¹

³⁶ 47 C.F.R. § 8.11.

³⁷ See, generally, Rossini and Moore, *supra* n.5.

³⁸ Law No. 18168 (Ley General de Telecomunicaciones), Section 24 H a), available at: <http://www.leychile.cl/Navegar?idNorma=29591&r=2> (in Spanish).

³⁹ Yana Welinder and Carolynne Schloeder, *Chilean regulator welcomes Wikipedia Zero*, Wikimedia Blog (September 22, 2014), <http://blog.wikimedia.org/2014/09/22/chilean-regulator-welcomes-wikipedia-zero/>.

⁴⁰ Open Internet Order, *supra* n.6 at ¶¶ 139-42, 151-52.

⁴¹ John Edgerton, *Wheeler: Binge On Is Pro-Competitive, Pro-Innovation*, Broadcasting & Cable (Nov. 19, 2015), available at: <http://www.broadcastingcable.com/news/washington/wheeler-binge-pro-competitive-pro-innovation/145940>.

the FCC later issued letters to T-Mobile (as well as AT&T and Comcast) seeking further information on their zero-rating arrangements.⁴²

Importantly, the FCC's letters went to carriers, not to the zero-rated edge providers. Net neutrality protections address potential conduct by network operators who may leverage substantial control over subscribers' access to content and applications simply by virtue of the operators' ownership of the infrastructure end users rely on to reach the Internet.⁴³ Similarly, zero rating is a practice engaged in by the network operator, who ultimately decides not only whether and how to exempt traffic from data caps, but also the size of the cap, and the terms and costs of data plans. While edge providers can and should design their offerings to facilitate openness, access, and innovation, the focus of any assessment of zero rating and its effects on end users should remain on the network operator. Loss of that focus risks regulating "up the stack," prescribing the way that content and applications should be designed or offered. This poses substantial and unnecessary risks of content regulation or technological mandates that are themselves inconsistent with net neutrality and best avoided.

India does not have specific net neutrality regulation or legislation. However, the Telecom Regulatory Authority of India (TRAI) has inquired into net neutrality's relation to "over-the-top" services.⁴⁴ Most recently, TRAI issued a consultation on differential pricing for data services, seeking comment on whether it should use its tariff regulation authority to reach practices like zero rating.⁴⁵ The consultation paper does not prescribe the approach it will take to assessing differential pricing arrangements but clarifies that TRAI checks tariffing proposals to determine if they are, among other principles and guidelines, non-discriminatory, transparent, not anti-competitive or predatory, unambiguous, and not misleading.⁴⁶ Presumably, TRAI will apply these principles to zero rating arrangements as well.

3.4 Zero Rating and Broadband Access

⁴² See, e.g., Letter from Roger C. Sherman, Chief, Wireless Telecommunications Bureau to Kathleen Ham, Senior Vice President, Government Affairs, T-Mobile (December 16, 2015), available at <https://www.documentcloud.org/documents/2648554-Letter-to-Kathleen-Ham.html>.

⁴³ *Verizon v. Federal Communications Commission*, 740 F.3d 623, 646-47 (D.C. Cir. 2014).

⁴⁴ *Regulatory Framework for Over-the-top (OTT) services*, Telecom Regulatory Auth. of India Consultation Paper No. 2/2015 (Mar. 27, 2015), available at: <http://www.trai.gov.in/WriteReaddata/ConsultationPaper/Document/OTT-CP-27032015.pdf>.

⁴⁵ *Consultation Paper on Differential Pricing for Data Services*, Telecom Regulatory Auth. of India Consultation Paper No. 8/2015 (Dec. 9, 2015), available at:

<http://www.trai.gov.in/WriteReaddata/ConsultationPaper/Document/CP-Differential-Pricing-09122015.pdf>.

⁴⁶ *Id.* at 4.

Eighty-four percent of the world population has access to mobile technology, but only about half that number access the Internet.⁴⁷ In India, “about 25% of total wireless subscribers use wireless data (Internet) services.”⁴⁸ Those who have not yet begun using the Internet may face several obstacles to adoption, such as lack of network coverage, high prices for devices and access, or a perception that Internet access would have little relevance or value to them.⁴⁹ Although both devices and data plans have become significantly less expensive,⁵⁰ they remain unaffordable for many people.⁵¹ A recent study of broadband availability and adoption in rural Africa identifies as major obstacles “restrictions on the locality of access, a lack of locally relevant content, unfamiliarity with new concepts, shortage of trained personnel, high cost of Internet access, and limited connection capacity with respect to the Internet structure and content.”⁵²

From a broadband policy perspective, zero rating’s chief potential benefit lies in helping overcome these obstacles. For potential broadband adopters, zero rating may lower costs and increase relevance of broadband access, as proponents contend.⁵³ Moreover, as more people in a given market get online, the increase in the value of the network and other factors, such as lower cost and creation of relevant, local content in an accessible language may further improve adoption rates. This, in turn, may incentivize network operators to make further investments in infrastructure that leads to increased deployment, access, and adoption.

The value of free access to information, including information whose relevance may overcome certain barriers to broadband adoption, must be weighed against the risk that users with access to zero-rated content and applications will not choose—or be able—to venture beyond it. The factors laid out below represent a proposed framework for

⁴⁷ Pew Research Center, *Technology Report* (2015), available at: <http://www.pewglobal.org/2015/03/19/1-communications-technology-in-emerging-and-developing-nations/> at 13, 17-18.

⁴⁸ TRAI Consultation Paper No. 8/2015, *supra* n.45 at 5.

⁴⁹ See McKinsey and Company, *Offline and Falling Behind: Barriers to Internet Adoption*, (Sept. 2014) (“McKinsey”)

http://www.mckinsey.com/insights/high_tech_telecoms_internet/offline_and_falling_behind_barriers_to_internet_adoption (registration required).

⁵⁰ McKinsey, *supra* n.49, at 17-18.

⁵¹ International Telecommunications Union, *Measuring the Information Society Report 2014* 125-129 (2014), available at: https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2014/MIS2014_without_Annex_4.pdf.

⁵² Veljko Pejovic, et al., *The Bandwidth Divide: Obstacles to Efficient Broadband Adoption in Rural Sub-Saharan Africa*, Int’l J. of Comms, 6 (2012), available at: <http://lrss.fri.uni-lj.si/Veljko/docs/Pejovic12IJOC.pdf>; see also Kathryn Zickuhr, *Who’s not online and why*, 2 Pew Research Center (Sept. 25, 2013), available at: http://www.pewinternet.org/files/old-media//Files/Reports/2013/PIP_Offline%20adults_092513_PDF.pdf.

⁵³ See Carew, *supra* n.2. Low prices can create a “virtuous cycle” in which unit costs decrease and customer utility increases, spurring further adoption, lower prices, and more relevant content. Robert Schuman, *Lifting barriers to Internet development in Africa: suggestions for improving connectivity*, AnalysysMason Report for the Internet Society (Oct. 31, 2013), available at: <http://www.analysysmason.com/About-Us/News/Insight/Africa-Internet-development-Jun2013/>.

weighing the potential benefits of zero rating in terms of increased adoption and access to information against the potential risk that zero rating becomes a cul-de-sac rather than an Internet on-ramp.

4 Factors for Assessing Zero-Rating Programs

The following framework groups factors into those that are specific to the terms of data plans and zero-rating arrangements and those that are external and concern the overall broadband market in which network operators offer those plans to users. The plan-specific factors focus on potential barriers edge providers may face in participating in a zero-rating arrangement as well as the barriers users may face in moving between zero-rated and metered content. The external factors concern matters such as broadband availability and competition, and the digital literacy of users. For both plan-specific and external factors, user choice and avoidance of market distortion are the primary guides.

Many of these factors are interdependent and they do not always cut the same way. For example, the more edge providers that can participate in a zero-rated offering the less likely it is that zero rating will distort the market among similarly situated edge providers. At the same time, the more substitutes for metered content that are available to users via zero-rating arrangements, the less likely users may be to seek out alternatives to zero-rated content.

4.1 Plan-Specific Factors

These factors concern both the conditions that edge providers must satisfy in order to participate in a zero-rating arrangement and the terms users must meet to access both zero-rated and metered content. The first three factors concern potential barriers that edge providers may face in participating in a zero-rating arrangement while the second three focus on obstacles users may face in accessing both zero-rated and metered content.

4.1.1 Edge Providers: Exclusivity and Affiliation

By definition, all zero-rating programs exhibit some degree of exclusivity. Without some division between metered and unmetered Internet access, zero rating becomes meaningless. But zero rating is perhaps most problematic when it allows an edge provider not only to receive favorable treatment of its own content over its competitors, but also to exclude those competitors from establishing a similar preference for their own content. Particularly where the network operator offering the zero-rating arrangement has market power, an exclusive zero-rating arrangement creates a distorted playing field that forecloses competition from

existing edge providers and new entrants. Understandably, startups and venture capital firms were among the most vocal opponents of zero rating in the FCC’s Open Internet proceeding.⁵⁴

Exclusivity can be a two-way street in the sense that edge providers may choose to partner with only one or two carriers in a certain region. This form of exclusivity could lock in an incumbent carrier’s market dominance and discourage new broadband competitors from entering the market. These concerns are amplified when both the carrier and edge provider have market power. Non-exclusivity policies, which are elements of both Wikimedia Zero and Facebook’s Free Basics terms, should be a common feature for both network operators and edge providers participating in zero rating or other forms of metering exemptions.⁵⁵

Affiliation and vertical integration can raise even more troubling concerns because the network operator can leverage its control of the network to become a dominant edge provider. Brazil’s largest mobile carrier, Oi, has launched “Oi Toca Aí,” a zero-rated music app exclusively for its subscribers.⁵⁶ If that is the only the zero-rated streaming music application offered on Oi’s network, the risk of market distortion among all streaming music services in Brazil would be profound.

4.1.2 Edge Providers: Payment and Costs

Conditioning zero rating on an exchange of payment can constructively exclude resource-constrained edge providers from participating in zero-rating arrangements. Edge providers with greater bargaining strength will be more likely to receive favorable terms than their competitors and even when sponsored zero-rating arrangements are offered to all edge providers on equal terms, they will tend to favor those edge providers with greater resources. Even assuming that the cost of sponsoring data is low, sponsored data arrangements present the same “pay-to-play” concerns as paid prioritization.

⁵⁴ Comments of CodeCombat, *Open Internet Remand*, FCC GN Docket No. 14-28, at 7 (June 23, 2014) (citing concerns about “discriminatory exemption from bandwidth caps . . . on discriminatory terms and on exclusive terms”), available at: <http://apps.fcc.gov/ecfs/document/view?id=7521678743>.

⁵⁵ Wikimedia Foundation, *Wikipedia Zero Operating Principles*, (last modified April 3, 2015) https://wikimediafoundation.org/wiki/Wikipedia_Zero_Operating_Principles; Internet.org, *Free Basics: Myths and Facts*, (Nov. 19, 2015) <https://info.internet.org/en/2015/11/19/internet-org-myths-and-facts/>.

⁵⁶ Pedro Henrique Soares Ramos, *Towards a Developmental Framework for Net Neutrality: the Rise of Sponsored Data Plans in Developing Countries* 9 (Mar. 31, 2014) (“Ramos”), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2418307.

Some supporters of sponsored data arrangements claim that emerging edge providers could use zero rating to gain “a fighting chance of competing with the entrenched giant by differentiating itself.”⁵⁷ However, between an established market participant with a steady stream of income and a relative newcomer, the former seems more likely to have the ability — if not the willingness — to pay. And even if sponsored zero rating were a successful strategy for new entrants, their reliance on a commercial arrangement with a carrier rather than succeeding on the merits of their new offering is the type of market distortion that open Internet protections seek to prevent.

There may be instances where sponsored data arrangements lack this market-distorting effect. An example in a recent Frost & Sullivan White Paper on zero rating raises a close question. The paper discusses a sponsored data arrangement between a carrier and a bank seeking to encourage its customers to conduct more transactions online.⁵⁸ A recent study of new mobile users in Myanmar found that banking was the least reported use of mobile service.⁵⁹ So long as this arrangement is held out to both banks and network operators on nondiscriminatory terms, this could be an arrangement that benefits all parties and poses little risk of market distortion. For example, if it costs the bank 10 cents to complete a transaction in person and only 2 cents to complete the transaction online, a 5-cent per transaction sponsored data arrangement may be a net benefit for the bank, the customer, and the carrier. Further, given the offline switching costs involved in changing banks, this arrangement is unlikely to distort users’ choices among this particular class of edge providers. So long as this arrangement is held out to all banks on equal terms, and the bank is willing to engage in this arrangement with all carriers, it serves merely to increase the amount of online activity by a bank’s customers.

4.1.3 Edge Providers: Content and Application Restrictions

Agnosticism Within and Between Classes of Applications: Zero-rating applications and content can provide access to essential information regarding health care, education, and vital government services. From a broadband policy perspective, the principal benefit of all this information is lowering costs and demonstrating the relevance and utility of the Internet. Diversity of content is key to that successful demonstration. As one report notes, “[d]igital media and

⁵⁷ Open Internet Order, *supra* n.6, at ¶ 151, n.362 (quoting Free State Reply Comments at 14-15).

⁵⁸ See Frost & Sullivan, *supra* n.28, at 14.

⁵⁹ Helani Galpaya, Ayesha Zainudeen, Zuthaharan P., *A Baseline Survey of ICT and Knowledge Access in Myanmar* 44, LIRNEasia (August 2015) (“Galpaya et al.”), available at: http://lirneasia.net/wp-content/uploads/2015/07/LIRNEasia_MyanmarBaselineSurvey_DescriptiveStats_V1.pdf.

learning research has shown that people develop sophisticated mental models for internet use through continued exposure to diverse applications, content, and services.”⁶⁰

Restrictions on the type of content or applications that may be zero-rated undermine content diversity’s contribution to relevance for users. Further, limitations as to certain types or sources of content undermine net neutrality’s application and content agnosticism, and pose risks of market distortion similar to the risks posed by exclusive or sponsored zero-rating arrangements. Limitations to particular providers within a class of applications or content are more problematic than limitations to a particular class of applications. Service-specific packs, such as bundling an application or suite of applications with voice and SMS messaging, carry a risk of market distortion that must be weighed against potential gains in broadband adoption.

When a zero-rating arrangement exempts from metered pricing all edge providers within a particular class of applications, the potential harms of zero rating are reduced but not altogether eliminated.

User-Generated Content, Social Networks, and Openness: Interactivity and user-generated content are crucial to zero rating’s ability to foster broadband adoption. GSMA has described the ability to create user-generated content as being a “necessary, rather than sufficient, condition to creating a healthy local content ecosystem.”⁶¹ The ability to share content also is a strong motivator for users to generate their own content.⁶² Allowing users to become content creators and distributors enhances the relevance of the Internet and can overcome potential market distortion as users are both selecting and creating the zero-rated content.

Social networks may spur user engagement and local content creation, but the GSMA study also cautioned that some users are likely to limit their use and understanding of the Internet to social networks and not pursue more comprehensive use of broadband access.⁶³ Thus, while social media may kick start the virtuous circle⁶⁴ between demand and deployment of broadband access and edge-provider content and services, it may also impede it if users do not seek out new content and services that require more robust data plans or are otherwise unavailable via zero-rated platforms. This points to a central paradox of zero-rated

⁶⁰ GSMA, *Mobile for Development Impact, Approaches to Local Content Creation: Realizing the Smartphone Opportunity* 21 (2015) (“GSMA Report”), available at: <http://www.m4dimpact.com/analysis/insights/approaches-to-local-content-realising-the-smartphone-opportunity>.

⁶¹ *Id.* at 13.

⁶² *Id.* at 32.

⁶³ *Id.* at 18.

⁶⁴ Open Internet Order, *supra* n.6, at ¶ 7.

packages and platforms: the easier it is for edge providers to participate in a zero-rating arrangement, the less likely zero rating will distort markets or foreclose competition. At the same time, the more zero-rated content and services available to the user, the less likely the user is to access metered substitutes. In CDT's view, market distortion poses the greater risk and the scales therefore should tip in favor of nondiscrimination and openness. But whether and how zero-rated platforms usher users toward "full" Internet access, including metered content, is a topic much in need of further study.

Technical Requirements and Support: Aside from content or application type, certain zero-rating arrangements or offerings may have technical requirements or limitations tied to them. For example, the Opera Mini browser uses a proxy server and certain compression techniques that make more efficient use of bandwidth but may limit some functionality.⁶⁵ Similarly, Facebook's Free Basics platform does not support certain applications or content, such as VoIP, file transfer, or photos larger than 200 KB.⁶⁶ These limitations allow users to access content on networks with limited capacity or on feature phones, but also limit accessible content.

When there are specifications or limitations placed on the content or applications that are eligible for zero rating or a zero-rated platform, it is essential that the carrier or platform provider make those technical specifications clear and, ideally, assist the edge provider in meeting them. Particularly in markets that are relative newcomers to the online community, clear guidance and assistance is essential.⁶⁷ Robust sets of developer tools and resources will increase the number and diversity of edge providers able to take advantage of a zero-rated offering or platform.

Limitations should not extend beyond zero-rated offerings, as in Binge On's much-discussed "downsampling" of streaming video regardless of whether the edge provider participates in the zero-rating arrangement.⁶⁸ Restriction on edge providers' or users' ability to encrypt their traffic is particularly problematic. No one should have to trade away security for zero rating. Movements toward more secure offerings, such as Facebook's announcement to send Free Basics traffic via

⁶⁵ See Wikipedia, *Opera Mini* (last modified Dec. 5, 2015), https://en.wikipedia.org/wiki/Opera_Mini.

⁶⁶ See Internet.org, *Participation Guidelines*, <https://developers.facebook.com/docs/internet-org/participation-guidelines>.

⁶⁷ The best practices and step-by-step guide for submitting applications to Free Basics provides a good model. See Facebook for Developers, *Preparing for Free Basics Submission*, <https://developers.facebook.com/docs/internet-org/how-to-submit#bestpractices> (last visited Jan. 4, 2015).

⁶⁸ See Brian Fung, *Is T-Mobile degrading online video and violating net neutrality? YouTube thinks so.*, The Washington Post (Dec. 23, 2015), <https://www.washingtonpost.com/news/the-switch/wp/2015/12/23/youtube-is-accusing-t-mobile-of-degrading-videos-and-violating-net-neutrality/>.

HTTPS even when the third-party edge provider does not use encryption, are positive developments.⁶⁹

4.1.4 Users: Availability and Cost

To move beyond zero-rated content, the user must be both technically and economically capable of reaching metered content. This means the network operator must offer a data plan that provides access to the “full” Internet and offer it at a price point that is within the means of most potential subscribers. Using zero-rated content as an incentive for users to adopt broadband data plans makes sense only when there are feasible broadband data plans to adopt. Even if a plan is theoretically available, cost barriers can make the option to access metered content illusory.

Where the infrastructure can conceivably support “full” Internet access, some network operators still offer limited “data packs” that allow voice and SMS subscribers access to pre-selected content and services as a way to attract new customers. While limited-service offerings may have a role to play in attracting the subscriber base to support increased infrastructure investments, these arrangements must be closely monitored to ensure that the end-state of these network offerings is not simply a bundle of voice, text messaging, and a handful of services that provide less than full broadband Internet access. There must a straightforward and seamless path from limited broadband offerings to full Internet access.

When access to the “full” Internet is technologically and contractually available, users may still face the barrier of cost. The higher the cost of accessing metered content, the more likely users are to remain within the confines of zero-rated offerings. The mere fact that some data has a cost and some does not will influence user behavior. Although the point is a contested one, a recent paper by the National Bureau of Economic Research observes users will reduce their overall use of the Internet as they get closer to reaching the cap set on their unmetered use.⁷⁰ Per-unit costs of access may have a similar effect.⁷¹

⁶⁹ See Internet.org, *Enhancing Security and Privacy of Free Basics*, <https://fbiorpress.wordpress.com/2015/09/24/enhancing-security-and-privacy-of-free-basics/>, see also, Facebook for Developers, *Technical Guidelines*, <https://developers.facebook.com/docs/internet-org/platform-technical-guidelines>.

⁷⁰ See Brian Fung, *Here’s how data caps really affect your Internet use, according to data*, The Washington Post (July 14, 2015), <https://www.washingtonpost.com/news/the-switch/wp/2015/07/14/heres-how-data-caps-really-affect-your-internet-use-according-to-data/>.

⁷¹ See, e.g., Dev Joshi, et. al., *Let’s Make A Deal: Price Sensitivity and Optimal Subsidies Among Broadband Non-Adopters* (Aug. 2012), available at: <https://prodnet.www.neca.org/publicationsdocs/wwpdf/113012bbpaper.pdf>.

4.1.5 Users: Choice and Control

User choice is one of the central requirements and virtues of the open Internet. The power of the open Internet as an engine of free expression, innovation, and economic opportunity is linked directly to the end-to-end principle that allows users to access the content and application of their choice on the platforms and devices of their choice. The more that zero rating deviates from that principle, the greater the risk it poses to the open Internet.

The most “open” zero-rating arrangements are those that give the user a certain allotment of data to use in the manner in his or her choice.⁷² Indeed, some would argue that such arrangements are not even properly considered zero rating because they apply to all potential sources of content and applications equally. However, such arrangements may be tied to accessing content through a particular browser or on a particular device. For example, the partnership between Mozilla, the device maker Symphony, and the Bangladeshi carrier Telenor Digital grants subscribers 20 MB of free data per day so long as they visit Telenor’s WowBox digital marketplace.⁷³ This plan contains both a device restriction (certain Firefox OS phones) and a behavioral requirement (visiting an app store). Although constraints on devices, operating systems, or browsers may be distinct from constraints on applications and content, they are not wholly unproblematic. Users’ ability to access content on the device of their choice has been a core net neutrality principle since the FCC’s initial Internet Policy Statement in 2005.⁷⁴

Users should also be able to opt out of zero rating. In its recent announcement of Binge On, T-Mobile points to the fact that users may opt out of the arrangement as indicia of the arrangement’s transparency and user control.⁷⁵ The decision to opt out of a particular plan or arrangement becomes much more meaningful when there are other arrangements for the user to opt into — including the increasingly rare unlimited data plan. Just as allowing a diversity of content and application providers to participate in a zero-rating arrangement will reduce the market-distorting tendencies of zero rating, offering users a diversity of data plans with a

⁷² See Denelle Dixon-Thayer, *Mozilla View on Zero Rating*, Mozilla (May 5, 2015) <https://blog.mozilla.org/netpolicy/2015/05/05/mozilla-view-on-zero-rating/>; Mitchell Baker, *Zero Rating and the Open Internet* (May 6, 2015), <https://blog.lizardwrangler.com/2015/05/06/zero-rating-and-the-open-internet/>.

⁷³ See Telenor Group, *Grameenphone and Mozilla Bring Firefox Phones to Asia* (Sept. 16, 2014), <http://www.telenor.com/media/press-releases/2014/grameenphone-and-mozilla-bring-firefox-phones-to-asia/>.

⁷⁴ Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, *Policy Statement*, 20 FCC Rcd 14986 (2005), available at: https://apps.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.

⁷⁵ John Legere, *Music Freedom, Binge On, Our Doors Are Open to Everyone!*, T-Mobile, <https://newsroom.t-mobile.com/news/binge-on-blog.htm>.

diversity of unmetered offerings will reduce the tendency of zero rating to interfere with user choice.

4.1.6 Users: Transparency

Aside from the hard costs of accessing metered Internet content, some economists and others who have studied the issue of data caps have posited “mental transaction costs” that users may face in reaching that content.⁷⁶ If a user does not have an intuitive sense of the size (and therefore cost) of a typical movie, television series episode, mp3, or e-book delivered via the Internet, they may view accessing that content as a financial risk. Thus, the more upfront, clear, and accessible information users have about accessing metered content, the better. Conversely, the more arithmetic or sheer guesswork users must perform to estimate access costs, the less likely they are to explore new content and services.

Both carriers and edge providers can play a role in supplying users with this information. Some zero-rated edge providers take steps to make sure that users are aware when they are moving from zero-rated to metered content. A user browsing Wikipedia Zero will see this banner when on the zero-rated version of a Wikipedia entry:



When that user clicks through to a metered web page, she will encounter the following warning:



The need to notify users that they are moving from zero-rated to metered content must be balanced against the risk that the notice is interpreted as a stop sign, redirecting users back toward zero-rated content. While, as a general matter, the scales should tip toward fully informing the user, care should be taken to design banners and other notices in a way that does not artificially deter users from venturing onto metered sites and services.

⁷⁶ Andrew Odlyzko et al., *Know Your Limits* 49-50 (May 2012), available at: https://www.publicknowledge.org/assets/uploads/documents/UBP_paper_FINAL.pdf.

Carriers should also be fully transparent in whether and how they monitor a user's interaction with metered content. Most zero-rating plans necessarily involve some degree of monitoring so that carriers can properly account for a customer's usage of metered and unmetered data. Tracking methods may involve simple measures of data throughput or time, or they may involve more granular information regarding individual applications or IP addresses. Tracking, monitoring, and storing records of data usage by any method raises privacy and data security concerns that could deter users from accessing metered and monitored content. Personal data collection, use and sharing should be subject to fair information practices.⁷⁷ Data collected specifically for billing purposes should be minimized, and secondary uses should be subject to a user's opt-in. Users are entitled to clear and accurate information about what information is collected and how it is used by the carrier and any third parties involved in implementing the zero-rating program.

The need for transparency holds for zero-rated content as well. Users are entitled to know what commercial arrangement lies behind a zero-rated offering. The more information a user has about who pays — directly or indirectly — for free data, the more choice and control they have in selecting among both zero-rated and metered offerings.

4.2 External Factors

Just as the individual characteristics of a zero-rating plan can advance or deter Internet access or open Internet policy goals, so can the larger context in which zero-rating arrangements are situated. In particular, the state of broadband deployment and adoption, competition, and the digital literacy of users will play a significant role in determining the degree to which zero rating encourages adoption or interferes with an open Internet.

4.2.1 Broadband Deployment and Adoption

Aside from lowering prices for consumers, the chief benefit of zero-rating arrangements cited by proponents is the expansion of Internet adoption.⁷⁸ A number of studies cite affordability and a perceived lack of relevance as key barriers not only to broadband access but even to simple mobile telephony.⁷⁹ By

⁷⁷ See Org. for Econ. Co-operation and Dev., *The OECD Privacy Framework* 14-15 (2013), available at: http://www.oecd.org/sti/ieconomy/oecd_privacy_framework.pdf.

⁷⁸ Eisenach, *supra* n.10, at 1.

⁷⁹ Galpaya et al., *supra* n.59 at 53.

providing free access to relevant content, the argument goes, zero rating can play a role in bringing unserved or underserved populations online. Moreover, as more users subscribe to broadband and seek access to more content, network operators will be incentivized to make further investments in broadband deployment and new edge providers may undertake efforts to reach new online communities.

Opponents see it differently. They view zero rating of limited offerings as “a false choice between free access to special services and no access at all.”⁸⁰ Moreover, if established edge providers account for those offerings, there is a risk of “inability of developing countries to generate their own technological progress.”⁸¹ Anxieties over new broadband adopters equating the Internet with one or two dominant edge providers (or this in fact becoming the case) are not unfounded.⁸²

But concerns about barriers to adoption, or the potential role of zero-rated offerings to overcome them, cannot be dismissed. According to Facebook, its connectivity efforts through Internet.org (including Free Basics) has “brought 15 million people online that otherwise would not be.”⁸³ Facebook also states that “50% of people who use Free Basics are paying for data — and access the internet outside of free basic services — within 30 days of coming online for the first time.”⁸⁴

Paying for data and accessing the Internet outside of free basic services can mean a number of things, and metrics are difficult to assess without access to underlying data about the implementation and effect of zero-rating programs. But if these reported figures mean that half the people who use Free Basics migrate to full Internet access within a month, a significant case has been made for services like Free Basics serving as an on-ramp to the broader Internet. In markets exhibiting low adoption due to barriers of affordability and relevance, zero rating may help users overcome those barriers.

4.2.2 Competition

⁸⁰ Comments of Josh Levy, Transcript of WS 208 *Net Neutrality, Zero Rating, and Development: What's the Data?*, Ninth Annual Meeting of the Internet Governance Forum 2014, Istanbul, Turkey (Sept. 3, 2014), available at: <http://www.intgovforum.org/cms/174-igf-2014/transcripts/1969-2014-09-03-ws208-net-neutrality-zero-rating-and-development-room-5>.

⁸¹ Ramos, *supra* n.56, at 6.

⁸² Leo Mirani, *Millions of Facebook users have no idea they're using the Internet*, Quartz (Feb. 9, 2015), <http://qz.com/333313/millions-of-facebook-users-have-no-idea-theyre-using-the-internet/>.

⁸³ Internet.org, *Our Impact* (accessed Dec. 15, 2015), <https://info.internet.org/en/impact/>.

⁸⁴ Internet.org, *Free Basics: Myths and Facts* (accessed Dec. 15, 2015), <https://info.internet.org/en/2015/11/19/internet-org-myths-and-facts/>.

Zero rating's potential market-distorting effects are enhanced in monopolized broadband markets or those with few facilities-based competitors. If a network operator has market power, its ability to both charge edge providers for zero rating and impose metered data costs on subscribers to push them towards zero-rated offerings will be largely unchecked. On the flipside, there is evidence that competition can police the terms and prices of data plans, raising caps and lowering prices.⁸⁵

In addition to providing a check on the prices and terms offered by any given network operator, robust competition also leads to a diversity of data plans as network operators seek to differentiate themselves and lure away each other's customers. But what happens when the insurgent — not the incumbent — seeks to do so through zero rating? This is the case in South Africa, where the third market entrant, Cell-C, zero-rated access to Facebook and WhatsApp in an effort to challenge “an entrenched duopoly market,” while also facing competition from a fourth entrant who is “able to exploit the economies of scale of its fixed line incumbent owner to consistently offer the lowest prices.”⁸⁶ In markets where a new competitors struggle to establish themselves, zero rating may give consumers more competitive choices among carriers.

This is not to say that zero rating is *per se* impermissible if offered by an incumbent or *per se* acceptable if offered by a new entrant. However, when looking to the two core considerations of the plan-specific factors: market distortions and user choice, the size and number of competitors are relevant. A zero-rating plan offered by a broadband provider with 20 percent of the market is less likely to distort competition among edge providers than a provider with an 80-percent market share. And where there are multiple competitors, users will have greater choice and control among both zero-rated and metered content and services.

4.2.3 Digital Literacy and Training

One of the chief concerns with limited offerings of zero-rated services is that users will equate the curated offerings with the entire Internet, or at least exhibit little interest in venturing beyond them. Particularly for new adopters, the value and relevance of new content and services may not be immediately apparent. And

⁸⁵ Odlyzko, et. al., *supra* n.76, at 31.

⁸⁶ Ariel Futter and Alison Gillwald, *Zero-rated internet services: what is to be done?* 4 (Sept. 2015), available at: http://www.researchictafrica.net/publications/Other_publications/2015_RIA_Facebookzerorating_policy_paper.pdf.

if the only thing they know for certain is that exploration will cost them, they may be inclined to stick with what they know they can get for free.

If zero rating is to serve as an on-ramp to more robust use of the Internet, users need to know what they can do and find there. Part of the answer may lie in better user training. A recent study in Bangladesh found that when users receive digital skills training at the time they acquire a smartphone, they tend to more actively engage with the Internet.⁸⁷ Curiously, however, training did not increase the number of applications users accessed or their willingness to use a web browser.⁸⁸ The study suggests further exploration of peer learning as a way to improve the outcomes of digital training.⁸⁹

Education is particularly critical to ensuring that broadband adoption becomes a gateway to local content creation. Users who receive training on basic Internet use are more likely to create their own content.⁹⁰ Thus, digital literacy and education are important in two chief respects. One, they ensure that a user who starts out in a zero-rated environment is both able to leave and aware of the compelling reasons to do so. Second, they make it more likely that users become local content creators in their own right. Local content is among the most relevant for new subscribers.⁹¹ By generating that content, new users can perpetuate their own market's virtuous circle, attracting new users to the broader Internet.

5 Concluding Recommendations and Research Suggestions

CDT offers the above multi-factor framework as an approach for evaluating zero rating on a case-by-case basis. Consistent with that framework, there are a few basic considerations that would maximize zero rating's potential benefits to broadband adoption and content creation, while limiting the potential harms to user choice and competition on the open Internet.

Non-Exclusivity: The greatest risk of potential market distortion comes from zero-rating plans that exempt a single content or service provider on an exclusive basis. If the content or service provider has an exclusive arrangement (and particularly if the edge provider is an affiliate), the network operator can use zero rating to leverage control of network infrastructure to control what takes place on the edge of the network. This is fundamentally inconsistent with net neutrality principles. Even when a network operator seeks to zero rate a particular class of applications,

⁸⁷ GSMA Report, *supra* n.60, at 23.

⁸⁸ *Id.* at 25.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ Galpaya et al. *supra* n.59 at 10.

such as music streaming services or social networks, it should zero rate all edge providers in that class on similar terms. Edge providers offering up content and services for zero rating should also observe a non-exclusivity principle. An edge provider who enjoys a significant market share could deter the entry of new network operators by making exclusive arrangements with dominant carriers.

Presumption Against Sponsored Data Arrangements: As with exclusivity, sponsored data arrangements create a substantial risk of market distortion because they tend to drive traffic toward those providers who can afford to pay for zero rating. Sponsored data arrangements pose similar risks as paid prioritization or other arrangements leading users to select content and services not on the basis of their merits, but on the willingness of the edge provider to pay for preferential treatment. The presumption against sponsored data arrangements can be overcome only in limited circumstances. Where an edge provider such as a bank sponsors data to induce users to shift offline activity online, rather than shifting online activity from one edge provider to another, the sponsored data is not distorting competition or user choice among providers and may encourage more relevant and beneficial use of broadband networks. But such cases appear uncommon.⁹²

Privacy and Data Security: Zero rating and other data arrangements should not require users to trade away data security for data cap relief. Just as network management issues should not be a blanket excuse to strip out encryption,⁹³ neither should zero rating. Ease of administration should not trump network security and user privacy.

Technical Assistance and Training: Technical training and assistance are central to zero rating's potential role in expanding broadband adoption and use. Training should be geared toward local content creation and supported by ongoing study and effort to improve digital training outcomes.

Transparency: Zero-rating arrangements should be transparent. The offers should make it easy for potential customers to understand what they get for free and how that might be different from what they could get otherwise. The method by which data usage is tracked, monitored, or recorded should be disclosed so as to allow customers to make informed decisions about which entities will gain access to what information as a result of a customer's use of unmetered offerings. Finally, users are entitled to know whom, if anyone, pays for the traffic exempted from data caps or usage charges.

⁹² Another example may be employers with bring-your-own-device (BYOD) policies for their employees. At least one court has found that employers with BYOD policies are required to compensate employees for work-related data use. *Cochran v. Schwan's Home Service, Inc.* 228 Cal. App. 4th 1137 (Aug. 12, 2014). A sponsored data arrangement in this circumstance is unlikely to distort competition or user choice.

⁹³ See Broadband Internet Technical Advisory Group (BITAG), *Differentiated Treatment of Internet Traffic* 30 (Oct. 2015), available at: http://www.bitag.org/documents/BITAG_-_Differentiated_Treatment_of_Internet_Traffic.pdf.

Regulation: The precise contents of open Internet regulation that pertain to zero rating will depend on the nature of the regulator, the market, and legal regime. While allowing for that variance, open Internet regulations should at least clarify how they will address zero rating and permit challenges to plans that may pose unacceptable risks of market distortion or unacceptable constraints on user choice.

Filling in the Research Gaps: One of the most consistent messages coming out of the most recent IGF panels on zero rating is the lack of data to back up the asserted benefits or harms of zero rating. Groups like the Alliance for Affordable Internet are undertaking an ambitious multi-phased research effort to fill that gap, but much of the most critical information is in the hands of network operators and edge providers. Helping to fill in the complete picture will lead to more accurate assessments of the effects of zero rating and whether particular arrangements can be adjusted to maximize benefits and minimize harms. Below are just a few questions that better data will help answer:

- How does zero rating affect broadband adoption and deployment? How many users migrate from limited service bundles to full Internet access and how quickly? Do new users attracted by zero-rating offers induce network operators to increase investment and build-out of their networks?
- How does zero rating relate to data caps and overage charges? Are instances of zero rating leading to higher cost for unlimited data or the elimination of zero rating leading to higher usage allowances indicia of a broader trend?
- How does zero rating influence user behavior? Does the mere fact that some content is free and some is metered influence user behavior? If so, how much does that influence depend on the incremental costs associated with metered content?
- How does zero rating compare to other strategies for increasing broadband adoption?
- How does zero rating relate to the creation and access of local content versus content created and hosted by large, established firms?
- Who are the implementers of zero rating: incumbents or insurgents? Do the types of zero-rating arrangements offered depend on the size and relative market position of the carrier?

2.3.33 Medianama

MEDIANAMA

www.medianama.com

Submission for the TRAI's consultation on **Differential Pricing for data services**

Dear Sir / M'am,

I would request you not to publish my email address.

At the outset, I am greatly appreciative of the TRAI, for giving us this opportunity to participate in this consultation paper on Differential Pricing of data services, a core element of Net Neutrality, and an issue which will impact the availability of information to the citizens of India, and the future of India's digital startups and entrepreneurs.

I'm writing on behalf of MediaNama, an online publication read by around 250,000 people each month, and covers developments in the digital ecosystem in India, with the objective of providing news and analysis to help create **a fair, open and competitive digital ecosystem in India**. We've participated in consultations with the TRAI and the DIPP in the past, as well as in the process initiated by Parliamentary Standing Committee on IT on the issue of Paid News in the Media and Net Neutrality. Over the years, we have focused on policy issues related to Internet Freedom, censorship, paid news, surveillance and privacy, and from a business perspective, lowering of regulatory barriers and the easing of controls on Internet businesses and mobile operators. This, combined with our reportage on business financials and on investments and financing of Internet startups gives us a breadth of understanding of **business and policy across content and carriage, large companies and small, and Internet and mobile, from an independent perspective**.

Thank you for allowing us this opportunity to take part in this important process. This consultation will help define the future of the Internet in India, which is in your hands.

We had addressed some of these issues in our submission to the TRAI's consultation paper on regulation of OTT Services (dated 27th March 2015), and we would urge you to also take into consideration our submission then. We would also request the TRAI to not ignore the over 1 million submissions made by citizens of India, in what was truly an open and uniquely participative consultation process, and include those answers when considering a regulation on Differential Pricing for Data services. In addition, we would request the TRAI to Ensure that violations of Net Neutrality are paused until a clear policy is finalized.

Our submission:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer:

Network operators are there to provide services to the consumer, and not should be selling their consumers to the highest bidder via differential pricing. Doing so would convert an access business to an audience business. The Internet should not be converted into a DTH like business.

Specific comments on Differential Pricing:

- 1. Definition of Net Neutrality includes differential pricing:** To understand this, we must first understand the implications of differential pricing for the Internet.

The Internet is an interconnection of networks, wherein, via peering, data packets are transferred from source to destination, through a series of handshakes between ISPs. While the ISPs have internal agreements for payments for transferring these data packets, the source of data packets only has a direct relationship with its immediate ISP connection, and the consumer of the data also only has a direct relationship with her immediate ISP. The network is neutral in the sense that for both the source and the end consumer, the ISPs transferring data do not price data packets differently on the basis of the source of the data or the end consumer.

Any interference in this time-tested model will impact the way ISPs transfer data, and impact the way the Internet functions. We would urge you to accept the definition of Net Neutrality based on how Professor Vishal Misra of Columbia University defines it:

“Internet is a platform where ISPs provide no competitive advantage to specific apps/services, either through pricing or QoS”

His rationale for choosing this definition, and addressing the confusion around the definition of Net Neutrality is in Annexure 1.

In addition, three principles had been affirmed by Anurag Thakur¹, the Chairman of Parliament's Standing Committee on IT, on 3rd April 2015:

¹ <https://twitter.com/ianuragthakur/status/583895078764023809>

Principles of Net Neutrality

1. All sites and apps must be equally accessible:

ISPs and telecom operators should not block certain apps and sites, just because they don't pay them a revenue share. No gateways to the Internet should be allowed, and no preferential listing of certain sites, whether via commercial arrangements or not.

2. All sites must be accessible at the same speed (at an ISP level):

This means no speeding up of certain sites because of business deals. More importantly, it means no slowing down some sites.

3. The cost of access must be the same for all sites (per Kb/Mb or as per data plan):

This means no "Zero Rating", or differential rating for different sites, apps or services. In countries like India, Net Neutrality is more about cost of Internet access than speed of Internet access, because we don't have fast and slow lanes: all lanes are slow.

2. Impact of price discrimination on Internet businesses:

At the core of this debate is the issue of how we let one business (at network operator) regulate the consumer's ability to access another (app or website), given that the availability to provide Internet access (spectrum and right-of-way access) is not unlimited, and exclusively with a few entities (network operators). **A genuine free market requires restrictions on the ability of large predatory companies, whether multinational or otherwise, to create monopolies.**

A non-discriminatory Internet **decentralizes the sources of innovation because everyone can create Internet services and applications without having to obtain permission from network providers.**² It allows collaborators to create open source and free tools to provide an alternative to proprietary tools, and improve on them.

Today, a text messaging platform, Whatsapp, can incorporate voice calling over Internet protocol without needing permission. Line has incorporated messaging, calling and games into a single application. WeChat has done this and added e-commerce. There are games that integrate messaging and Internet Telephony, allowing gamers to interact with each other while playing. Everything is a remix on the Internet³. All businesses are

² http://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1222&context=fss_papers

³ <http://everythingisaremix.info/blog/everything-is-a-remix-case-study-the-iphone>

about bundling and unbundling⁴, and there is no ecosystem in existence that is as agile, innovative, free and competitive as the Internet. For innovation to take place, platforms have to be affordable, stable, predictable and neutral.

Access to the Internet is, traditionally, **uniquely non-discriminatory**. Differential pricing would end up giving apps or services a specific competitive advantage, irrespective of the intent behind the application or service, and allow disproportionate power in the hands of network operators. We would urge you not to allow this. **In addition, we would also urge you to prevent network operators from changing the end-user-pays approach of Internet access.** By allowing network operators to directly charge businesses for enabling access to an individual website would end up creating a framework for discriminatory practices from network providers. It would allow network providers to insert themselves in the middle of a direct relationship between a website/application and its user.

The Internet is a highly competitive global marketplace. The Internet demands significant capital and efficiency from its participants, due to its nature of being a global marketplace. India offers significant efficiencies when it comes to technology talent, which has allowed it to become a dominant provider of IT enabled services as vendors to major companies worldwide. However, India still suffers from poor ease of doing business⁵, ranked at 142 in the world, and many companies are looking to raise money are looking an international domicile to register their business. For Blume Ventures, an Indian VC fund funded by Indian investors, several of their firms have chosen to shift domicile to the US or Singapore in order to raise funds and target global markets.

Indian startups are not choosing India

According to data provided by iSpir⁶, a think tank set up with the intent to help transform India into a hub for new generation software products:

- 54% of tech companies that raised Series A in 2014 are domiciled outside India
- 65% of tech companies that raise Series A in 2015 are expected to be domiciled outside India
- 9 of the biggest 30 B2B product companies are now domiciled outside India
- 25% of all product startups - any size and any vintage - are now domiciled outside India.

⁴ <http://a16z.com/2014/02/25/future-of-news-business/>

⁵ <http://www.doingbusiness.org/rankings>

⁶ <http://www.ispir.in/>

Startups are fragile businesses, ever evolving and innovating, at great speed, if not at great scale. For Internet startups to operate efficiently, there needs to be predictability, stability and reliability of Internet access.

To this end, **a regulatory framework** (via rules or legislation) **for Net Neutrality, in order to prevent predatory practices such as differential pricing and speed manipulation from network operators** is necessary to ensure that Indian startups are not discriminated against.

Any failure to do so will force startups to shift even operations to international markets, at a time where it is necessary to create a market conducive to their growth. Deepinder Goyal, Founder and CEO of Zomato has taken his Delhi based business to 23 countries⁷, tweeting that⁸ he “Couldn’t have built Zomato if we had a competitor on something like Airtel Zero”:

The image shows a tweet from Deepinder Goyal (@deepigoyal) on Twitter. The tweet content is: "Couldn't have built Zomato if we had a competitor on something like Airtel Zero. (1 of 2)". Below the tweet are standard Twitter interaction icons (retweet, favorite, etc.). Below those are the metrics: RETWEETS 392 and FAVORITES 156, each accompanied by a small grid of profile pictures. At the bottom of the tweet card is the timestamp "10:26 AM - 10 Apr 2015".

Negative impact of differential pricing:

1. **The creation of a vendor relationship for Internet companies with telecom operators:** Allowing differential pricing will transform the Internet economy into a mirror of the Mobile Value Added Services ecosystem, which allows network operators to convert an access business into an audience business. Network operators are there provide services to the end customer, and not should be selling their customers to the highest bidder via differential pricing.

⁷ We have scale on our mind - Deepinder Goyal, Zomato <http://www.medianama.com/2015/01/223-zomato-ceo-deepinder-goyal/>

⁸ <https://twitter.com/deepigoyal/status/586581043139907585>

Currently, telecom operators provide Internet access to the interconnected network that is the Internet, and consumers choose where they wish to go. Any form of preferential treatment via price discrimination that is an outcome of a partnership between a telecom operator and an Internet company converts this into an audience business, with telecom operators allowing businesses access to their “audience”, by acting as a gatekeeper between the Internet business and its customer.

A case of discrimination

In 2008, Airtel and Vodafone had blocked⁹ Netcore’s MyToday services for no apparent reason. MyToday was an opt-in text-alert service that consumers had chosen to sign up for. AUSPI, the association of CDMA telecom operators had then said¹⁰ that Netcore was free to go to court if it wanted its services back up. The Mobile VAS ecosystem was limited to a few companies because telecom operators chose services they wanted customers to be allowed to access: they restricted access to short codes, billing integration, and chose one company over another if any company was becoming too large.

An ecosystem similar to MVAS is sought to be created with Data VAS, by converting an access business into an audience business, and creating a direct dependency among Internet companies on the access service provider, where, today, due to existing peering and interconnection agreements between ISPs for transfer of data packets, none exists. **A “Data VAS” model will be bad for innovation and will impede the competitiveness of Indian business and national economic growth.**

Any service or company specific preferential partnership will create an unhealthy dependency on the either the company or a group of companies on the service provider. This preferential partnership could be via either:

- a. **Creation of packages for services:** wherein companies that don’t tie up with the telecom operators could be excluded. This will be a walled garden.
- b. **Prioritization of speed:** wherein certain sites could be speeded up in comparison with others. With limited bandwidth available, this chokes the bandwidth for users accessing sites and services that provided by companies who are unwilling to pay. Following a partnership with Google, for the Indian

⁹ http://www.business-standard.com/article/technology/vodafone-blocks-netcore-free-sms-109021700039_1.html

¹⁰ <http://www.medianama.com/2008/07/223-the-trai-open-house-discussion-on-mobile-vas-off-deck-vs-on-deck-licensing-interconnect-agreements-dispute-resolution-and-revenue-share-thresholds/>

Premier League in 2010, Airtel had provided a fast lane to users accessing YouTube, increasing their speed to 2 Mbps.¹¹

- c. **Zero rating and cost based prioritization:** this advantages those companies that are willing to pay to allow consumers to access their sites, and slices up the Internet into paid and free parts, thereby lowering propensity to access for services unwilling to pay telecom operators. In particular, this benefits larger companies like Facebook and Google. In 2013, Airtel partnered with Google to offer Google services (Google Search, GMail and Google+) for free.¹² This permission to prioritize traffic due to any considerations other than maintaining the stability of the network lends itself to two situations:
 1. Predatory activities from telecom operators, as was evident in case of Mobile VAS, which restrict the ability of consumers to access these startups.
 2. Collusion between larger Internet companies and telecom operators, in order to reduce competition for the Internet companies.

2. **Telecom operators favouring their own services over others:** There are instances in the past where telecom operators have used the absence of law to prioritise their own competing services over those of competition. Some examples:

- a. **Zero rating own services:** Bharti Airtel, when it launched its online music streaming service Wynk,¹³ it waived data charges for Airtel users, using its ownership of content and carriage. This effectively puts competitors like Saavn, Gaana and Rdio at a competitive disadvantage, with no means to competing.
- b. **Speeding up own services:** Games downloaded from Airtel's "Games on Demand" service are available at a speed higher than that of other service providers, with download speeds for users not on a 2mbps plan upgraded while downloading games from the Airtel service, no matter which plan they have signed up for¹⁴.
- c. **Blocking competing services:** Vodafone and Airtel had blocked Netcore's MyToday Mobile VAS service, since MyToday's content over SMS competed with similar services from telecom operators.

¹¹ <https://gigaom.com/2010/03/25/youtube-caught-in-net-neutrality-flap-in-india/>

¹² <http://www.medianama.com/2013/06/223-airtel-partners-google-to-offer-free-google-search-gmail-google>

¹³ Airtel's music service Wynk: Fair usage limits; Violating Google Play Store & Apple App Store policies?
<http://www.medianama.com/2014/09/223-airtels-music-wynk/>

¹⁴ http://www.airtel.in/broadband-vas/broadband-vas/games_on_demand.html

It is easy for telecom operators to launch products that compete with existing online products, and degrade the experience of all other services. Therefore, it is essential, in order to maintain fair competition and diversity of availability of both content and services that telecom operators are restricted from adopting anti-competitive and predatory practices.

We do not recommend restricting telecom operators from launching competing services, since fair competition will only help give consumers more options to choose from.

However, **we recommend restricting telecom operators from using their position as an access pipe to manipulate access of competing Internet services, or giving preferential treatment to their own service.** The policies access service provider must be source agnostic.

3. Larger Internet companies colluding to control the Indian Internet: Technology is the classic david vs goliath story. Facebook came as a startup and defeated MySpace and Orkut, just as Google beat Microsoft online. This was possible because no direct relationship was possible between access service providers (telecom operators and ISPs) and apps and services. Remember that an Indian company, Wingify, built an A/B testing service that competes with Google's free alternative. Chennai based Zoho competes with Google Docs.

By allowing large companies such as Facebook and Google to partner with telecom operators, you will enable the concentration of power with these large companies, to the detriment of startups from India. It is worth noting that Google and Facebook, both of which have previously inked anti-net neutrality agreements with telecom operators, are members of the COAI, the telecom operator association. Imagine if it cost more to access Zoho than Google Docs, because of a collusive agreement between Google and Airtel. In addition, imagine if Facebook became the gatekeeper for online content and services: it would be easy for the company to extract rent for discovery and usage, and share that with the telecom operator. Imagine if Facebook had access to all of the data from all Internet services: it would be easy for it to map consumer behaviour, create services and give it preferential positioning on its FreeBasics platform.

To quote the DOT committee report on Net Neutrality and its comments on Internet.org (now Free Basics):

In India, it provides restricted Internet access to subscribers of one TSP. Until April 2015, Internet.org users could have access for only a few websites, and Facebook acted as the gatekeeper. In May 2015, it announced that the platform would be opened to more.

The committee was conscious that market for content provision indicates that clear market leaders emerge in a short while, and if such market leaders are able to dictate the path to specific content, then the principles of non-discriminatory access from the user viewpoint can be compromised leading to distortions emerging in the content provision market and consequent implications for the larger Internet economy and emergence of new innovations.

The committee therefore is of the firm opinion that content and application providers cannot be permitted to act as gatekeepers and use network operations to extract value even if it is for an ostensible public purpose.

Collaborations between TSPs and content providers that enable such gatekeeping role to be played by any entity should be actively discouraged. If need be government and the regulator may step in to restore balance to ensure that the internet continues to remain an open and neutral platform for expression and innovation with no TSP/ISP or for that matter any content or application provider, having the potential or exercising the ability to determine user choice distort consumer markets or significantly controlling preferences based on either market dominance or gatekeeping roles.

To emphasise some of the issues of FreeBasics, we wish to highlight some of the points made by SaveTheInternet.in:

Claim : Facebook's [Free Basics](#) is an Open Platform.

Rationale: It is open to all developers agreeing on Facebook's technical guidelines

Response:

Reading carefully the technical guidelines we noticed that the technical standards of Free Basics doesn't allow:

- JavaScript/Video/Large and SVG Images/Flash
 - Secured connection; HTTPS is allowed only with a "dual certificate", better known as a Man-In-The-Middle attack, where Facebook can read and tamper with Data Passing through the Free Basics platform.

The first requirements ensure that none of the new services on Free Basics can have interactive content, which might compete with interactive services of Facebook owned companies. It should also be noted that the technical guidelines do not mention that the services owned by Facebook will have the same restrictions.

The second requirement means service like digital social network, messaging and email services have to agree to share their secure data with Facebook or not participate in the Free Basics Platform.

Other requirements that we noticed are:

- It may take 8 to 10 weeks to receive a response from a member of the Internet.org team.
- A developer is required to have a Facebook account, and is required to agree

to Facebook's Terms of Services in addition to Free Basics terms.

8 to 10 weeks is enough time to render crisis response applications and websites like chennairains.org useless. The second clause excludes developers who refuse to have a Facebook account because they were not comfortable with Facebook's Data Usage and Privacy Policy.

Another fact that cannot be ignored is that Facebook has reserved itself the right to accept and reject applications. This places it in a position of power over developers where it acts in the role of a gatekeeper to Free Basics. Using this power it has determined the technical requirements and will subsequently exercise them. This is done without a transparent judicial process which cannot be expected of any private operator like Facebook. They also make no promise that these guidelines may not change to become more onerous in the future. For example, implementing Facebook login may become mandatory in the future. All of this must be viewed in the context that the Internet itself is an open platform where people can build without permission.

Facebook is using a very narrow definition of "openness" which only helps Facebook and friends.

2.

Claim: Free Basics provide no advantage to Facebook

Rationale: Facebook does not receive or give any money to developers, telcos or anyone else for their participation in Free Basics, nor does Facebook generate any revenue from the version of Facebook within Free Basics as there are no ads in it.

Response:

It is important to note that directly earning money through access fees or ads is not necessary to give advantage to Facebook. The Technical guidelines of Free Basics ensure that Facebook can be the only social network on Free Basics, Whatsapp can be the only messaging service and instagram can be the only photo sharing website.

Yochai Benkler has illustrated how networks become more valuable as they gather scale. Hence every new sign up on Free Basics which is heavily tilted towards a signup on Facebook increases the commercial value of Facebook per user as a network.

Facebook only says that they don't monetize through Facebook now, not that they will never do it. They themselves have agreed that there can be ads in Free Basics in the future. It is also reasonable to expect to have ads in Free Basics in the future because it is huge monetization opportunity.

Issues of trust also exist with Facebook in which one sided and unilateral terms of service are interpreted, amended and changed at its sole discretion. It often does this to its own benefit with little transparency. For instance, in 2010 researchers discover that Facebook is transmitting data about users on 3rd party sites using its like Button. WSJ and NYT reported it and Facebook said don't worry "it doesn't use data from Like buttons and other widgets to track users or target advertising". In 2014 when people weren't looking, it started using

browsing behavior for targeted ads. Same thing goes for its data retention policies, now they say they don't store personally identifiable information but they don't say will never do it. (ref [ProPublica](#))

3.

Claim: Facebook gets access to all usage data of sites that are on Free Basics is a myth. Rationale: "Facebook takes user privacy and security extremely seriously. Free Basics receives and stores data on navigation information – the domain or name of the Third-Party Service accessed through Free Basics, and the amount of data (e.g. megabytes) used when you access or use that service – because it needs to determine what traffic can be delivered free of data charges. Facebook does not store any personal navigation information from within the service beyond 90 days. We don't share any personally identifiable information with our content partners and there is no requirement for those partners to send Facebook such information about their users."

Response: The secured connection clause in technical guides implicitly ensures that Facebook has access all usage data of sites that are on Free Basics. Facebook also doesn't claim that it will not monetize on the data or combine it with the navigational data of Free Basics with the data collected through Facebook and its other services.

Facebook already tracks Facebook users and nonusers browsing behavior to sell them targeted ads. The whole business model of Facebook revolves around advertising and monetization of user data. If Facebook claims that they are or they won't use data collected through Free Basics for their advantage then the burden of proof lies with Facebook. One way to do is it open source the Free Basics platform and infrastructure and invite third party researchers to verify their claims.

As we mentioned above Facebook also claims that it user privacy and security extremely seriously. There have been numerous cases of privacy violations by Facebook. Which obviously includes collection of vast amount of personal data of users and sharing it with advertisers and data brokers. In a recent case a Belgian court barred Facebook from tracking people who don't have Facebook accounts, though Facebook continue to do it in other parts of the world. (ref [Ars Technica](#))(ref [EFF](#))

In addition, Facebook is likely to claim that it is merely an "on-ramp" for the web, and a certain high percentage of its users end of buying data packs. We'd like to highlight observations made by a reporter from SNL.com ([source](#)):

"In my local area of Ahmedabad, Gujarat, some RCom stores have stopped marketing and promoting the service of late following customer complaints. One RCom store manager said that while Free Basics, or Freenet, was quite popular at launch, the store soon started hearing from angry customers who said the "free" part of the marketing and branding of Free Basics was misleading."

Thus the TRAI must take into account that the service may be merely helping Reliance Communications take customers away from other telecom operators, and not

necessarily adding new subscribers. There is no independent way of verifying Facebook's data for FreeBasics.

The TRAI must also take into account the fact that FreeBasics isn't just available to new Internet users. It is also available to those users with existing Internet connections and data packs. This creates a tiered system for the Internet, with Facebook and those companies that partner with it available for free, and the rest not. This, in turn, encourages usage of Facebook and its partners, and disadvantages those who don't partner with them. Here Reliance Communications influences consumer choice by zero rating FreeBasics, and FreeBasics influences consumer choice by ensuring zero rating for those sites and services that are a part of this package.

To emphasise the impact on competition, we'd like to highlight a comment on HackerNews that points us in a direction that TRAI can explore. The comment ([source](#))

Okay, let's give the users of Facebook predecessors of Free Basic a voice.
Here am I, a German who used to use Facebook Zero (free access to Facebook via 3G) while I was in middle (and later high) school.
As soon as it became available, I – and some of my friends – stopped using SchuelerVZ, the social network most people used to use at the time – and instead actually tried to convince others to switch to Facebook, too.
"It's free! You don't need to pay anything!"
We tried to get as much content as possible inside the network, and never actually left it – because we had literally no money on our prepaid SIMs, and therefore couldn't access other pages. Everything that wasn't on Facebook didn't exist for us.
In only a few months after Facebook Zero launched, the user numbers of SchuelerVZ and StudiVZ rapidly declined.
Today, we don't have a choice for social networks anymore, Facebook has a monopoly.

Facebook Zero: <http://0.facebook.com/>

The TRAI should take into consideration the impact of Zero Rating by any telecom operator for any service, on the basis of this comment. While Facebook's activities on its own platform should be subject to CCI scrutiny, the TRAI is well within its rights using Tariff regulations to ensure that licensed oligopolies like telecom operators don't give a competitive advantage to any FreeBasics like service, including paid services such as Airtel Zero.

4. Negative impact on Innovation: Lack of Net Neutrality, whether via differential pricing or speed manipulation, will facilitate the destruction of competition. A Vodafone would never have created an innovative VoIP service, which would threaten its own

traditional and slowly-becoming-outdated business model of revenue generation. It should not be allowed to place curbs on VoIP or messaging, whether via arbitrary differentiated pricing, blocking or throttling. Today you are looking at messaging and VoIP in the context of PSTN based telephony, but have you considered what might have happened if the world looked at email in the context of written letters¹⁵, or if a power company hikes charges specifically for CFLs¹⁶ because users prefer them and they are more efficient?

Net Neutrality implications for Websites and Apps		
Factor	Neutral (current)	Non Neutral
Starting up	Very quick. No permissions required, apart from statutory requirements for registering a business.	Slow. Need permission from telecom operators to enable Internet access/speed/costing
Carriage Fee	None	Yes. Negotiate carriage fee with each telecom operator separately.
User relationship	Direct user relationship	Relationship with user depends on telecom operator.
Ability to iterate and change models	Very quick	Re-enabling service depends on telecom operator (Mobile VAS experience: http://rashmiranjanpadhy.com/2015/04/12/airtel-kills-startups-and-innovation-a-real-story/)
Competition	Based on product/service quality and cost to consumer, availability of funds	Based on telecom operator relationships , cost being charged by telecom operator, product/service quality, cost to consumer, availability of funds

¹⁵

http://www.reddit.com/r/india/comments/2qiegm/important_announcement_from_postal_department/

¹⁶ <http://zigzackly.blogspot.in/2014/12/jo-mera-hai-woh-mera-hai.html>

Zoom out and examine your role in the context of the future for this country, which holds the potential for the creation of thousands of Zomato's, Flipkart's, Practo's, Wingify's, Paytm's, and whether changing the rules of Internet access hampers or spurs innovation.

3. Impact on community initiatives and access to knowledge: Please also keep in mind that the Internet isn't just a marketplace: it is a global commons. By allowing network providers the ability to set up mechanisms for price discrimination would allow them to incentivise the usage of those entities who are able and willing to pay them, and in turn (on a comparative basis) dis-incentivise the non-commercial contributory part of the Internet which has given us community run initiatives like Wikipedia and more recently, contributory initiatives such as chennairains.org, which was a volunteer driven effort in order to aid those in need of help during the recent floods in Chennai.

"Karthik Balakrishnan, the Web developer behind chennairains.org, says he got the idea to make the website after he pinged Sandhya Ramesh, who was actively coordinating relief efforts on Twitter at the time. She in turn linked him to Sowmya Rao's Google spreadsheet. It showed the crowdsourced list of beds available, connecting people who were displaced from their own houses, and were looking for places to stay. Balakrishnan and Rao chatted along with the spreadsheet at two in the morning, following which Balakrishnan booked the domain and posted the site by 3.30am. "Little did I know then, that the hastily-put together spreadsheet would bloom into a multi-faceted, volunteer driven, highly energetic online movement to help Chennai that would be used by police officers, government officials," Rao adds."

[Read the rest at NDTV](#)

Imagine if this was needed to be set up in a permission based ecosystem like Airtel Zero or FreeBasics: the speed of response would be constrained by the speed of response of Airtel or Facebook.

Facebook's terms and conditions regarding FreeBasics state:

"Due to the large volume of requests we are currently receiving, it may take 8 to 10 weeks to receive a response from a member of the Internet.org team." ([source](#))

Please note that since launch, there are only 101 websites on FreeBasics in India. This list of sites is not public. The growth of the Internet, and the ability for anyone to set up a website or a service is because of permissionless innovation. It's hypocritical of Facebook to set up a permission based ecosystem under FreeBasics for the developing world, including India, while at the same time taking a different approach in the US:

Facebook has signed [the Internet Association's amicus curiae brief supporting the FCC](#), stating “The open architecture of the Internet creates an innovation-without-permission ecosystem. Consumers (and consumers alone) decide the winners and losers on the open Internet.”

Preventing price discrimination is also key to consumer choice and media diversity. In an article for the Indian Express, Vibodh Parthasarathi, who teaches and researches media policy at the Centre for Culture, Media & Governance, Jamia Millia Islamia notes:

By maintaining parity of availability (no preferential content/service), uniformity of affordability (no zero-rating) and equity of access (including through technological standards), net neutrality protects diversity online in two minimal ways. First, it demands ISPs make available all types of services and content on equal footing, thereby preserving Source Diversity. However, like all marketplaces, there is a gap between what is on offer and what is actually consumed online. With this nuance net neutrality warrants, secondly, we are empowered to choose equally between comparable, and comparably offered, services/content. This preserves Exposure Diversity, or the diversity actually incurred at the user-end. Extensive research in both television and internet has shown diversity of source and exposure are not always positively correlated.

The abundance of the internet is conditional to our being provided and accessing all sites equally, i.e., without being technologically hindered (including through proprietary formats), financially biased (through differential pricing or speeds) or commercially limited (by constricting offerings). Invariably, these hurdles work together—differential pricing tends to de jure result in preferential offerings. Net neutrality is perhaps the only principle nurturing both, the equal availability of diverse content and the parity in accessing such diverse content. Consequently, questioning net neutrality implicitly questions the value of diversity which resides at the heart of the internet, as much as at that of our human experience. The founder of Facebook reiterated where connectivity is a challenge, access could be widened by offering some services gratis. The very thought of “some services” conjures a risky trade-off—where diversity takes a hit. This risk is compounded without any end-user involvement—an increasingly common in governance tool—in deciding the composition of “basic” services. Bundling, including Internet.org, distorts information flows at the supply and demand sides by respectively limiting competition among online services and by pre-determining the choice of services being used. How would Zuckerberg react to users being empowered to choose what their basic services is composed of? If not, then we are effectively being asked to choose between no access and access to an oligopoly of ideas. This carries another important message for policymakers: While the principles of net neutrality and universal connectivity must necessarily coexist, they should not be deliberately confused. Practices of bundling, fast-laning and zero-rating signify implicit and explicit forms of architectural data rationing—thereby directly posing grave risks to online diversity.

([source](#))

We would urge you to ensure that the petty self-interest of both oligopolistic telecom operators and large Internet companies does not hold innovation, freedom of expression, access to information and knowledge to ransom, and a structure is put into place to ensure that **providers of Internet access (telecom operators and ISPs) are not in a position to pick which site or service on the Internet win: that choice must be of the consumer's alone.**

Net Neutrality implications for Consumers		
Factor	Neutral (current)	Non Neutral
Access to knowledge	Millions of websites to choose from. Access to everything	Only get access to those websites which pay or partner with the telecom operators. Most sites not available.
Speed	All sites load at the same speed	Some sites load faster than others
Payment	Pay for how much data you use, as per plan	Pay for what you use, or pay nothing for a few sites that partner with telcos.
Access to global services	Access to all global sites	Under zero rating or packages, no access to global sites that don't partner with telecom operators.

Apart from this, research from Amba Kak of the Oxford Internet Institute indicates that for financially constrained users, “some access is better than none”, but the trade-off they are willing to make is how much they use the internet, not necessarily how much of the internet they get to use.” ([source](#))

Kak [writes in Business Standard](#):

“What I learnt from my interviews was that the next generation of internet users are mostly young, and curious about the ability of the internet to materially benefit their lives. Limited access curtailed this ability. Some also expressed fear of being unexpectedly charged for leaving the “free zone”, by, for example, clicking on links on Facebook. They felt more comfortable with the standard flat-fee data plans.”

4. Prevent the creation of walled gardens:

The Internet is not ten, hundred, ten thousand or even a million websites. It comprises of hundreds of millions of sites and applications, which are available to all Internet users to choose from. This has been made possible because the access service provider does not influence consumer choice by either modifying the speed of Internet access, availability of sites and services and price of accessing a particular website or service.

All websites are available, all at the same speed of Internet access (per kbps or mbps) and at the same cost (according to a wholesale data pack charge).

If we had unlimited spectrum or unlimited right of way, this problem would not arise. A pure free market operation would have allowed each individual website to buy a slice of spectrum or wireline access, to offer access to its services online, or their own package of services. Consumers would have had unlimited choice of providers, and could have picked and chosen what they wanted, and fair competition would have helped determine the best consumer proposition.

However, we're not living in that ideal world and spectrum is scarce, as is right of way. Telecom operators and ISPs are mere licensees, not owners, given the mandate to increase penetration of mobile and Internet, in exchange for exclusive right to provisioning these services. Should better technology, and indeed, the usage of national resources like spectrum, and the future of thousands of Internet companies be forsaken to protect the interests of an oligopoly of 13 telecom operators, of which just three, Airtel, Idea and Vodafone, account for as much as 64% of active mobile users¹⁷? Steps must be taken to ensure that telecom operators and ISPs don't operate like the Land Mafia of the technology space.

Telecoms have financial incentives to violate Net Neutrality

It's important to note that there is disincentive for telecom operators to offer a neutral web, because while in case of open competition between telecom operators and ISPs, consumers are charged around Rs 0.26 per MB (data realization per mb¹⁸), while Airtel presumably charges Rs 1/MB from Internet companies¹⁹. This means two things:

1. There is financial incentive for telecom operators to invest more in their Zero rating services, because they make more money on Zero rating than they do on connectivity where consumers pay.
2. There is financial incentive for telecom operators to increase prices of access

¹⁷ <http://www.medianama.com/2014/11/223-september-2014-india-telecom-data/>

¹⁸ <http://www.medianama.com/2015/04/223-airtels-mobile-internet-q4-fy15/>

¹⁹ <http://www.financialexpress.com/article/industry/tech/is-airtel-zero-violating-net-neutrality/62733/>

to the public and open Internet, to bring it on par with the money they earn from zero rated services.

Thus, there is financial incentive for them to carve out private areas, such as Airtel Zero, out of a public Internet, and restrict or limit access for consumers to the few services that can pay them:

Addressing some points likely to be made by telecom operators

1. Telecom operators are likely to say that Internet companies are “free riding” on telecom networks.

This is factually incorrect. Internet companies pay their own ISP’s for hosting and connectivity, and consumers pay their ISP/telecom operator for accessing these services. By making Internet companies pay for consumer side access as well will mean that there is triple charging going on, with the Internet company paying twice, and consumer paying once. This also means that **messaging and VoIP services from telecom operators and affiliated/partner companies (Airtel Talk and Hike, for example), will get a distinct competitive advantage**, since the money that those services pay, will go from one pocket of the telecom operators to another.

2. Telecom operators are likely to say they won’t have incentive to invest in network capacity: While we understand that infrastructure rollouts are necessary for Digital India, there are few important points to note here:

- a. **Government projects for infrastructure rollout:** it is important to note that the National Optical Fibre Network is meant to address exactly this mandate, by making fibre connectivity available in rural India. In urban India, projects are being rolled out for providing free WiFi.
- b. **Private infrastructure rollouts are demand led and demand is high:** It is important to understand that telecom operators themselves have said that they plan to roll out Internet infrastructure, given consumer demand. Himanshu Kapania, CEO of Idea Cellular, said on its earnings conference call on April 29th 2015²⁰, excerpted below:

“As I mentioned, capex expenditure for us is RoI led, and we are allocating expenditure to capex because we believe that the demand that we are seeing is much higher than what we have seen in FY13-14. It is important for us to tap a larger percentage of the demand. Most of it is going to preparing us for

²⁰ <http://www.medianama.com/2015/05/223-idea-earnings-call-q4-fy15-voip/>

mobile data as well as new markets where we don't have 2G presence. There is a small component for reconfiguring our spectrum, but that will allow us to into 3G business. So it is all demand led."

"The pace of 3G adoption - we're very pleasantly surprised. It gives us a lot of confidence to go ahead and make the investment now. We have seen that there is sufficient RoI. For us, the capex investment is RoI led. There is a reason why we're increasing our guidance, because there is sufficient RoI available and helps us in our growth journey."

c. **Airtel says that investments have already been made:** In a recent earnings conference call, Gopal Vittal of Bharti Airtel had told investors²¹:

'on whether new towers are required to accommodate data growth that CapEx requirement "is not material. There could be some requirement in a few places and a few cities but it is still a little early to say so we will assess that as we go forward." He added that in some cities where there is congestion, the company will assess the need for standalone sites, but "frankly it is not significant at this stage so we will wait and watch."

Therefore, there don't appear to be any challenges related to being able to afford infrastructure rollout, and if there are issues, then the USO Fund should be allocated to help address these issues.

d. There is adequate money being made from data services. Broadly:

- Data consumption is increasing, but on 2G and 3G
- 2G users are increasing, but many existing 2G users are shifting to 3G connections
- 3G users are increasing, both due to additions and switching of 2G users
- Data ARPU is increasing
- VAS Revenues are increasing

Please Note: We've attached a detailed presentation on the growth in data services along with our submission. This should indicate that telecom operators have sufficient incentive to grow data services.

In the recent earnings conference call, Idea Cellular CEO Himanshu Kampania said that.

²¹<http://www.medianama.com/2015/02/223-no-evidence-of-voip-cannibalization-of-voice-airtel-india-ceo-gopal-vittal/>

“What we are observing is that there is all round improvement in usage, and the applications that consumers are expecting are far more varied, and a lot more newer applications are being accessed. The largest application accessed are the video apps, across various sites. Other time is spent on social media. There is significant usage of e-commerce, mobile banking and specialised services. In terms of handsets, primarily the lower end of 3G handsets are fueling the growth, 4-4.5", in a price bracket which is Rs 4500 to Rs 7000 . More and more consumers are upgrading their Rs 1500 2G phones.”

4. Telecom operators might say that Internet services are choking their network:

This is factually incorrect. Internet services don't choke networks, the consumer demand for these services chokes networks. If consumers want HD videos, then they'll try and watch them. In the process, they'll pay more data charges to watch these videos. There is a financial incentive for telecom operators to:

1. Improve the quality of their networks by investing in better equipment and/or fibre for carrying traffic
2. Invest in data only base stations. Bharti Infratel mentioned in its recent earnings call that these are being installed.
3. Offload traffic to WiFi by investing in WiFi networks, which will have lower cost for telecom operators, per MB used, and they can still charge customers rates for Mobile Internet. For example, at Cyberhub in Gurgaon, Airtel operates a Wifi network for offloading data, and this has charges equal to Mobile Internet data, even though mobile is theoretically more expensive, and is charged higher.

5. Telecom operators say that Zero Rating is like toll free data, and may drive innovation:

Zero rating will not drive innovation. With Zero Rating, consumers will get a poorer version of the Internet. As Sh. Naveen Patnaik, CM of Odisha, pointed out in his letter to TRAI, “Free” is not the same as “Freedom”, and “if you dictate what the poor should get, you take away their rights to choose what they think is best for them.” Controlling access to the Internet has far reaching implications. Facebook's internet.org, which has been launched in many countries in South America, Asia, India and Africa, is a violator of Net Neutrality, by providing access to a few sites selected by telecom operators, including some selected news media websites.

You, as legislators, will understand better how much influence media and social media have on people today. The power to control information is the biggest weapon in a democracy. Plurality and diversity of both views and platforms are important, and for

this, the Internet needs to be kept open and neutral.

Zero rating is priced based preferential treatment of services, and its dangers are immense:

1. **Zero rating is “positive discrimination”** and instead of making some services more expensive, like Airtel did with Internet calling in December 2014, **it involves making some services comparatively more expensive than others by making other services cheaper.** India is a country with low speeds and price conscious consumers. Hence, an access service provider charging differently for different services will lead to preferential access for the cheaper service.

This lends itself to predatory pricing from telecom operators, wherein they can make general Internet access more expensive, and make some services cheaper. There are two models of Zero Rating: Paid Zero Rating (for example, Airtel Zero) and Unpaid Zero Rating (for example, Facebook’s internet.org): Paid Zero Rating, such as Airtel Zero, where a telecom operator takes money from an Internet company and makes access for consumers free, and free Zero Rating, such as Internet.org from Facebook where no money changes hands, but a directory of services controlled by Facebook and telecom operators is made available to consumers for no data charges.

Tim Berners-Lee, one of the founding fathers of the Internet as we know it, wrote in February that Net Neutrality is “also about stopping ‘positive discrimination’, such as when one internet operator favours one particular service over another. If we don’t explicitly outlaw this, we hand immense power to telcos and online service operators.”

Sir Lee, in May 2015, also called zero rating a step backwards:

“In the particular case of somebody who’s offering … something which is branded internet, it’s not internet, then you just say no. No it isn’t free, no it isn’t in the public domain, there are other ways of reducing the price of internet connectivity and giving something … [only] giving people data connectivity to part of the network deliberately, I think is a step backwards.” ([source](#))

The business model of Zero Rating is also suspect. Professor Vishal Misra writes on the business of Zero Rating ([source](#)):

“If ISPs Zero Rate content, somebody has to pay for the bandwidth. Suppose the Content provider pays for it. Then there is a pricing problem:

- ISPs cannot charge the content provider a price above the price they charge consumers. Suppose they charge consumers X per MB of data, and they charge content providers X+Y per MB of data. Then, for sufficient traffic where overheads are accounted for, it is cheaper for content providers to send recharge coupons back directly to the customers who used their services. Long term, pricing above the consumer price is not sustainable.
- ISPs cannot charge the content provider a price below the price they charge consumers. Suppose they charge consumers X per MB of data, and they charge content providers X-Y per MB of data. Then if the plan is truly open, a company like [Gigato](#) can come along, buy data in volume and become a virtual ISP. They can funnel traffic to services via their servers (they can remain good guys and not decrypt or store private data), sell the bandwidth to consumers at X-Y/2 and pocket the difference. The ISPs lose out.

Or alternately, the ISP pays for the bandwidth of the content.

- This opens the possibility of [vertical integration](#), where ISPs ZeroRate their own content, and that is extremely bad for competition. Or ISPs ZeroRate only a select group of content providers, for non-transparent reasons (FreeBasics or Binge On "technical" requirements that make the walled gardens implicitly closed), leading to a fractured experience/Internet for their consumers.

It is not clear to me what the business model is for ZeroRating, where the ISPs make money and provide an Open and Neutral Internet experience for their consumers.

Economic issues are really the core of Network Neutrality, and nobody has explained to me how the economic model of ZeroRating remains consistent with Network Neutrality”

We would aver that the idea behind Zero Rating is essentially a means to gain discretionary power, which lends itself to the corruption that plagued Mobile VAS.

Apart from this:

a. Impact of Zero Rating:

- i. **Slicing the Internet into services:** Zero rating, whether paid or unpaid, creates a fundamental and permanent shift in the way the Internet works, by splitting it into free and paid. Services such as Airtel Zero will slice the Internet, and will lead to the launch of similar services from all telecom operators. There might be an Idea Zero, Vodafone Zero, Aircel Zero, Uninor Zero, Tata Docomo Zero. Add to this Internet.org, which will have its selection of services also determined by telecom operators²². This means that each user will get a different experience of websites, and may never know the universe of knowledge outside of this collection of websites. That restricts consumer choice. Zero rating is “positive discrimination”. Airtel Zero favors those services who pay them to be zero

²² <http://www.medianama.com/2015/05/223-facebook-s-internet-org-privacy/>

rated. Internet.org favors those services which are low bandwidth, and allow Facebook to access user data even if Facebook is not being used on Internet.org.

- ii. **More bureaucracy for startups:** Airtel Zero changes the way we access information via the Internet. Telecom operators and ISPs run highways to the city that forms the Internet. The web was created as an open platform, where anyone could set up and host their site anywhere, and be available across the globe. This is why sites hosted in India are available across the globe, and vice versa. Websites don't tie up with and pay each telecom operator and ISPs in each country (hundreds across the world) so that consumers can access these sites. If the next 200 million users in India are on Airtel Zero, startups and other companies will have to choose between ignoring these customers or tying up with multiple Indian telecom operators. This lends itself to red-tapism at telecom operators, and corruption and collusion. Historically, telecom operators have co-ordinated when negotiating rates with content owners. In 2008, Viren Popli, Head (Mobile) for Star TV, said²³ that "If you have ever dealt with mobile operator, you will know that after your meeting ends with one operator, every mobile operator knows what you're talking about." In case of Internet.org, the sites have to work without javascript and https, are less secure, and have to conform to facebook's guidelines in order to be made available to consumers, apart from approval from telecom operator partners.
- iii. **Usage of the open web declines:** When consumers try and move out of a zero rated platform to the open web, they will rightly be informed that they are going to be charged for this. This information is essential in order to prevent charges when the user may not want to be charged. However, adding a layer of confirmation usually leads to reduction in conversion rate, since accessing a link is often on an impulse, whereas choosing to pay to access a link is an additional decision. As an example of the impact of adding an additional layer of confirmation, Cleartrip saw a decline in mobile bookings after a second factor of authentication was introduced for mobile, as per RBI guidelines²⁴. Ecommerce companies actively work to reduce the number of clicks and steps required for a purchase, and each reduction leads to higher conversions.
- iv. **Impact on access speeds:** Many telecom operators actively reduce speeds for customers beyond a certain usage of data, by instituting what

²³ <http://www.medianama.com/2008/08/223-momo-mumbai-dont-compare-the-us-market-for-vas-to-the-indian-market-viren-popli-svp-mobile-for-star-india/>

²⁴ <http://www.medianama.com/2011/02/223-how-indias-banks-killed-the-future-of-commerce-hrush-bhatt-cleartrip/>

they call a “Fair Usage Policy”. In Airtel’s words “We have observed that few of our customers have been using an excessive amount of bandwidth, thus impairing the browsing experience of an overwhelming majority of broadband users.”²⁵

Telecom operators today complain about not having adequate spectrum as a reason for poor connectivity speeds. A report from Ericsson, released recently, stated²⁶: “48 percent of those using mobile internet on 2G or 3G are unable to perceive any difference between 2G and 3G services”.

With poor connectivity speeds, it’s important to assess the impact of zero rated access: consumption of free zero rated services is likely to be higher than that of paid services, and with limited bandwidth and spectrum, there is a distinct possibility that zero rating will consume more data, and leave limited bandwidth for open web access.

- v. **Incentives aligned towards favoring Zero Rating over open web:** In its statement regarding Airtel Zero, the company had cited²⁷, as an example, an amount of Rs 1/mb being charged from Internet companies for accessing Airtel Zero websites. This is almost 4 times the data realization per MB reported by Airtel in its Q4-FY15 financial results. Thus, Airtel’s incentives will be aligned towards increasing usage of its Zero Rating platform, where it makes more money, via usage of services from vendors, versus the rest of the web. There is also incentive for Airtel to increase cost of open web access, in order to drive both startups and users to the Zero platform.
- vi. **Zero Sum game, with competitive pressure on startups:** Once a startup joins, because of high dependency, competitive pressure ensures that others also join. When Flipkart allegedly joined Airtel Zero, its competitors began examining that option. Times Internet has said that most of its publication businesses will not exit Internet.org unless their competitors also do so: no one will risk being the first to leave if competing sites are around. This means that with all competitors on board, this becomes a necessary expense for all startups, and no one except the

²⁵ <http://www.medianama.com/2009/03/223-airtel-to-moderate-user-broadband-speeds-what-of-net-neutrality/>

²⁶ <http://www.ericsson.com/res/docs/2015/consumerlab/ericsson-consumerlab-the-changing-mobile-broadband-landscape-india.pdf>

²⁷ <http://www.teleanalysis.com/resources/column/airtel-zero-is-similar-to-toll-free-services-srini-gopalan-14338.html>

telecom operator benefits. Zero rating is a means of instituting a carriage fees for telecom operators.

b. Zero rating is not a toll free number:

- i. **Access is not just a support mechanism:** A toll free voice service is a support mechanism for most businesses, and not the sole entry point for the business like an app or a website. An Internet company has 100% dependency on Internet access providers and telecom providers, while that is not the case with most companies that use toll free voice services. This leaves room for potential abuse, in case of differential pricing, manipulation of access speeds, or monopolistic hiking of rates, like in case of carriage fees in Cable TV, which led to manipulative practices and significant losses²⁸, as well as the shutting down of several channels²⁹
 - ii. **A toll free voice service isn't the mode of delivery for the service itself:** it's a mode of information, and rarely, a mode of transaction. In case of the Internet, all delivery of content and communications takes place over the access mechanism, and all transactions take place via the access for ecommerce companies.
 - iii. **Providers of toll free voice services do not compete with their customers:** However, in case of the Internet, telecom operators have launched competing services. As explained earlier, Airtel's Wynk is a music streaming service which has plans that come bundled with free data, while, at the time of launch, its competitors did not have that option. This is a cross-media ownership issue, where the carriage mechanism also owns content, and can abuse its position of controlling access.
- c. **Zero Rating of government services:** The Indian government's decision to open up the Application Protocol Interface (API) for government services is a laudable move. The challenges of government departments choosing to be the sole access points to digital services are well known and documented: they suffer from either lack of adequate communication to potential users and stakeholders, of poor infrastructure and product design, and sometimes the inability to handle significant loads. The issues faced by IRCTC are well documented, and we've seen the websites provided by the Ministry of Company Affairs face issues as well. In line with the "Minimum Government, Maximum Governance" mandate, opening up the API for government services allows creative entrepreneurs to imagine better and unique consumer products, and compete for customers.

²⁸ <http://www.thequint.com/2015/apr/15/after-my-cable-massacre-i-punch-for-net-neutrality>

²⁹ http://www.business-standard.com/article/opinion/vanita-kohli-khandekar-net-neutrality-lessons-from-cable-tv-115041401043_1.html

To achieve this goal, the National eGovernance Division, Ministry of IT, Govt of India has hired Amit Ranjan, a former entrepreneur himself, to help create an ecosystem where Indian startups can create applications and produce better consumer experiences. In an appeal to domain experts, Ranjan has written³⁰:

“Imagine if the simplicity and fluidity of platforms like Wikipedia, Facebook, Whatsapp, Skype could be replicated in the citizen services that you and I use everyday – be it applying for a passport or a driving license, filing your taxes or getting your govt scholarship. Imagine what citizen services can be built on top of the biometric identification system Aadhaar, which currently at 830 million is just a stone’s throw from the billion mark. Imagine if the internet could be the same change agent in the lives of our less connected co-citizens in far off towns & villages, in the tribal areas, in remote rural corners where roads don’t reach – that’s what e-governance is about.”

Asking for developers, designers, big data engineers, open source community managers and others to join, Ranjan has pointed out that “There is a shift towards technology enabled open governance systems (open source, open APIs, open standards, open data) and you could drive this openness inside the government.”

However, if the government services are going to be Zero rated, then what incentive is there for entrepreneurs to invest in, and build services that compete with Zero rated government services?

The idea should be to encourage entrepreneurs, not compete with them. Faced with competition from the government, which could have zero rating for its services, there is a distinct possibility that such initiatives to open up API will fail. The government will have to choose between the two.

In addition, we endorse the suggestion by Nandan Nilekani to take the approach of providing data to users in a manner similar to Direct Benefit Transfer. The reason that the government is choosing to provider benefits directly to consumers is to allow them the right to choose. A similar right must be given when it comes to usage of data. Let those in need of Internet access determine what they need to use the data for.

³⁰ <http://www.webyantra.com/2015/04/17/come-join-the-team-building-stuff-for-1-3-billion-indian-citizens-from-the-startup-trenches-inside-the-government/>

A Non-Neutral Internet will set back the growth of the Internet in India, and adversely impact digital inclusion, just as the decision from the Reserve Bank of India to restrict mobile payments when Wallet365 was launched in 2006³¹, delayed the financial inclusion that is currently being attempted again by the government via Payments Banks and the Jan Dhan Yojana.

India has around 400 million users million Internet users according to the IAMAI, the second largest in the world, most of whom have come online in the last four years, and around 25% of which (100 million) have come online in 2015 alone. At the heart of the Prime Minister's Digital India initiative is the goal of providing Internet connectivity to all Indian citizens. It is important that while trying to make the Internet available to every Indian citizen, we are also conscious of what kind of an Internet is being made available to them.

We should not compromise the basic principles of the Internet in our haste to get people online: the Internet that they get should be open, neutral and non discriminatory, for it to enable collaboration, innovation and progress. **The Internet Freedom of our citizens and startups was not sold to telecom operators with the spectrum auctions.**

However, India is a country with poor quality Internet access, and the focus should be on increasing access in a neutral way, along with improving quality of service.

For this, we need more competition. Despite what telecom operators claim, Airtel, Idea and Vodafone account for as much as 64% of active mobile users³², have 3G Interconnection agreements, and a tower joint-venture together. Airtel, the second largest wireline ISP has a WiFi joint venture with Vodafone called FireFly Networks. We'd also like to point out the lack of competition in providing broadband access: the ISPAI has also parroted the views of the telecom operators to the TRAI. These ISPs and telecom operators, lest it be forgotten, also instituted limits on broadband usage, in terms of the Fair Usage Policy, which leaves broadband customers little choice of ISP.

At present, instead of growing the market, the top three telecom operators are focusing on splitting the market between themselves. Where is the competition? They speak in the same voice, when it comes to demanding that they be allowed to violate net neutrality by pushing for licensing or registration of Internet companies and/or buying bulk data from telecom operators. **They're merely splitting the market between themselves.** Developing nations like Brazil, Chile and Mexico, and many European nations have taken steps to enforce net neutrality consistent with its universal definition of non discrimination between Internet services. Talking of "redefining net neutrality for

³¹ <http://www.techshout.com/internet/2006/08/timesofmoney-launches-wallet365com-indias-first-e-wallet/>

³² <http://www.medianama.com/2014/11/223-september-2014-india-telecom-data/>

the Indian context" is merely a pretext from the Telecom operators to deceive the Indian government.

The government should institute policies that force competition among telecom operators, so that consumer quality of service is forced to go up, and consumer experience of the Internet in terms of speeds of access and latency reduces.

We would urge you to protect Net Neutrality, and not allow telecom operators to manipulate how consumers consume content on the Internet by instituting anti-neutrality practices. There must be:

1. No licensing or registration of Internet companies, whether communications or non-communications based.
2. No manipulation of speed, availability (via packaging of individual sites) or cost of Internet access (via Zero rating or by making some services such as messaging or Internet calling more expensive).

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Ans: Differential pricing must not be permitted, as indicated in the answer to Question 1.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer: Net-Neutral alternatives to Zero Rating:

1. **Internet access coupons using the USO fund or with contributions from Internet companies as CSR:** One simple method is the introduction of couponing, where free Internet access of around 100 mb can be given to citizens to try out services of their choice, without the government or the telecom operators selecting which services consumers should use. This can either be funded using the USO Fund, or organizations such as Facebook, which claim they want to get more users online, can contribute money to a separate fund that be used by the government to buy data from citizens, as per their choice of telecom operator. It could also be a part of their CSR activity. Please note that

- telecom operators sometimes give promotional data for free, to enable users to start accessing the Internet.
2. **Sachet pricing of Internet access** is also available, to allow citizens to avoid excessive charges, and to make it cheaper for them to get online. For example, Vodafone offers data packs such as Rs 17 for 85 mb of data, with a validity of 2 days.
 3. **Advertising supported Internet access:** Apart from this, there can be advertising supported neutral services for free, such as that being provided by Ozone Networks at the Mumbai Airport. In addition, with branding arrangements, brands could give free Internet access (to the whole web) on purchase of products and services, in a way similar to giving free data recharges to individuals.
 4. Subsidised Internet access in partnership with venues: Network operators can provide free Internet access in partnership with venues such as coffee shops and stores.

As infrastructure is deployed and more spectrum released for services, the cost of Internet access will go down. Launch of 4G services will reduce the cost of 3G and 2G services, just as cheaper 4G handsets will make 3G and 2G handsets cheaper. There is always a downward pressure on costs with improvement technology, making it more accessible to the poor.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer: Along with not allowing differential pricing, please ensure that telecom operators are unable to charge online businesses, and unable to discriminate on basis of quality of service, whether via a commercial or non-commercial arrangement. Telecom operators may claim that they have never manipulated speeds before: This is factually incorrect. For the Indian Premier League in 2010, Airtel had provided a fast lane to users accessing YouTube, increasing their speed to 2 Mbps, thereby, comparatively, throttling those users who weren't watching YouTube³³. Two years later, the Measurement Lab (M-Lab) reported that Airtel and other ISPs had been throttling BitTorrent traffic in India for years³⁴. Please note that even today, Airtel has a paid Games on Demand service, where downloads of games are increased to 2mbps for all users, in competition with other services. Differential speeds for individual services do exist, and should be prevented.

³³ <https://gigaom.com/2010/03/25/youtube-caught-in-net-neutrality-flap-in-india/>

³⁴ <http://www.thehindu.com/sci-tech/technology/internet/isps-slam-brakes-on-bittorrent-speeds/article3751310.ece>

In conclusion: Focus should be on improving access without compromising Net Neutrality. Don't allow Differential pricing, since that is a step backward. There is sufficient incentive for telecom operators to roll out data networks.

Annexures

Definition of Net Neutrality

by Vishal Misra

([source](#))

Tuesday, December 29, 2015

Half the equation and half the definition

There is a lot of confusion over what constitutes Net Neutrality, so much so that parties fiercely on the opposite side of issues both claim to be for it. As an example, the current controversy over Free Basics has been between Facebook, whose CEO penned an Op-Ed entitled "[Free Basics protects net neutrality](#)", and on the opposite side of it is a volunteer coalition, SaveTheInternet (STI), whose entire charter is to protect Net Neutrality. As the Op-Ed from the volunteers [suggests](#), the basic contention between Facebook and the volunteers is a different definition of Net Neutrality. While the concept of Net Neutrality was coined by Tim Wu back in 2003, the definition of what constitutes Net Neutrality has been evolving.

Let me walk you through the evolution of the definition that the STI coalition is going with, which is widely accepted and which I have arrived at after years of researching the issue. I will explain why Facebook (amongst countless others, they are not solely to blame here) only consider half the equation and thus end up with half the definition.

I'll start with the folk-definition that we started hearing, around 10 years ago:

Folk Definition: All packets must be treated equally

As networking researchers we knew that this definition was not practical and it made little sense to us. Without getting too much into boring details, we knew routers on the

Internet did not treat all packets identically (TCP-SYN packets are treated differently from TCP-Data or TCP-Ack packets, UDP packets are treated differently, packets in the tail of the queue are dropped during congestion etc. etc.). However, we also knew what the principle of Net Neutrality was trying to say, and that was the network did not discriminate. So the folk definition needed to be made crisper. The FCC adopted Net Neutrality rules last year and the definition broadly laid out the following principles:

FCC: ISPs will not block or throttle any traffic and will not implement any paid prioritization (no fast lanes)

This definition changes the abstraction from how packets are treated, to how services are treated which is a logical progression. However the FCC missed out in one crucial aspect, and that is not incorporating the concept of differential pricing in its Net Neutrality Principles. Zero Rating, which is a special case of differential pricing, was not a big problem in the US when the Open Internet order was voted upon, and the FCC preferred a wait and watch approach to it (as a refresher, Zero Rating is the concept where consumers don't pay for the bandwidth of some or all services, and instead the cost of the bandwidth is borne either by the ISP or the content provider). The FCC definition focused on *quality of service* (QoS) as the determining factor for Net Neutrality, and insisted that all content on the Internet received the same quality of service from ISPs. The intent was to not provide competitive advantage to any service on the Internet, as that was in the best interest of both consumers as well as entrepreneurs. However it missed out in the following way:

As a brief background, in game theory (the mathematical tool we have used in our work on analyzing the issue), the quantity that we focus upon is called *Consumer Surplus*. Surplus is defined as Utility derived from a particular service *minus* the **cost paid** to obtain that service. The Utility is a mathematical quantity that models the impact of the QoS obtained for a particular application, and the FCC was absolutely correct in enforcing neutrality there, but the FCC did not model the *cost paid* in its definition of Net Neutrality (and it is the definition Facebook uses to justify Free Basics as being consistent with Net Neutrality). How much an application costs changes the surplus a consumer obtains, and applications with similar utility (quality) but with differing costs provide different surpluses. In game theoretic models higher surpluses get competitive

advantages, thus it is *crucial* to model the cost aspect of an application to get to a definition of Net Neutrality that works. Differential pricing or Zero Rating of select services absolutely violates the principle of Net Neutrality if we consider the impact on consumer surplus.

Thus, if we only model half the equation, we end up with a definition of Net Neutrality that focuses *only* on QoS, however if we model the equation fully then the price of the service comes into play. A lot of people only model half the equation (Facebook included) and thus claim that differential pricing (Zero Rating specifically) is fine under Network Neutrality, but that is not true. If we are talking about a true level playing field, then the other half of the equation cannot be ignored.

Access Now, a global non-profit aimed at protecting the digital rights of citizens, has adopted a definition that states the following:

Access Now: Net neutrality requires that the Internet be maintained as an open platform, on which network providers treat all content, applications and services equally, without discrimination.

This definition implies that differential pricing cannot be adopted, but it does not say so explicitly and people (usually differential pricing advocates) can easily ignore the pricing aspect of a service and say Zero Rating is consistent with this definition. To fix this minor issue, and make things explicit, I have proposed the following definition which has received acceptance from academics, policy makers, entrepreneurs and activists alike, and I announced it publicly sometime back:



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Internet is a platform where ISPs provide no competitive advantage to specific apps/services, either through pricing or QoS

#NetNeutrality

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This definition has the following properties

1. It incorporates both QoS and Pricing in the definition of Net Neutrality, thus correctly modeling consumer surplus.
2. It makes explicit the notion that Net Neutrality is not how we treat packets but how we treat competition.
3. It allows for reasonable traffic management by ISPs without violating Net Neutrality.
4. It allows *differential* QoS and/or pricing as long as it is allowed in a non-discriminatory way. ISPs can prioritize *all* real time traffic (e.g. all voice or all Video Conference traffic in a provider agnostic way) over all non-real time traffic. Similarly all emergency services or health monitoring apps can be prioritized.
5. It allows creating and differentially pricing entire class of services. For instance, an ISP can create an extremely low latency service and offer it to all games/gamers without discrimination, and that should be fine. The definition permits differentiation between services, but prohibits discrimination within a service.
6. It ensures a level playing field on the Internet, where upstarts can come in and compete on the basis of ideas.
7. Lastly, and this is only half in jest, the definition fits in 140 characters including a hashtag.

I am a big believer in the power of capitalism, as I think humans are largely selfish with varying degrees of altruism. However, for capitalism to work for the greater good of society, it is critical that the selfish interests of corporations align with public interests.

And that's where regulators step in, using the concept of [mechanism design](#), to introduce a minimal set of regulations that incentivize corporations to act in societal interest. I think the concept of Net Neutrality, defined in the way above, provides the mechanism for the Internet economy to work in the public interest. I hope the right regulations get passed.

2.3.34 ACL Mobile Limited

RESPONSE TO TRAI CONSULTATION PAPER QUESTIONS

PREPARED BY: ACL MOBILE LIMITED

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

YES, the TSPs should be allowed to have differential pricing, **specially, Zero Rating** for data usage for accessing different websites, applications or platforms for following reasons:

- i) **TO BRIDGE THE ‘DIGITAL DIVIDE’ IN INDIA**: India is a developing country and a major part of population is still far away from connecting digitally, specially the *rural and poor sections of society*. Lower segment of the society cannot afford data. In fact a very large section of Indian population is such that they cannot fully afford the data cost but can only pay partially and as such are devoid of the real and full benefits of data services. The Digital divide is huge and needs to be eliminated. Even the cheapest mobile subscriptions may be cost prohibitive for many of the India’s poor. Thus, differential pricing, especially zero rating offers an incentive for potential users to try the Internet and is an important way to bridge the digital divide in India and to fulfill the dream of *Digital India*.
- ii) **CONSUMER WELFARE**: Zero Rating is an economically efficient mechanism for increasing consumer welfare. It makes mobile internet affordable. Further, the most common types of Zero Rating programs are the ones most likely to benefit consumers, not harm them and the ones most likely to *expand consumer choice, and not limit it*. Zero rating would help increase **M-Commerce**, in the Country. Various government schemes, NGO schemes, CSR schemes related to ***Education, Health and Development, Banking, Social Security Schemes, Women Empowerment etc.*** can be very well augmented with the help of Zero Rating
- iii) **ECONOMIC FACTORS**: Differential pricing, including Zero Rating is a market-driven mechanism for achieving economically efficient (and socially desirable) outcomes. Zero rating helps in capturing demand side of economies of scale. Zero rating provides efficient pricing mechanism in two sided market for mobile wireless services. Zero Rating programs are an instrument by which mobile wireless firms can differentiate themselves from competitors by offering access to customized content with their mobile wireless services. Product differentiation also can serve to intensify competition in such markets. One obvious and likely significant benefit of Zero Rating is to expand participation in zero-rated online content and applications, while also increasing mobile wireless penetration, especially in developing economies.
- ii) **DIFFERENTIAL PRICING IN OTHER SECTORS**: Today, differential pricing exists for nearly every good and service we buy, including concert tickets, transportation, restaurants, and medicines. If price differentiation works to the benefit of consumers and competition in virtually every other aspect of our economy, why shouldn’t this idea also hold true in the world of Internet access?

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

There appears to be no evidence that such arrangements (**especially Zero Rating**) involve exclusivity: Rather, it appears that opportunities to participate are being held out to content providers of all kinds. Without exclusivity – the inclusion of some participants and the exclusion of others – there is no foreclosure,

and hence no anticompetitive concern. Zero rating should thus be allowed and promoted. However, the TSP's should allow all websites/applications/platforms an equal opportunity to provide their content through the TSPs and there should be no discrimination for a class of subscribers. For example if one Company say 'ABC' is allowed to Zero rate its website under Pricing Plan 'X' then all other Companies shall also have same opportunity to make their website under Zero rating at Pricing Plan 'X' which was offered to 'ABC'. This will ensure that there is no discrimination and competition and market entry will not be hampered. TSP is the gate keeper and should not be in a position to advantage or disadvantage a website/app/platform.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

In our best assessment, Zero rating is best possible differential pricing as compared to other options and is universal at TSP level. Data pack, website pack or direct credit /re-imbursement to subscribers would not solve the purpose or will only solve part of problem and in fact in our view would create more confusion and are impractical and non-viable. For example free data pack may be provided for a particular purpose like E-learning but the consumer may use it for any other purpose and to keep a check would be almost impossible.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

There is very important issue to be considered which is related to the need for an **Aggregation Platform for Zero Rating services**.

We, ACL Mobile Limited. were the first Indian company to conceive and develop a "Toll Free Data" platform or "Zero Rating Data" platform which provides aggregation of Zero Rating across TSPs. The platform enables various Indian enterprises to provide sponsored services to their customers across all TSPs thus enabling all customers of the enterprise to enjoy benefit of sponsored data irrespective of the TSPs they belong to. The platform connects all TSPs on side and enterprises on the other thus enabling the enterprises to reach their customers irrespective of their TSP. We were in the process of integration with various TSPs and enterprises just before the debate on Zero Rated started in the Country. When we approached the enterprises and telecom operators with our platform we received excellent response and each enterprise was interested in some sort of Zero Rating to increase their business or to provide certain customized and sponsored services to their customers across TSPs. Also because it is impractical for an enterprise to approach each TSP separately to get some sort of Zero Rating and it becomes a tedious task if they have to approach each TSP. Similarly all Telecom Operators were also excited about the same. Thus, as per our initial experience there is great demand for Zero Rating aggregation services across Enterprises and TSPs.

We believe that it is imperative to allow such aggregation platform to drive the zero rating eco-system. There needs to be a policy for encouraging such aggregation as it eliminates chances of any sort of discrimination since the benefit is available to all subscribers equally. For example: the sort of aggregation allowed for SMS Services under TRAI Telemarketing rules. We hope that our recommendations would be considered positively by TRAI.

2.3.35 CUTS



COMMENTS ON TRAI'S CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA SERVICES

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms. This is because:

Differential pricing, means fragmenting of Internet based on content. Fragmenting Internet means somebody taking control of the internet, other than the user. Somebody taking control of internet other than the user means, the user giving up its rights to privacy and also using a restrictive internet, a service more or less seen equivalent to public utilities like water, electricity and air.

The differential pricing enables the TSPs to become gate-keepers for our internet services and they will then be able to differentiate between our data packets. The principle of net neutrality clearly prohibits any blocking, differentiation or prioritisation of data packets based on their type. Once differential tariffs for contents would be in place, the principles of net neutrality will no longer be valid. Zero Rating plans, which are based on differentiation of data packets, have portrayed themselves as subsidizing the cost of accessing internet. It is however important to highlight that subsidization is also a way of differentiation. It shall distort the equilibrium internet enjoys today, where everybody has an unrestricted access and also have equal opportunities.

The Zero Rating platforms have also claimed themselves to be open for all. It is imperative to question on who made them the owners of this vital utility of the modern world. The Zero Rating platforms are also propagandising their services to be for good cause, as providing internet access to the digitally excluded. One should remember that initiatives like "Digital India" are not planned for infinity. Digital inclusion shall be accomplished in few years, but if the internet forced into fragmentation now, due to differential access and pricing, this will become a practice forever. Once established, it would be impossible to turn back to the older days of unrestricted internet access.

Considering the situation in India, affordability is the biggest hurdle in internet adoption followed by literacy and others. India mobile service tariffs, pertaining to data as well as voice, may be lowest in the world but they are still unaffordable to many in the country. In a cost sensitive country like India, breaking the internet into smaller modules, with each module demanding different price, shall not only make the internet adoption complicated but may also result in increase in prices for services. India is already struggling with the operators not providing complete set of information for the mobile services and plans, imagine a scenario where access to individual site/apps/services would have a differential price. The internet is a network of infinite websites/services and it would be virtually impossible to have a price chart for all of them. Consolidated Internet charge for unrestricted internet access has been the best way and shall remain the best way in future.

Another question to be pondered over is, when all the content on internet is unrestrictive, why would some content provider cling on to Zero Rating or differential pricing plans? The reason is simple, for more visibility and hence more revenues. This shall enrol themselves to such platforms (which may have financial implications), which will provide subsidized access to their services, which will make certain services cheaper than the services offered by its competitors.

The success of Facebook, Google, or several Indian startups is a result of open nature of internet that permitted innovation without any entry barriers. Startups need to be nurtured and not thrown out to deep-pocketed incumbents. If this happens all startups are certain to fail and so would the innovation prospects of India.

There are possibilities of the incumbents adopting anti-competitive practices by restricting entry of new players in the market through cheaper access to their services. All that is required is to enable internet adoption is bolstering out infrastructure, digital literacy and the showcasing the benefits of being online. To successfully execute Digital India initiative, it needs intervention of the Government and Public-Private Partnership and not walled gardens or differential access on internet.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Ok, firstly this shouldn't be approved. Even if somehow this comes through, it is essential for all content/service providers to get exactly the same opportunity. Consider one TSP or a content provider offering Zero Rating plans, for which they say the platform is open for all "satisfying minimum specifications". Firstly, if the platform is open for all, why are there minimum specifications in place? It automatically rules out some players from the getting on these platforms. This makes it subjective entry point and hand overs complete control of the internet to the platform owner, which is not desirable. Rather it should really be "open" where all content providers/apps would be able to enrol freely, irrespective of their attributes. Then all service/content/apps would remain available on such platforms, like in the present day, and the internet would thus stay intact. More importantly, the users would have all choices available and the platform, in itself, would not be able to restrict consumer's choice. This means that x, y and z content providers may have differential prices applicable but the choice of accessing either shall be on consumer's discretion and not dictated by the platform owners.

Another important aspect of such platforms, that needs mention, is the association with one TSP with each platform. If the platform introduced by a content provider was indeed meant for enhanced internet uptake, why was it restricted to one single TSP? It should be available across all platforms/TSPs. Why does one need to switch to a particular service provider to avail a platform meant for a noble cause? Hence, if the differential prices were at all permitted, each and every platform should be associated with each and every TSP as well. E.g. I am on "A" service provider, why do I need to switch to "B" to avail the platform? How does it help the already mobile empowered yet digitally excluded strata of population?

Differential pricing, in itself goes against the principles of TRAI: Non-discriminatory, transparency, not anti-competitive, non-predatory, non-ambiguous, and not misleading. However, since the question talks about a hypothetical situation, the differential plans might offer an affordable internet for a short-short time, but it will do a permanent damage to internet services, competition, market entry and innovation. The only way differential pricing may have the least negative impact would be handling the freedom of choice in consumer's hand and not the Content-provider/TSP.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Differential tariff plan doesn't seem to have any alternative model, as any differential access of

internet, is ought to violate principles of net neutrality. The internet is in the perfect form right now and there is no need for any alteration. Why fix something this is not broken? Differential pricing doesn't even offer a slightest upgrade to existing services then why should it be even considered for implementation.

Providing free internet is essential to bring the excluded on board, but if the corporates are so keen in philanthropy, they should rather be providing free and unrestricted internet packs rather than providing internet which limits access to their services and the services they deem worthy to reach consumers. They could do so as part of their Corporate Social Responsibility and the Companies Act could be revised to include such services as CSR activities. Bangladesh offers 20 MB of free data to consumers. Rest the two alternatives suggested in the consultation may also be adopted if the corporates are so keen to end digital exclusion.

If the idea is to be really noble, the TSPs and content providers should team up with the government to strengthen the existing infrastructure. The Government already has plans to provide free WiFi at certain places (community hotspots), wouldn't it really help if, rather than building Zero Rating Platforms, the TSPs or Content providers lend a hand to the government and take the initiative forward. Further, if need be, there could be other possible legitimate business models that can be developed without violating principles of net neutrality, such as subsidy mechanisms (provide free internet coupons to consumers, who will have their own choice to select which apps/websites to use); Time based model (operators can offer hourly or daily passes for accessing its WiFi Network); Free Models (service provider can offer service for public locations i.e. bus/train stations, hotel, airports, etc that wants to provide free access to its customers), etc.

The basis of any model, relating to internet access, is that it should be unrestrictive. Even if differential pricing was the only option, it should be based on free consumer choice in totality. There should be no discrimination at TSP/Content-provider's end. We do not require gatekeepers, as we as internet users know which gate to open ourselves. For those who are yet to taste internet, even they won't take too long in understanding it either.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The consultation doesn't talk about Big Data. For the differential tariff or Zero rating plans, there is associated high risk on consumer's privacy. Since these platforms would be acting gatekeepers, they would be able to get hold of sensitive information of the consumers. With TSPs/Content-providers holding sensitive consumer data, it all boils down to ethics. If ethics are violated, this has the power to bring down, not just a consumer but the entire nation. Also, the consultation doesn't talk about the role of the TSPs associated with the Content-provider's platform.

The TSPs have always been against net-neutrality and even for slightest financial implications on them, imposed by TRAI or DoT, they have cried aloud on their meagre revenues. Providing so called "free access" to internet also has financial implications on TSP, then how does that not impact their balance sheet, is an issue that warrants a response from the TSP. There is one more issue that should be considered in the consultation. Very recently, Facebook has been encouraging its users to send a standard response on the click of a button to TRAI, in support of Free Basics. However, it has been reported that this mechanism can be misleading. Facebook's move has been criticised on the ground that it might be resulting in people supporting Free Basics without realising the implications for net neutrality. Hence, the volume of submissions in support of Free Basics should be assessed by TRAI with prudence.

2.3.36 IT for Change

**Response of IT for Change, Bengaluru,
to Telecommunication Regulatory Authority of India's (TRAI)
Consultation Paper on 'Differential Pricing for Data Services'**

Before responding to the specific questions 1, 2 and 3, we will like to present an overall rationale and framing of our inputs which can be done as a response to the question 4 which is;

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

(The response to question 4 below is also summarised in a recent op-ed in Deccan Herald, "[So, what could be wrong with free Internet?](#)")

Internet is a powerful new phenomenon, which renders the issue of its regulation very complex, apart from being an uncharted territory. It can therefore also be quite confusing, dividing even people and groups who may otherwise have similar interests.

In the circumstances, it is required that regulatory interventions around the Internet are preceded by *a thorough assessment of the nature of the phenomenon of the Internet, and its role in emerging structures and systems of an information society, or, in this context more aptly called as, a digital network society. The current controversy around net neutrality must trigger such a larger examination by TRAI in the coming months.*

Internet is much more than just a telecommunication system. Traditional telecommunication systems have been a relatively inert and stable layer supporting distance communication, with very little internal differentiation. The typical regulatory issues here therefore have been of inter-connection, universal coverage, quality, and pricing of services. All such issues are relevant to the Internet as well.

Next, ***the Internet is also considered a new form of media***, as the term 'social media' implies. In its 2014 recommendations on 'issues related to media ownership', TRAI did describe the Internet as media. It then made this observation about the Internet, "...the impact of the new media platforms on plurality could be reviewed at a later stage when their penetration becomes deeper and usage substantial". Since, as discussed below, Internet is a key 'design element' in the emerging digital networked social configurations, the issues of plurality of media and Internet must be addressed *now*, before new social designs become too entrenched. The current TRAI consultation paper right employs concepts from media regulation like 'vertical integration' and 'gate-keeping' as being key to Internet regulation as well.

Beyond its role as a telecommunication system and a new form of media, ***Internet has a key constitutive role in the transformations that are currently taking place across all sectors of the society*** from governance, democracy, education, and health, to transport and entertainment, to work, trade and business. (In this regard, it is better to use the composite term 'Internet and its associated digital phenomenon' as the key driver of

transformation. But in this input we will loosely just say 'Internet' in its place.) In this constitutive role in digital network society transformations, the Internet must provide an even playing field for all actors and activities engaged in these changes. Even the slightest unevenness or deformity in the Internet magnifies into major deformities in the social systems transforming on the top of it, causing both considerable inequities and inefficiencies.

Next to its 'constitutive role', and in part in continuation of it, is ***the role of Internet as the 'people connecting layer' for all new digitally-transformed social systems***. The current early stages of the digital network society suggest a tendency towards increased monopolization in every sector as it becomes digital. The Internet, as the 'people connecting layer' for digital systems, then becomes the all-important 'manoeuvring zone' for people, enabling some degree of resistance to monopolization, allowing interoperability and switch-overs across different options. But if this public connectivity layer can also be rigged, by selling privileged transit over it, the risk of monopolization and lock-ins by a few corporates over key social sectors gets greatly enhanced.

It is in Internet's such ***dual role, as a constitutive element, and a 'people connecting layer', with regard to the emerging digital network society paradigm***, that the need to fully protect its net neutrality character is most clearly evident. In this formative stage of a new social paradigm, fiddling with the basic design of the Internet is to compromise the very design of the new social systems. Once, a flaw in Internet's design, like zero or differential pricing, is allowed to take root, it will quickly become a core design element of new digital-social arrangements. At that stage, it will be impossible to recover from it with the new digital social design having become relatively stable and entrenched. It is for this reason that the exigency of protecting the net neutral character of the Internet cannot be met down the line after a greater digital systems maturity has been attained, or by *ex post* interventions. It should be done now, and *ex ante*.

Lastly, regulatory interventions are especially required when the expected market dynamics are too highly loaded in a particular manner which is problematic. It is easy to see that monopoly inclined digital companies, in all sectors, would find it a small price to pay the telcos for a privileged use of the Internet as 'people connecting layer', rather than the consumers paying for connectivity. Telcos also realize that, while the value transiting through their networks with increasing digitalization of society is almost limitless, what they can charge consumers for connectivity has its limits. Instead, charging those who use a privileged transit over their networks to consolidate monopolies, and profiteer from it, is an ever-expanding source of revenue. ***It is so beneficial to all the big economic actors involved, at the expense of the rights and freedom of the people, that the slightest window of ambivalence that may be left in the regulation will be employed to quickly develop new digital social systems models that would then be difficult to reverse.***

It is of course for this reason, for instance, that the telco partners of the Free Basics platform are foregoing revenues in letting their networks to be used for free by the application provider and even allowing the latter to enjoy all the publicity of doing a 'humanitarian act' (while, in fact, Facebook is not the one providing free connectivity). ***This shows how large are the stakes here, and that they pertain to the overall, long-term model of rent-seeking with regard to the ever-expanding digital social activities.***

In the light of the above framing, we will now respond to the specific questions 1, 2 and 3.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No. Price based discrimination for data usage for accessing different websites/ applications/ platforms **should never be allowed**, in any circumstances. It should not even be allowed for temporary, promotional purposes. If a telco wants to promote its service, it can offer the entire Internet free, if needed, with time and/ or data cap restrictions. The only reason for differential pricing is to open up revenue streams from the content/ applications providers side, which immediately distorts the basic model of the Internet, which distortion will magnify and propagate through all digital social systems, as discussed earlier. **Internet must always provide all (legal) content and application at exactly the same terms to everyone.** That is basic to its social role as an egalitarian networking platform, where every actor and node gets treated the same as any other. The slightest compromise in this basic design will be like an interruptible tear that will cut through the fabric of a hoped for digital network society that provides everyone equality of opportunity and formal status.

We must mention here that ***we consider free provision of key public, emergency and other essential services, as determined by the regulator (and regularly revisited) and not a private company – whether a telco or an application provider – not only acceptable but also necessary.*** This must be enforced on all telcos as a licensing condition. After all, as more and more of these services become digital, it is irrational to deny someone an essential public service, or emergency medical help, just because one has run out of one's data pack! TRAI must set up an internal system of assessing and listing such free services and make it compulsory for all telcos to carry them free. To avoid confusion in discussions in this key area, we can employ 'zero rating' as a term only for a situation where selection of free services is made by telcos and not the regulator (a practice which should be fully disallowed). ***Regulator mandated free services can be named with a different term' like 'public and other essential services'.***

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Once differential pricing is allowed, no complementing measure will be able to stop the quick slide towards the complete inversion of the Internet's egalitarian model. We will rapidly see emerging new telco and monopoly application/ content providers' business models that would be too potent an economic combination to be able to resisted. These will soon become the dominant models of the Internet, and new social systems will shape around them. Very soon, they will be too entrenched to ever be reversed.

We must remain attuned to the very strong, almost explosive, dynamics at work as Internet shapes new digital social systems. Things that look in control may not remain in control once problematic practices like differential pricing are allowed, even on a tentative basis. Neither can they be controlled through supposed additional cautionary measures nor by *ex post* regulatory interventions. There is a basic systemic design issue at stake here.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest describe these methods/technologies/business models. Also, describe the potential benefits and

disadvantages associated with such methods/technologies/business models?

Internet is being referred to as a human right in many global discussions, and is being considered as such legally in some countries. Basic connectivity is the very foundation of 'Digital India'. There can be no 'Digital India' without universal connectivity of sufficient quality. Everyone therefore should be connected by Internet, whether one can afford it or not. Apart from the social considerations, there are such huge externalities of universal connectivity that it makes eminent economic sense as well. ***Every citizen should be provided a basic minimum data quota, as set by the regulator, and mandated through licensing conditions on telcos.*** Government may think of initially offsetting some of the revenue losses through USO Funds. However, as per telcos own logic in pushing zero-rated services, citizens that get free data quota are expected to keep aspiring for higher data usage and better data services and thus such a practice of 'free data quota' will only bring more revenue for them in the long term.

Meanwhile, government of India must leverage its National Optic Fibre Network, which should be handed over to local self governance bodies to run the last mile – over both wired and wifi models. These bodies may license local private operators – like the cable operator model – to retail connectivity but with the condition of free supply to community institutions like school, hospital, anganwadi, etc, ***and a basic free data quota for all.***

There is no alternative to wired, optic fibre connectivity, supported by local wifi networks, to address the issue of universal connectivity of a sufficient quality for all. Mobile operators must also offload to wifi connectivity wherever possible.

2.3.37 NERA Economic Consulting

Telecom Regulatory Authority of India
Consultation Paper on Differential Pricing for Data Services
Consultation Paper No. 8/2015
New Delhi, 9 December, 2015

DECLARATION OF JEFFREY A. EISENACH, PH.D.

December 30, 2015

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I. PURPOSE OF DECLARATION AND SUMMARY OF FINDINGS

1. My name is Jeffrey A. Eisenach. I have been asked by Facebook, Inc. to assess from an economic perspective the issues raised in the Consultation Paper on Differential Pricing for Data Services issued by the Telecom Regulatory Authority of India (TRAI) on 9 December 2015 (“Consultation Paper”).¹ This Declaration summarizes the results of my assessment.

2. The Consultation Paper raises certain questions about the use of differential pricing by Telecom Service Providers (TSPs), including whether the use of differential pricing goes against the principles of non-discriminatory tariffs or transparency, and accordingly whether it may have anticompetitive effects or otherwise harm consumers. At the same time, the Consultation Paper recognizes that differential pricing may enable wider access to the Internet. Accordingly, it concludes that “potential benefits and disadvantages of such practices have to be weighed in order to determine the regulatory approach.”²

3. My assessment of the differential pricing practices at issue here is consistent with the benefit-cost framework put forward in the Consultation Paper. Like many forms of business conduct in markets involving the Internet ecosystem, differential pricing has the potential *in the abstract* to have both positive and negative effects. The *actual* effect of such practices depends on the specifics of the practices themselves and on the market context. Accordingly, it is appropriate to assess the specific nature of both the practices and the markets at issue.

4. In this context, having examined both the practices and the markets at issue here, my analysis indicates that the potential benefits of the differential pricing practices discussed in the Consultation Paper exceed any potential costs, and accordingly that such conduct should not be prohibited or proscribed. Specifically, I conclude:

¹ TRAI, Consultation Paper on Differential Pricing for Data Services, Consultation Paper No. 8/2015, 9 December 2015 (Consultation Paper).

² Consultation Paper at ¶ 17.

- Under very general conditions, differential pricing in Internet ecosystem markets is a welfare-enhancing practice which reflects the characteristics of such markets. In particular, differential pricing allows Internet services to be extended to a larger user base, thereby exploiting both supply- and demand-side economies of scale and scope and setting in motion a “virtuous cycle” from which all market participants benefit, especially consumers who would otherwise not have had access to Internet services.
- The exceptional conditions that would create the potential for anticompetitive practices or otherwise harmful applications of differential pricing are not present in the Indian market for Internet services. Most importantly, the markets for Internet access and for online content and applications are highly competitive. The use of differential pricing is itself evidence of the competitiveness of the market, as it constitutes a form of non-price competition under which TSPs seek to win customers by offering differentiated services that create value for consumers.
- The forms of differential pricing observed in the Indian marketplace are *prima facie* not anticompetitive. To the contrary, the practices involved are neither exclusive nor discriminatory, but rather available to all similarly situated firms on non-discriminatory terms.
- To prohibit or proscribe the kinds of differential pricing practices addressed in the Consultation Paper would slow innovation, harm competition and reduce consumer welfare.
- There are strong marketplace incentives for firms to identify and implement alternative pricing schemes to expand Internet access to a greater proportion of the population. By contrast, the complexity and dynamism of the marketplace make it unlikely that regulatory efforts to devise such schemes would be successful.
- Any residual concerns about anticompetitive or other harmful effects of differential pricing are best addressed under existing antitrust and consumer protection laws and regulations.

5. The remainder of this Declaration is organized as follows. In Section II, I summarize my qualifications. In Section III, I review the characteristics of Internet ecosystem markets and present a conceptual framework for assessing the benefits and costs of differential pricing. In Section IV, I provide an overall assessment of the competitiveness of the markets for Internet services (including Internet access as well as content and applications) in India. In

Section V, I provide a response to the specific questions posed by TRAI in its Consultation Paper. Section VI presents a brief summary of my conclusions.

II. QUALIFICATIONS

6. My name is Jeffrey A. Eisenach. I am a Senior Vice President and Co-Chair of the Communications, Media and Internet Practice at NERA Economic Consulting. NERA is a global economic consultancy with more than 25 offices in North America, Europe and Asia-Pacific. My primary business address is 1255 23rd St. NW, Washington, DC 20037. I hold a Ph.D. in Economics from the University of Virginia and a B.A. in Economics from Claremont McKenna College. I have previously served in senior policy positions at the U.S. Federal Trade Commission and the White House Office of Management and Budget, and on the faculties of Harvard University's Kennedy School of Government and Virginia Polytechnic Institute and State University. I have been studying, writing about and teaching telecommunication regulation for nearly 20 years, and have published articles on telecommunications regulation in journals such as *Telecommunications Policy*, the *Review of Network Economics* and the *Federal Communications Law Journal*; and, I have testified and/or submitted expert reports on communications matters before the U.S. Congress and the Federal Communications Commission (FCC), and before regulatory agencies in numerous U.S. states and territories and several foreign countries. In addition to my position with NERA, my other current affiliations include serving as an Adjunct Professor at George Mason University Law School (where I teach the course on Regulated Industries), as a Visiting Scholar at the American Enterprise Institute, as a member of the Board of Directors of the Information Technology and Innovation Foundation, and as a Member of the Executive Committee of the Economic Club of Washington. A copy of my

curriculum vita is at Exhibit A. Earlier this year I prepared an analysis of *The Economics of Zero Rating*,³ upon which this declaration is partially based. That paper is at Exhibit B.

III. ASSESSING THE EFFECTS OF DIFFERENTIAL PRICING

7. In this section I put forward an analytical framework for assessing the effects of differential pricing. First, I describe the relevant characteristics of Internet ecosystem markets, such as the markets for mobile Internet connectivity and online content and applications, which form the basis for assessing the effects of practices such as differential pricing. Second, I apply the resulting conceptual framework to the conduct at issue here to assess its potential benefits and costs.

A. Relevant Characteristics of Internet Ecosystem Markets

8. In general, the welfare effects of pricing schemes and other business practices depend on the characteristics of the markets in which they are deployed. The markets at issue here are Internet ecosystem markets, which are distinguished from more traditional “textbook” markets by three primary characteristics: *dynamism*; *modularity*; and *demand-side effects*.⁴

9. *Dynamism* refers to the significance of innovation as a measure of market performance: In dynamic markets, the ability of a firm to offer new and improved products

³ Jeffrey A. Eisenach, *The Economics of Zero Rating*, NERA Economic Consulting (March 2015).

⁴ This section relies in part on Jeffrey A. Eisenach and Ilene Knable Gotts, “In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector,” in Fabrizio Cugia di Sant’Orsola, Rehman Noormohamed, and Denis Alves Guimarães, eds., *Communications and Competition Law: Key Issues in the Telecoms, Media and Technology Sectors* (Wolters Kluwer Law and Business, 2014) 69-90. For a more extensive discussion of these phenomena and their implications for competition analysis, see Jeffrey A. Eisenach, *Broadband Competition in the Internet Ecosystem* (American Enterprise Institute, 2012); see also Oz Shy, *The Economics of Network Industries* (Cambridge University Press, 2001).

plays at least as significant a role in its success (*i.e.*, its profitability) as the ability to produce and sell existing products at lower prices.⁵

10. Typically, Internet ecosystem firms create new products by making significant sunk cost investments (which may take the form of either “R&D” or capital expenditures in non-recoverable facilities). As a result, production benefits from economies of scale – *i.e.*, average total costs that decline at higher levels of production, but always exceed marginal costs. Producers are able to recoup their sunk cost investments because products are differentiated through innovation (innovation can be thought of as simply product differentiation over time), meaning that long-term prices in such markets are higher than marginal cost, notwithstanding the existence of robust competition. Under traditional antitrust doctrine, the ability to earn high margins might be mistaken for monopoly power (the ability to earn excess profits), but assuming low entry barriers, it is not only consistent with, but necessary for, robust competition and the maximization of consumer welfare in these types of dynamic markets. In such markets, high accounting margins not only allow firms to recoup sunk cost investments, but also provide the incentive to take the risks inherent in innovation.⁶

11. A second characteristic that distinguishes Internet ecosystem markets is *modularity*, or what is sometimes referred to as “platform competition.” From an economic perspective, modularity is associated with strong complementarities in production or

⁵ See William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton University Press, 2002), at 4 (“Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals.”).

⁶ Especially in dynamic markets with high rates of innovation, high margins as measured by accounting data do not necessarily equate to high profits from the perspective of economics or competition analysis. The seminal reference is Franklin M. Fisher and John J. McGowan, “On the Misuse of Accounting Rates of Return to Infer Monopoly Profits,” *American Economic Review* 73;1 (March 1983) 82-97.

consumption: Operating systems are strong complements with personal computers; smart phones are strong complements with both communications networks and online content, such as mapping services, restaurant reviews, or social networks. Modularity also creates demand for compatibility or “interconnection.” Firms that produce complementary products (*e.g.*, Microsoft and Nokia, or Facebook and Reliance Communications)⁷ may team up to create platforms (sets of compatible complements); in other cases (*e.g.*, Apple, BlackBerry) firms choose to achieve compatibility through vertical integration. Competition in such markets takes place both within platforms (*e.g.*, between HTC and Samsung for share on the Android platform) and among them (*e.g.*, between the Android and iOS operating environments).

12. Finally – and importantly for assessing differential pricing schemes like those addressed in the Consultation Paper – Internet ecosystem markets are also characterized by significant *demand-side effects*, including economies of both scale and scope. Demand-side economies of scale, also known as network effects, imply that a product is more valuable to consumers as the number of users increases. The prototypical, if now somewhat dated, example is the fax machine. Demand-side economies of scope, by contrast, imply that a product’s value increases with the diversity (as opposed to simply the number) of users: The value of a credit card network to both consumers and merchants depends on the presence of the other *type* of participant. Markets characterized by demand-side economies of scope are referred to as “two-sided” or “multi-sided.” Another characteristic of multi-sided markets, discussed further below, is the virtuous cycle by which all market participants benefit from the growth of the market.

⁷ “Examples include Reliance Communications coming together with Facebook to provide free access to 38 websites including Facebook, Wikipedia, Reliance Astrology, AajTak etc.” (TRAI, Regulatory Framework for Over-the-Top (OTT) Services, Consultation Paper No: 2/2015, March 27, 2015, ¶ 6.1.)

Thus, for example, both TSPs and content providers benefit from the market expansion that results from differential pricing.

13. The relationship between competition and consumer welfare in markets with demand-side effects is more complicated than in more traditional markets in several ways. For example, it is well established that the operator of a two-sided market has strong incentives to set efficient relative prices (*i.e.*, to engage in efficient price discrimination).⁸

B. Potential Benefits of Differential Pricing

14. The discussion above provides a conceptual framework for assessing the effects of differential pricing regimes like those addressed in the Consultation Paper. This section applies this framework to assess the potential benefits of differential pricing in the markets for online content and applications, mobile access, and the Internet ecosystem overall. Specifically, it discusses: (1) the role of differential pricing in capturing network externalities (demand side economies of scale); (2) the efficiency of differential pricing in dynamic markets; and (3) differential pricing as a mechanism for competitive product differentiation in mobile wireless markets. In each of these respects, differential pricing of the sort discussed in the Consultation Paper is under general conditions best understood as a market-driven mechanism for achieving economically efficient (and socially desirable) outcomes.

1. Differential Pricing and Network Effects

15. Online content providers and mobile networks operate in markets that can have network effects, in that the value of the network to customers grows with the addition of other customers. The extent and nature of network effects can vary significantly in particular cases. In

⁸ See, e.g., Julian Wright, “One-Sided Logic in Two-Sided Markets,” *Review of Network Economics* 3(1) at 44 (2004).

some cases, expansion increases the value for all customers on the network. In others, the effects are limited to additions within smaller groups. And in others, benefits arise when different kinds of participants join a network.⁹ Thus, it is often in the interests of current participants in a network to promote its growth in some form, and sometimes in the interests of society generally to promote universal participation. Governments often subsidize participation in industries with network effects through direct or indirect government subsidies (e.g., universal service for telephone and, more recently, broadband adoption).

16. One significant benefit of differential pricing is to expand participation in online content and applications, while also increasing mobile wireless penetration, especially in developing economies.¹⁰ There is a substantial literature in support of the proposition that expanded Internet access, principally through higher mobile wireless adoption, has a variety of economic and societal benefits.¹¹ Such benefits should be of particular interest in India, which –

⁹ The impact of network effects can depend on a variety of factors. For example, some of the network effects of increasing wireless penetration are shared among carriers thanks to the fact that carriers interconnect with one another (so subscribers to each network can call subscribers on other networks). Carriers may seek to capture some of these effects through programs (“friends and family” plans) that encourage in-network calling.

¹⁰ For example, a 2010 program by Turk Cell involving Twitter resulted in a 340 percent increase in Twitter traffic. See Internet Governance Forum, *Net Neutrality, Zero Rating and Development: What’s the Data?* (transcript), September 3, 2014. Facebook reports that its Internet.org program has resulted in a 50 percent increase in the rate at which new users sign up for mobile data services. See Facebook, *Comments on the Report of the DoT Committee on Net Neutrality* (August 14, 2015) at 2 (“Facebook Comments”)

¹¹ See e.g., Chandra Gnanasambandam *et al.*, *Online and Upcoming: The Internet’s Impact on India*, McKinsey & Company (2012) (available at www.mckinsey.com/~/media/mckinsey%20offices/india/pdfs/online_and_upcoming_the_internets_impact_on_india.ashx internet penetration benefits india); see also *Value of Connectivity: Economic and Social Benefits of Expanding Internet Access* (Deloitte 2014 (available at https://fbcdn-dragon-a.akamaihd.net/hphotos-ak-ash3/t39.2365/851546_1398036020459876_1878998841_n.pdf); see also *Digital Entrepreneurship in Kenya 2014* (GSMA, 2014) (available at http://www.gsmaentrepreneurshipkenya.com/GSMA_KENYA-AR2014-060214-WEB-SINGLE-PGS.pdf).

despite having a very large online population – continues to experience relatively low rates of Internet penetration.¹²

17. The power of network effects is sometimes greatest within “communities of use.” That is, the value of adding an additional member is greater for members who are more closely connected with (i.e., who value interactions with) existing members than those who are (in the same sense) further away. In this context, differential pricing is appropriately understood as a mechanism for achieving increased participation within relatively small communities, including within lower-income populations in developing economies.¹³

18. By promoting the positive network effects of increased adoption, differential pricing thus generates positive social as well as economic externalities.

2. Differential Pricing in Dynamic Markets

19. Both online content providers and mobile broadband services are characterized by dynamic competition – that is, both industries make large, non-recoupable investments in R&D and physical infrastructure which are largely invariant to the number of users. As discussed above, in such industries, the average cost curve is declining over the relevant range of output: Simply put, it always costs less to produce an incremental unit of output than it costs, on average, to make the previous ones.

¹² ITU, *ICT Facts and Figures 2015*, (<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>) Individuals_Internet_2000-2014.xls.

¹³ Social networks like Facebook and Twitter have been shown to play a significant role in driving Internet adoption in developing countries, where the proportion of Internet users who use such applications is higher than in the U.S. See e.g., Lee Rainie and Jacob Poushter, “Emerging Nations Catching Up to U.S. on Technology Adoption, Especially Mobile and Social Media Use,” Pew Research Center (February 13, 2014) (available at <http://www.pewresearch.org/fact-tank/2014/02/13/emerging-nations-catching-up-to-u-s-on-technology-adoption-especially-mobile-and-social-media-use/>).

20. Just as with markets in that experience network effects, consumer welfare can be increased in dynamic markets if firms are able to identify and offer discounts to “marginal” customers, that is, those with lower willingness (or ability) to pay, thus expanding the size of the market and generating the additional revenues that can be used to defray the fixed costs of investment and innovation. It is widely agreed that such differential pricing – referred to by economists as – “competitive price discrimination” – is not only widespread, but generally improves economic efficiency and increases consumer welfare.¹⁴

21. In this context, differential pricing can be understood economically as a mechanism by which mobile carriers engage in efficient price discrimination through the bundling of two goods (mobile wireless service and content), thereby creating the ability for marginal consumers to pay a reduced price by choosing a differentiated product in the form of a “basic” form of online access.¹⁵ In so doing, differential pricing improves economic efficiency by supporting continuing investment and innovation in both networks and content while expanding Internet access to consumers who would otherwise be unserved.

22. These effects are accentuated by the two-sided nature of Internet ecosystem markets, as the benefits accrue to both content providers (by increasing the number of

¹⁴ See e.g., William J. Baumol and Daniel G. Swanson, “The New Economy and Ubiquitous Competitive Price Discrimination: Identifying Defensible Criteria of Market Power,” *Antitrust Law Journal* 70 (2003) 661-685 at 665; see also, e.g., Hal R. Varian, “Differential Pricing and Efficiency,” *First Monday* 1;2 (August 1996) at 2 (“[M]any important industries involve technologies that exhibit increasing returns to scale, large fixed and sunk costs, and significant economies of scope. Two important examples of such industries are telecommunications services and information services. In each of these cases the relevant technologies involve high fixed costs, significant joint costs and low, or even zero, marginal costs. Setting prices equal to marginal cost will generally not recoup sufficient revenue to cover the fixed costs and the standard economic recommendation of ‘price at marginal cost’ is not economically viable. Some other mechanism for achieving efficient allocation of resources must be found.”).

¹⁵ Facebook and its partners in Free Basics have made extensive investments to understand the realities of Internet access in the developing world and to use this knowledge to develop ways to expand Internet access in such countries.

subscribers) and subscribers (by increasing the amount of available content).¹⁶ In the case of applications like Facebook, Twitter and Wikipedia, in which “consumers” are also content creators, the benefits are enhanced still further: by attracting additional participants onto the platforms of such services, differential pricing increases *both* the number of content consumers and the amount of content available. This “virtuous cycle” effect helps to explain why firms like Facebook are taking the lead in encouraging differential pricing programs.¹⁷

3. Differential Pricing and Competition in Mobile Wireless Markets

23. Lastly, firms in dynamic industries are better able to defray their fixed costs to the extent they can differentiate their products and attract more consumers. Differential pricing programs are an instrument by which mobile wireless firms can differentiate themselves from competitors by offering access to customized content with their mobile wireless services. Product differentiation also can serve to intensify competition in such markets. In this context, it is notable that the most prominent examples of differential pricing in the U.S. have involved MetroPCS, Sprint and T-Mobile,¹⁸ all of which have used zero-rated offerings to differentiate their products from larger competitors. Similarly, differential pricing has played a significant role in product differentiation for Globe (Philippines), which has offered zero-rated access to Facebook and other applications as part of its marketing campaigns.¹⁹ Thus, differential pricing

¹⁶ To the extent content providers contribute financially to differential pricing programs through sponsored data programs, they do so in reflection of the increased value (at least over the long run) of enhanced distribution. But carriers may (and do) choose to offer differential pricing even without a financial payment from content providers simply because it increases the value of their platforms.

¹⁷ Relatedly, to the extent differential pricing ultimately increases the audience for mobile content services, it also implicates yet another “side” of the multi-sided mobile wireless ecosystem – advertisers.

¹⁸ MetroPCS is now part of T-Mobile.

¹⁹ See “Globe Telecom Expands Mobile Data Business with Free Facebook, Free Viber Offer,” *Adobo Magazine* (January 8, 2015) (available at <http://www.adobomagazine.com/phillipine-news/globe-telecom-expands-mobile-data-business-free-facebook-free-viber-offer>).

generally contributes to the competitiveness of mobile wireless markets. As discussed further in Section IV, there is evidence that differential pricing in the Indian wireless market is an important element of competition.

C. Potential Costs of Differential Pricing

24. As noted at the outset, differential pricing has the potential, in the abstract, to harm competition and consumers. In theory, for example, a monopolist might seek to forestall entry into a market by bundling its services in such a way as to raise rivals' costs; or, it might condition access to its products and services by downstream firms on agreements to purchase all or some substantial proportion of their output from the monopolist (thereby effectively foreclosing some or all of the market from competitors).²⁰

25. In order for these effects to occur in the real world, however, a number of conditions must be met, both in terms of the characteristics of the market and the nature of the conduct. Most importantly, the firm(s) engaging in such conduct must have sufficient market power to succeed in actually foreclosing competition – that is, to raise rivals' costs sufficiently to actually foreclose entry (or expansion) by an otherwise equally efficient competitor. As discussed in Section IV below, the evidence shows that such market power does not exist in either the TSP market or in the market for online content and applications in India. Secondly, the nature of the conduct must be such that it can plausibly be construed as having anticompetitive effects. As I explain further in Section V below, the differential pricing practices discussed in Consultation Paper do not appear to pass this basic test – that is, they do not appear

²⁰ See e.g., Einer Elhauge, “Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory,” 123 *Harvard Law Review* (2009) 399-481.

to discriminate against actual or potential competitors of the firms engaged in differential pricing.

26. As the Consultation Paper explains, another potential cost of differential pricing could take the form of consumer deception (i.e., lack of transparency).²¹ For example, consumers might be tricked by differential pricing plans into believing, say, that all data services are free when in fact many are still subject to data charges, and thereby subjected to fees they did not expect or desire to incur. There are several reasons to believe that such practices are unlikely, including (as discussed further in Section IV) the vigorous competition and attendant high rates of turnover (churn) in the Indian mobile wireless market, which suggests that firms engaging in such deception would suffer loss of market share as a result. Further, as I explain in Section V, if such conduct were to be observed in the marketplace, the appropriate response would be to enforce existing consumer protection regulations²² rather than to prohibit or proscribe an otherwise presumptively beneficial business practice.

IV. COMPETITION IN RELEVANT INTERNET SERVICES MARKETS

27. As discussed immediately above, economic assessment of the impact of differential pricing schemes depends in significant measure on the competitiveness of the underlying markets. If markets are competitive, then the likelihood of anticompetitive effects of differential pricing is effectively eliminated, and the ability of the market to police deceptive conduct without regulatory intervention is enhanced. The evidence in this section suggests that

²¹ See Consultation Paper at ¶ 6.

²² For example, TRAI recently made it mandatory for mobile network operators to inform their customers about data usage. (Telcos must inform customers about data usage: TRAI, *The Times of India*, August 8, 2015.)

both the mobile wireless market and the markets for online content and applications in India are highly competitive.

28. First, the evidence demonstrates that the Indian market for telecommunications services is among the most competitive in the world.²³ As reported in the most recent TRAI Indian Telecom Services Performance Indicators,²⁴ as of June 2015 there were 319.4 million Internet subscribers.²⁵ As shown in Figure 1, Internet subscription occurs principally through mobile wireless access.²⁶

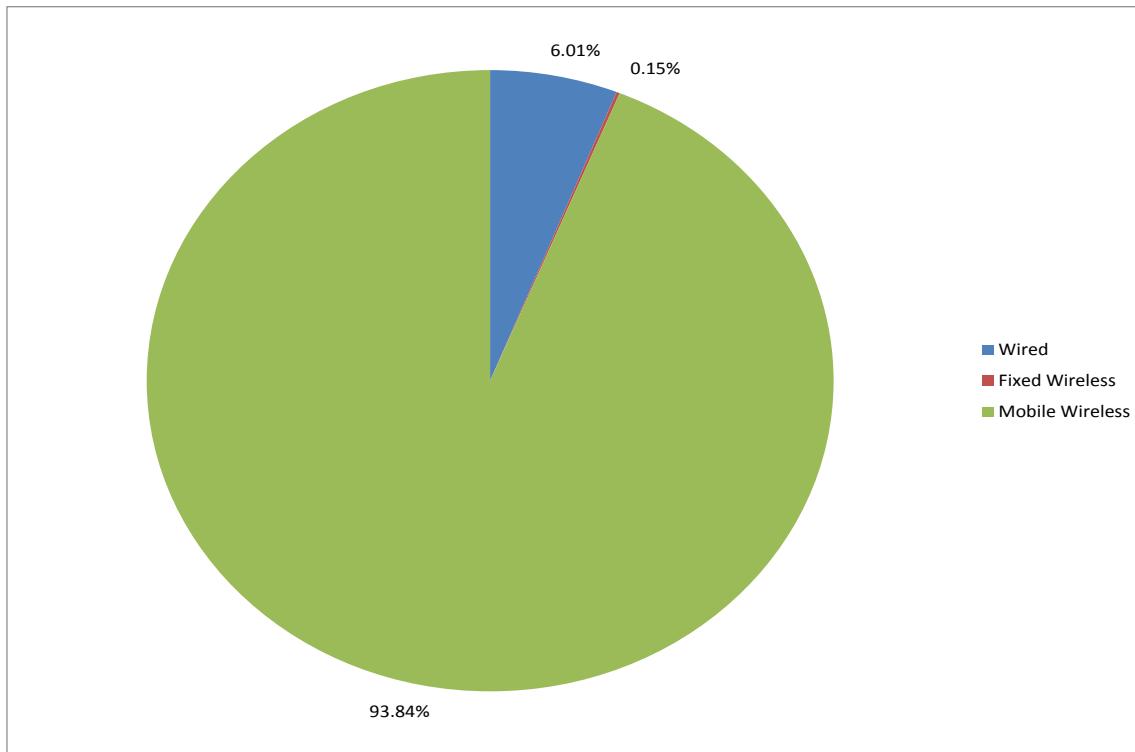
²³ The TRAI tariff framework companies are comprised of Internet Service Providers (ISPs) and Data Service Providers (mobile wireless providers), together the Telecom Service Providers (TSPs).

²⁴ TRAI, The Indian Telecom Services Performance Indicators, April – June 2015, November 23, 2015 (TRAI, Performance Indicators).

²⁵ TRAI, Performance Indicators, April – June 2015, p. ii.

²⁶ TRAI, Performance Indicators, April – June 2015, p. v.

FIGURE 1:
COMPOSITION OF INTERNET SUBSCRIPTIONS

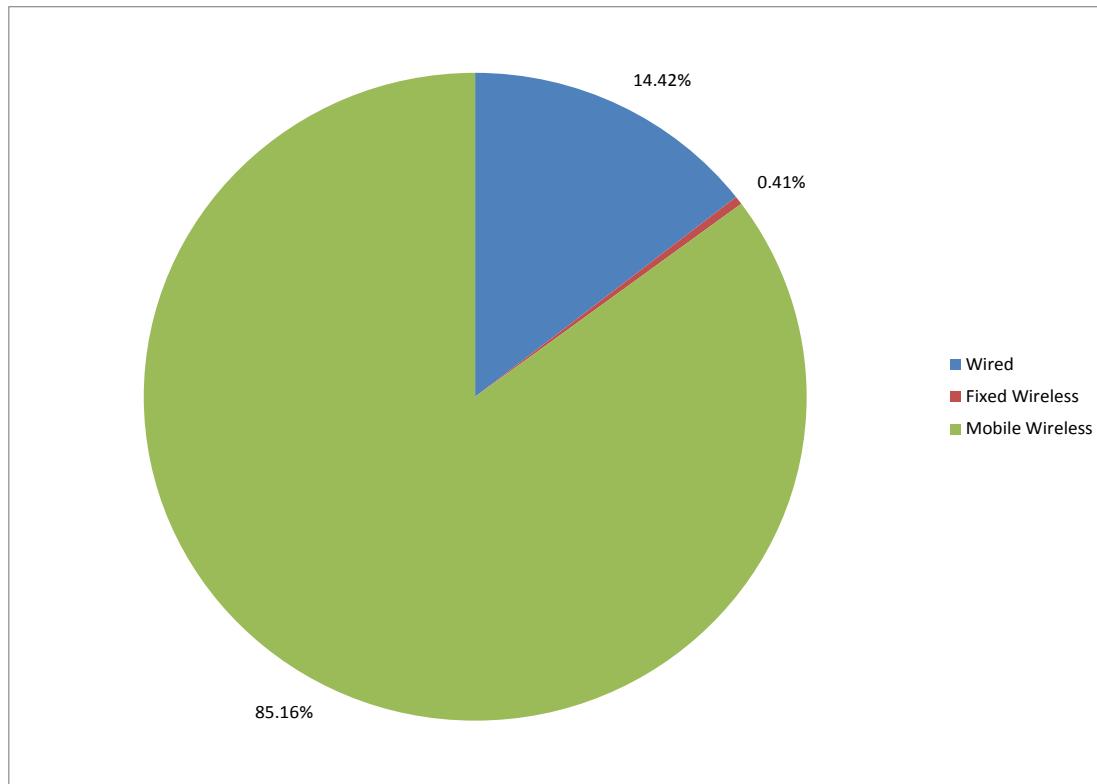


29. Of the 319.4 million Internet subscribers, 108.9 million, or 34 percent, were broadband subscribers.²⁷ As shown in Figure 2, broadband subscribers also access the Internet principally through mobile wireless, which accounted for a little over 85 percent of broadband subscribership as of June 2015.²⁸

²⁷ Broadband is defined as download speeds greater or equal to 512 Kbps. The first TRAI Performance Indicator report to do so is October – December 2013, prior to that broadband was defined as 256 Kbps. (TRAI, Performance Indicators, April – June 2015, p. 35; and October – December 2013, p. 25, ¶ 1.30.)

²⁸ TRAI, Performance Indicators, April – June 2015, p. 28.

FIGURE 2:
COMPOSITION OF BROADBAND INTERNET SUBSCRIPTIONS



30. The principal providers of broadband Internet access are Bharti Airtel, Vodafone, Bharat Sanchar Nigam Ltd. (BSNL),²⁹ Idea Cellular, Reliance Communications, Tata, and Aircel. Of these, BSNL has a significant wired broadband presence, with wired broadband accounting for 54 percent of its 18.2 million broadband Internet subscribers.

31. The service areas of the major wireless providers as of June 2015 largely cover all of India,³⁰ as shown in Table 1.

²⁹ BSNL is state owned. (TeleGeography, *GlobalComms Database*, India, p. 5 (accessed December 21, 2015).)

³⁰ Note that All India is variously defined as covering 22 and 23 licensed areas. (TRAI, Performance Indicators, April – June 2015, p. 10 and Annexure 1.1.)

TABLE 1:
WIRELESS SERVICE PROVIDER AREAS OF OPERATIONS

<u>Wireless Service Provider</u>	<u>Area of Operations</u>
Bharti Airtel	All India
Vodafone	All India
Bharat Sanchar Nigam Ltd.	All India (except Delhi & Mumbai)
Idea Cellular	All India
Reliance Comm.	All India (except Assam & NE)
Tata	All India (except Assam, NE & J&K)
Aircel	All India

32. Data on the market shares of broadband providers show that, as of June 2015, there were seven broadband Internet providers with shares of three percent or greater, with the highest share (22.6 percent) held by Bharti Airtel, as shown on Table 2.³¹ Even when the data is limited to wireless providers, the market is still relatively unconcentrated, with Bharti Airtel, Vodafone and Idea Cellular serving 24.8, 23.7 and 17.9 percent of subscribers, respectively.³² Thus, from a structural perspective, the Indian mobile wireless market is relatively unconcentrated. As one industry analyst firm describes it, “India is one of the most crowded mobile markets in the world, with a dozen active mobile Operators ... and, as such, many areas are served by ... eight or more mobile providers.”³³

³¹ TRAI, Performance Indicators, April – June 2015, Annexure 1.6.

³² TRAI, Performance Indicators, April – June 2015, p. 36, ¶ 1.51.

³³ TeleGeography, *GlobalComms Database*, India, p. 46 (accessed December 21, 2015).

TABLE 2:
FIXED AND WIRELESS BROADBAND INTERNET SUBSCRIBERS BY PROVIDER

	<u>Internet Broadband</u>	Share of <u>Internet Broadband</u>
1 Bharti Airtel	24,559,552	22.6%
2 Vodafone	22,076,479	20.3%
3 Bharat Sanchar Nigam Ltd.	18,197,562	16.7%
4 Idea Cellular	16,671,982	15.3%
5 Reliance Comm.	9,740,900	8.9%
6 Tata	7,411,603	6.8%
7 Aircel	3,424,306	3.1%
8 Sistema Shyam	1,908,025	1.8%
9 Mahanagar Telephone Nigam	1,520,406	1.4%
10 Atria Convergence Tech.	721,439	0.7%
Subtotal	106,232,254	97.6%
Other	2,620,194	2.4%
Total	108,852,448	100.0%

33. Similarly, in 2013, the Organisation for Economic Co-operation and Development (OECD) found that “[t]he mobile market [in India] is among the most competitive with some 15 operators providing services and among the lowest prices globally.”³⁴ And in a recent report, the India Brand Equity Foundation (IBEF) described mobile wireless as facing “intense competition” due to the presence of “around 6 to 7 players in each region” and that “[c]ustomers’ low switching cost and price sensitivity are increasing competition among players.”³⁵

34. Consistent with this vigorous competition, and with the competitive dynamics of Internet ecosystem markets as described in Section III, mobile wireless operators in India compete by offering a wide array of service plans and differentiated product offerings, including

³⁴ OECD, *Communications Outlook 2013*, p. 59.

³⁵ IBEF, *Telecommunication*, August 2015, p. 23.

both prepaid or postpaid contracts.³⁶ Most subscriptions are prepaid, accounting for about 95 percent of subscribers in June 2015, a share that is unchanged from December 2009.³⁷

35. To understand the extent of service plan differentiation, I examined the pricing plans of several carriers, and refer to Bharti Airtel's offerings as an example. It offers two basic plans accompanied by numerous promotions (see Exhibit C). Basic tariff plans price local and long distance calls, SMS and data. Promotions for Bharti Airtel include, for example, the ability to separately purchase a Star Sports Pack bringing live cricketing action, to participate in "Exciting Offers on Airtel Money" that allow the booking of railway tickets with no data or SMS charges, or "Stay Online Throughout the Night" which offers the ability to check birthday notifications on Facebook or chat through the night on Whatsapp for fixed fee. Baharti Airtel also offers a Facebook Pack which allows for 15Mb of data over 5 days (for 5Rs) or 21Mb of data over 7 days (for 7Rs). In addition to offering promotions, Bharti Airtel introduced Airtel Zero in April 2015. Airtel Zero operates as an open platform offering toll-free mobile app data services with the data charges paid by the corporate participants.³⁸ Further evidence of the variety of tariffs and promotions being introduced is Bharti Airtel's announcement that as of December 29 Internet packs for its prepaid customers would no longer have a fixed period during which the data had to be consumed (i.e., the data packs will be "validity-free").³⁹

³⁶ As the Consultation notes: "The past few years have witnessed tremendous growth in data usage and quite a large number of data tariff offers are made available by TSPs." (TRAI Differential Pricing Consultation, ¶ 8.)

³⁷ Consists of a blended GSM and CDMA subscriber rate. (TRAI, Performance Indicators, October – December, 2009, pp. 34, 39; and April – June 2015, pp. 42, 50.)

³⁸ Bharti Airtel, Media Centre, *Airtel Launches 'Airtel Zero': A win-win platform for customers and marketers*, April 6, 2015.

³⁹ *Airtel introduces validity-free internet packs*, Business Standard, December 24, 2015.

36. Competition among mobile operators focuses to a significant extent on efforts to increase penetration and usage, including the offering of Internet applications. For example, Reliance Communications' Annual Report states:

We aim to expand our revenue streams through the expansion of our portfolio of service offerings and launching specific sales and marketing initiatives aimed at increasing our customer base. Such efforts include (i) offering a wider range of wireless and wireline services, such as video on demand, online gaming and video chat and conferencing; (ii) further expanding our distribution network of retail stores and developing them into one-stop shops for retail customers; and (iii) providing wireless broadband data services through both our CDMA and 3G mobile networks. In addition, we intend to focus on cross-selling and bundling of our products and services, including bundling of free social networking applications with data packages, through our various partnerships with device manufacturers and application developers. This enables us to introduce more attractive categories of tariffs and product combinations that can cater to different markets, demographics and customer needs, and in turn, benefit our customers from the greater value presented by our product offerings.⁴⁰

37. Similar points are made by the other mobile operators. For example, Bharti Airtel whose "market research has shown that there are millions of customers across the country, who own an Internet-ready mobile device and are keen on getting online, but are apprehensive due to reasons like lack of know-how and fear of incurring heavy data charges" created a 'One Touch Internet' portal "for the 'uninitiated' to see, try and buy a host of popular services (including social networking, videos, online shopping and travel bookings)." These services include Facebook, YouTube, Twitter and Flipkart.⁴¹ According to Bharti Airtel's Annual Report, One

⁴⁰ Reliance Communications, *Annual Report*, 2014-15, p. 34.

⁴¹ The OneTouch Internet FAQ page states that all trials except YouTube expire at midnight.

Touch has helped 2 million first time users experience the Internet.⁴² Another operator, Idea Cellular reports that its expanded 3G network, reduced 3G handset prices “and availability of user friendly applications, has resulted in improved share of Data revenue in the [company’s] total revenue.”⁴³

38. The high proportion of prepaid subscriptions in the Indian market is an important component of competition, as it allows most consumers to rapidly switch (i.e., “churn”) between mobile wireless services. Reliance Communications, in its Annual Report, describes it as follows:

The Indian mobile telecommunications industry has historically experienced a high rate of churn. This high churn rate has been a consequence of increasing competition and resultant promotional tariffs for new connections. Churn rates are especially high among pre-paid subscribers, who constitute a significant portion of the subscriber base of the Indian telecommunications industry.⁴⁴

Monthly churn estimates range from 2.7 percent for Bharti Airtel⁴⁵ and 3.6 percent for Reliance Communications,⁴⁶ and have been reported to be as high as 4 to 6 percent, meaning that 32 to 72 percent of subscribers switch providers each year.⁴⁷

⁴² Bharti Airtel Ltd., *Annual Report*, 2014-15, p. 16; Bharti Airtel, Media Centre, Airtel Launches ‘One Touch Internet’ – the simplest way for first time users to learn the internet, November 7, 2014; and OneTouch Inter FAQ (<http://one.airtel.in/ifb/faq.html>, accessed December 26, 2015).

⁴³ Idea Cellular Ltd., *Annual Report*, 2014-2015, pp. 41, 73. In addition to the “usual applications, Idea has launched several mobile applications aimed at improving information access and quality of life for non-urban communities across the country, which are often economically disadvantaged. These initiatives pertain to education and learning, mobile banking, agricultural information, health and safety, government schemes and employment generation.”

⁴⁴ Reliance Communications, *Annual Report*, 2014-15, p. 40.

⁴⁵ For fiscal year ending March 2015. (Bharti Airtel Ltd., *Annual Report*, 2014-15, p. 85.)

⁴⁶ For the second quarter 2015. (Reliance Communications, *Investors’ Presentation*, November 2015, slide 28.)

⁴⁷ MNP fails to enthuse customers as only over two percent subscribers have opted, December 4, 2011 (<http://www.telcoma.in/en/tag/telecom-regulatory-authority-of-india-trai/>) and P.S. Rajeswari & P. Ravilochanan, *Churn Analytics on Indian Prepaid Mobile Services*, Asian Social Science; Vol. 10, No. 13; 2014, p. 170.

39. Vigorous competition has resulted in rapid growth in mobile wireless uptake. For example, the number of wireless subscribers grew from 525 million in December 1999 to 981 million June 2015, or 87 percent, with rural wireless subscribers growing from 165 million to 418 million, or 154 percent, over this period. As a result, rural wireless teledensity increased from 20 percent to 48 percent.⁴⁸ Overall Internet broadband adoption grew by 97 percent from 55 million subscribers in December 2013 to 109 million in June 2015, and wireless broadband adoption grew even faster, growing by 130 percent from 40 million to 93 million.⁴⁹ During this period per subscriber data usage increased from 60 MB to 110 MB per month, an increase of 85 percent.⁵⁰

40. TRAI itself has concluded that competition among TSPs has benefited consumers. In its Decadal Profile of the telecom sector, issued in June 2012,⁵¹ TRAI's Chairman, Dr. J.S. Salma, wrote:

Conducive regulatory environment through policies of the Government and regulatory measures put in place by the Telecom Regulatory Authority of India (TRAI) have contributed to a competitive environment for the service providers and accessibility to telecom services at affordable tariff, to the consumers.⁵²

41. The evidence suggests that the market for online content and applications has been important to the growth of Internet subscribers. As TRAI's Consultation Paper on Delivering Broadband notes, “[f]or the demand side of the ecosystem, relevant, useful and

⁴⁸ A subscriber may be counted more than once, for example, urban subscribers have a wireless teledensity of 144 percent in June 2015. (TRAI, Performance Indicators, October – December 2009, p. i and April – June 2015, p. i.)

⁴⁹ During this period broadband was defined as a speed greater or equal to 512 Kbps, prior to October–December 2013 broadband was defined as a speed greater or equal to 256 Kbps. (TRAI, Performance Indicators, October – December 2013, p. 26 and April – June 2015, p. 28.)

⁵⁰ TRAI, Performance Indicators, October – December 2013, p. ii and April – June 2015, p. ii.)

⁵¹ TRAI, Telecom Sector in India: A Decadal Profile, 2012 (TRAI, Telecom Decadal Profile).

⁵² TRAI, Telecom Decadal Profile, Foreword.

innovative advancements in services, applications, and content are important for encouraging adoption and use of broadband.”⁵³

42. The Indian market for online content and applications also appears to be highly competitive. For example, the TRAI has noted that “[h]undreds of thousands of OTT apps have emerged due to the low cost base required to provide a service in the internet environment.”⁵⁴ The market for social networks is also competitive. According to 2015 data provided by WeAreSocial, major social networks present in India include Facebook, Google+, Twitter, LinkedIn, and Instagram. Moreover, the market is far from saturated: Only about 38 percent of active Internet users are social media users.⁵⁵ Nor is there any shortage of applications. According to WeAreSocial, the average smartphone user in India has 17 apps on the device. Of course, Internet users are not limited to social networks or other apps. The most searched terms in India in 2014 were the IRCTC (cricket), followed by Flipkart, SBI Online and Snapdeal.⁵⁶ Table 3 shows, for those looking online, the multiple sources used by Indian consumers to make a purchase decision.⁵⁷

⁵³ TRAI, Consultation Paper on Delivering Broadband Quickly: What do we need to do?, September 24, 2014, ¶ 5.16.

⁵⁴ TRAI, Regulatory Framework for Over-the-Top (OTT) Services, Consultation Paper No: 2/2015, March 27, 2015, ¶ 2.48.

⁵⁵ S. Kemp, Digital, *Social & Mobile in India in 2015*, August 27, 2015 (<http://wearesocial.net/blog/2015/08/digital-social-mobile-india-2015/>).

⁵⁶ *The top Google searches of 2014*, The Times of India, December 18, 2014.

⁵⁷ Consumer Barometer 2014/15 survey by Google (<https://www.consumerbarometer.com/en/>, accessed December 24, 2015).

TABLE 3:
ONLINE SOURCES USED TO MAKE A PURCHASE DECISION IN INDIA

<u>Source</u>	<u>Use</u>
Search engine	44%
Online research: on brand websites	23%
Social networks	21%
Online research: on retailer websites	20%
Online video sites	20%
Price comparison sites	11%
Brand pages on social network sites	9%
Online magazines / news sites	9%
Advice sites/review sites/forums/blogs	8%
Email (e.g., offers, newsletters)	7%
Auction or classified sites	3%
Other online information source	5%
 Sum	 180%

43. In conclusion, the conditions that would make it likely (or even possible) for the types of differential pricing practices considered in the Consultation Paper to harm competition or consumers do not appear to be present in the relevant markets. Neither TSPs nor online content and applications providers has sufficient market power to foreclose entry by competitors.

V. RESPONSES TO THE QUESTIONS POSED BY THE CONSULTATION

44. In this section, I provide direct responses to the questions posed by the Consultation Paper.⁵⁸

⁵⁸ TRAI Differential Pricing Consultation, p. 9. I understand that TRAI scrutinizes tariff proposals against certain criteria, including: Non-Discriminatory; Transparency; Not Anti-competitive; Non-Predatory; Non-Ambiguous; and, Not Misleading. My opinions consider each of these criteria.

A. Response to Question 1

45. Question 1 reads: “*Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?*”

46. For the reasons discussed above, TRAI should not prohibit or proscribe differential pricing of data services by TSPs. In general, differential pricing is a means by which suppliers pass along to consumers the value created through economies of scale and scope. The benefits of differential pricing are enhanced by the particular characteristics of the market, including multi-sidedness and the “learning effect” new consumers experience from initial exposure to the Internet. As TRAI explained in its OTT consultation paper, “[t]ypically, once customers start using data plans … they begin using increasing amounts of data as they get familiar with the various OTT smartphone application environments.”⁵⁹ This is a benefit, not a cost, of introducing consumers to the Internet.

B. Response to Question 2

47. Question 2 asks: “*If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?*”

48. As a general matter, differential pricing should be governed by the same regulatory principles as all other forms of business conduct.

49. As noted above, it is my understanding that the practices discussed in the Consultation Paper are non-discriminatory, in that they are available on equal terms to similarly situated consumers both upstream (content and applications providers) and downstream

⁵⁹ TRAI, Regulatory Framework for Over-the-Top (OTT) Services, Consultation Paper No: 2/2015, March 27, 2015, ¶ 2.35.

(consumers).⁶⁰ However, even exclusive arrangements between TSPs and online content providers (if they were to occur) should not be banned per se. Rather, because differential pricing is often welfare enhancing, various practices should be assessed on a case-by-case basis under broad principles of competition doctrine.⁶¹ Similarly, concerns about transparency or the potential for deceptive acts or practices related to differential pricing should be addressed under general consumer protection laws and regulations, and should be based on consideration of whether consumers acting reasonably in the circumstances would have been deceived by such practices and whether there is evidence of actual consumer harm.

50. With respect to the effects of differential pricing on affordable Internet access, the extension of affordable broadband service to a larger customer base is a generally acknowledged benefit of differential pricing, and one which should be given significant weight given the relatively low level of Internet penetration in India. Indeed, it seems generally agreed that the level of broadband Internet use in India needs to be increased.⁶² According to the International Telecommunications Union (ITU),⁶³ only 18 percent of Indians used the Internet in 2014 and Cisco estimates that in India the average smartphone generated 299 MB of mobile data traffic per month compared to 819 MB globally in 2014.⁶⁴

⁶⁰ See Facebook Comments at 2.

⁶¹ The “non-discrimination” principle obliges a TSP not to discriminate between subscribers of the same class in the application of tariffs. See Consultation Paper at ¶4.

⁶² For example, according to the DoT, “the mobile broadband market has not taken off in comparison with other countries due to the comparatively high cost of devices as also the cost of data services.” (DoT Committee Report, Net Neutrality, May 2015, ¶ 6.9.)

⁶³ ITU, *ICT Facts and Figures 2015*, (<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>) Individuals_Internet_2000-2014.xls.

⁶⁴ Cisco, *VNI Mobile Forecast Highlights*, 2014-2019 (http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country).

C. Response to Question 3

51. Question 3 asks, “*Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?*”

52. Innovation and differentiation in pricing plans and service offerings are key elements of innovation in Internet ecosystem markets. For example, in recent years, the market for online music distribution has evolved from one based on downloads (e.g., iTunes) to one based on streaming (e.g., Pandora, Spotify). Few market observers predicted this development, which has fundamentally transformed the competitive landscape of the online music business while providing consumers with greater choice and superior services. Such innovation is part of the competitive dynamics of Internet ecosystem markets, which encourage suppliers constantly to experiment with new pricing schemes that enhance the size and scope of the market. Thus, if there are efficient alternatives to current differential pricing plans, it can be expected that they will develop organically through the competitive process. Conversely, given the complexity and dynamism of the markets at issue, it is unlikely that superior schemes will emerge as a result of an administrative process.

D. Response to Question 4

53. Question 4 asks, “*Is there any other issue that should be considered in the present consultation on differential pricing for data services?*”

54. I am aware that some have proposed that differential pricing plans be subject to *ex ante* approval under the TRAI's tariffing authority. For example, the DoT proposes that each proposed tariff "would need to be filed before TRAI within a reasonable period prior to the launch of the plan" and that the "TRAI would examine each such tariff filing carefully."⁶⁵ Such a process would create both significant delay and regulatory uncertainty. Indeed, even DoT Net Neutrality Committee concedes that

[T]here are [a] multitude of possibilities in designing tariff plans and it would not be possible to either pre-think all possibilities or determine its validity with respect to Net Neutrality principles. The Committee is of the opinion that a conclusion on whether the tariff plans specifically breach Net Neutrality would have to be seen in the context of the design of the tariff plan and the outcomes it generated, including its ability to distort consumer markets.⁶⁶

55. Given the highly dynamic nature of Internet ecosystem markets, a prior approval regime would be tantamount to an outright prohibition of differential pricing schemes. Indeed, while consumers are the ultimate beneficiaries, such plans are adopted by suppliers for the purpose and with the intent of gaining a competitive advantage over other suppliers – a competitive advantage that would be reduced or eliminated if they were required to give prior notification. Given the *prima facie* beneficial nature of such innovation, regulatory impediments should be minimized whenever possible.

VI. CONCLUSIONS

56. For the reasons explained above, it is my opinion that the differential pricing practices discussed in the Consultation Paper generate potential benefits far in excess of any potential costs, and that any negative consequences of such practices can best be identified and

⁶⁵ DoT Committee Report, Net Neutrality, May 2015, ¶15.2.

⁶⁶ DoT Committee Report, Net Neutrality, May 2015, ¶12.6.

deterred through the enforcement of existing competition and consumer protection laws and regulations. Additional regulations which prohibit or unnecessarily proscribe or discourage adoption of such plans are likely to harm competition and consumers, with low-income consumers who would not be able to afford Internet access in the absence of differential pricing suffering the greatest harm.

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Dr. Eisenach is a Senior Vice President and Co-Chair of NERA's Communications, Media, and Internet Practice. He is also an Adjunct Professor at George Mason University Law School, where he teaches Regulated Industries, and a Visiting Scholar at the American Enterprise Institute, where he directs the Center for Internet, Communications, and Technology Policy. Previously, Dr. Eisenach has served in senior policy positions at the US Federal Trade Commission and the White House Office of Management and Budget, and on the faculties of Harvard University's Kennedy School of Government and Virginia Polytechnic Institute and State University.

Dr. Eisenach's consulting practice focuses on economic analysis of competition, regulatory, intellectual property and consumer protection issues. He has submitted expert reports and testified in US federal court as well before the Federal Communications Commission, the Federal Trade Commission, several state public utility commissions, and courts and regulatory bodies in Australia, Canada, the Caribbean, and South America. He has also advised clients in some of the world's largest information technology sector mergers.

He has written or edited 19 books and monographs, including *Broadband Competition in the Internet Ecosystem* and *Competition, Innovation and the Microsoft Monopoly: Antitrust in the Digital Marketplace*. His writings have also appeared in scholarly journals such as *The Review of Network Economics*, as well as in popular outlets like *Forbes*, *The New York Times*, and *The Wall Street Journal*.

Prior to joining NERA, Dr. Eisenach was a managing director and principal at Navigant Economics, and before that he served as Chairman of Empiris LLC, Criterion Economics, and CapAnalysis, LLC. Among his other previous affiliations, Dr. Eisenach has served as President and Senior Fellow at The Progress & Freedom Foundation; as a scholar at the American Enterprise Institute, the Heritage Foundation, and the Hudson Institute; as a consultant to the US Sentencing Commission (on corporate sentencing guidelines); and as a member of the 1980-81 Reagan-Bush Transition Team on the Federal Trade Commission, the 2000-2001 Bush-Cheney Transition Team on the Federal Communications Commission, the Virginia Governor's Commission on E-Communities, and the Virginia Attorney General's Task Force on Identity Theft.

Dr. Eisenach received his PhD in economics from the University of Virginia and his BA in economics from Claremont McKenna College.

Education

- 1985 Ph.D. in Economics, University of Virginia
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Professional Experience

- Jan 2014-present Senior Vice President, NERA Economic Consulting
Jan 2010-Jan 2014 Managing Director and Principal, Navigant Economics
Sept 2008-Jan 2010 Chairman and Managing Partner, Empiris LLC
June 2006-Sept 2008 Chairman, Criterion Economics, LLC
July 2005-May 2006 Chairman, The CapAnalysis Group, LLC
Feb 2003-July 2005 Executive Vice Chairman, The CapAnalysis Group, LLC
June 1993-Jan 2003 President, The Progress & Freedom Foundation
July 1991-May 1993 Executive Director, GOPAC
Mar 1988-June 1991 President, Washington Policy Group, Inc.
Sept 1986-Feb 1988 Director of Research, Pete du Pont for President, Inc.
1985-1986 Executive Assistant to the Director, Office of Management and Budget
1984-1985 Special Advisor for Economic Policy and Operations, Office of the Chairman, Federal Trade Commission
1983-1984 Economist, Bureau of Economics, Federal Trade Commission
1981 Special Assistant to James C. Miller III, Office of Management and Budget/Presidential Task Force on Regulatory Relief
1979-1981 Research Associate, American Enterprise Institute
1980 Consultant, Economic Impact Analysts, Inc.
1978 Research Assistant, Potomac International Corporation

Teaching Experience

- 2000-present Adjunct Professor, George Mason University School of Law, (Courses Taught: Regulated Industries; Perspectives on Government Regulation; The Law and Economics of the Digital Revolution)
1995-1999 Adjunct Lecturer, Harvard University, John F. Kennedy School of Government, (Course Taught: The Role of Government in the 21st Century)
1989 Adjunct Professor, George Mason University, (Course Taught: Principles of Economics)

1985, 1988	Adjunct Professor, Virginia Polytechnic Institute and State University, (Courses Taught: Graduate Industrial Organization, Principles of Economics)
1983-1984	Instructor, University of Virginia, (Courses Taught: Value Theory, Antitrust Policy)
1982-1983	Teaching Assistant, University of Virginia, (Courses Taught: Graduate Microeconomics, Undergraduate Macroeconomics)

Honors & Professional Activities

2012-present	Visiting Scholar and Director, Center for Internet, Communications, and Technology Policy, American Enterprise Institute
2011-present	Member, Board of Directors, Information Technology & Innovation Foundation
2011-present	Vice President (Education) and Member of Audit Committee, Economic Club of Washington
2010-2011	Member, World Bank ICT Broadband Strategies Toolkit Advisory Group
2009-present	Member, Economic Club of Washington
2008-2009	Member, Board of Directors, PowerGrid Communications
2008-2012	Member, Board of Advisors, Washington Mutual Investors Fund
2002-2014	Member, Board of Advisors, Pew Project on the Internet and American Life
1993-2009	Member, Board of Directors, The Progress & Freedom Foundation
2002	Member, Attorney General's Identity Theft Task Force, Virginia
2002-2003	Member of the Board of Directors, Privacilla.com
2001-2004	Member, Executive Board of Advisors, George Mason University Tech Center
2001-2002	Contributing Editor, <i>American Spectator</i>
2001	Member, Bush-Cheney Transition Advisory Committee on the FCC
2000-2001	Member, Governor's Task Force on E-Communities, State of Virginia
1999-2001	Member, 2000-2001 Networked Economy Summit Advisory Committee
1998-2003	Member, Board of Directors, Internet Education Foundation
1998-2003	Member, Internet Caucus Advisory Committee
1996-2002	Member, American Assembly Leadership Advisory Committee
1995-2000	Member, Commission on America's National Interests
1988-1991	Adjunct Scholar, Hudson Institute
1988-1991	Visiting Fellow, Heritage Foundation

1981-1984	President's Fellowship, University of Virginia
1981-1983	Earhart Foundation Fellowship, University of Virginia
1981	Member, Reagan-Bush Transition Team on the Federal Trade Commission
1979	Henry Salvatori Award, Claremont Men's College
1978	Frank W. Taussig Award, Omicron Delta Epsilon

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The Economics of Zero Rating

By **Jeffrey A. Eisenach, Ph.D.**

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The Economics of Zero Rating

By **Jeffrey A. Eisenach, Ph.D.**

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Dr. Eisenach is grateful to Internet.org for sponsoring this research. The opinions expressed are his own and do not necessarily reflect those of NERA or of any of the institutions with which he is affiliated.

Introduction

Zero Rating plans enable mobile wireless customers to download and upload online content without incurring data usage charges or having their usage counted against data usage limits. Zero Rating has become increasingly popular in both developed and developing countries, but plays a particularly important role in developing countries, where the costs of mobile data services are higher relative to per capita incomes.

The obvious benefits of Zero Rating include lower prices for consumers, especially those who might have difficulty affording mobile data plans, and expanding Internet adoption, which has been demonstrated to generate substantial economic and social benefits. However, some have expressed concerns about whether such plans violate net neutrality principles by discriminating in favor of some content over other content. Critics of Zero Rating worry that it could harm competition in markets related to Internet access and/or online content, or interfere with consumers' unfettered access to online information (i.e., diversity of expression).

In this context, this study presents an assessment of the benefits and costs of Zero Rating. It concludes that Zero Rating programs in general represent an economically efficient mechanism for increasing consumer welfare given the unique characteristics of information technology markets, which make it beneficial to offer lower prices and other incentives to expand the size of the market, especially in developing countries where incomes, and market penetration, are low. Further, the most common types of Zero Rating programs are the ones most likely to benefit consumers, not harm them, and the ones most likely to expand consumer choice, not limit it. With respect to diversity of expression and related concerns, it is difficult to construct a scenario under which increasing access to online information and adoption of digital communications services would be harmful to online speech. While regulatory authorities should remain vigilant in monitoring business practices, broad-based bans or restrictions on Zero Rating plans are far more likely to harm consumer welfare than improve it.

The remainder of this paper is organized as follows. Section II describes the state of play with respect to both the types of Zero Rating plans currently in the marketplace and efforts by regulators in some countries to limit or prohibit their availability. Section III presents a brief explanation of the economic characteristics (i.e., dynamism, modularity and demand-side effects) that distinguish information technology markets from markets for other types of goods, and which affect both market performance and the nature of the competitive process. Based on this framework, it outlines the primary issues involved in assessing the impact of Zero Rating plans on economic efficiency, competition, and overall economic welfare. Section IV presents an assessment of the two primary criticisms of Zero Rating, namely the asserted potential for anticompetitive market foreclosure and concerns about diversity of expression. It explains that the Zero Rating plans currently being offered almost certainly generate benefits well in excess of any costs. Section V provides a brief summary of conclusions.

Zero Rating Plans: The State of Play

All Zero Rating plans share one characteristic: They allow mobile subscribers to access certain online content “for free” – that is, without having the associated data usage counted against their usage allowances under wireless service plans. The plans differ in two main respects: The types of content included, and the underlying business arrangements.

The type of content included in Zero Rating services varies widely, and includes access to online government and community service sites as well as access to popular services like Facebook, Google, Twitter and Wikipedia. In the U.S., T-Mobile offers its data plan subscribers zero-rated access to more than 25 online music services, including iHeartRadio, Pandora and Spotify. In some cases, carriers offer customized content designed specifically to be offered in conjunction with Zero Rating. For example, Facebook Zero and Internet.org provide customized content designed specifically for use on devices with limited capabilities or over networks with limited capacity.

Zero Rating business arrangements vary mainly according to the nature of the relationship between the access provider and the content provider. The most common form of Zero Rating plans are “carrier initiated” – that is, the mobile carrier simply chooses to zero-rate certain content as a means of attracting customers. “Sponsored data” plans represent a different model, under which content providers pay carriers to have their content zero rated. In some cases, carriers may choose to zero-rate their own content or content produced by affiliated companies, as was the case until recently with mobile TV plans offered by Canadian carriers Bell Mobility and Videotron.

Content-oriented applications like Facebook, Twitter and Wikipedia have been especially active in working with mobile operators to develop and promote Zero Rating plans in developing countries. Facebook Zero allows customers of participating mobile carriers to access Facebook’s standard mobile site content, send messages, update their status and engage in other typical activities on a zero-rated basis. (Facebook Zero users can also access additional Facebook content, such as photographs, but when they do so the resulting data usage counts as paid usage.) First launched in 2010, Facebook Zero has been implemented by more than 50 mobile operators in over 40 countries.¹ Facebook Zero is carrier initiated: Facebook does not pay carriers for participating in Facebook Zero.

Internet.org is a global partnership involving Facebook and other technology companies, local governments and NGOs which focuses on decreasing the cost of delivering data and expanding Internet access in underserved communities outside of the U.S. and Europe.² The internet.org app, which is offered in partnership with local mobile carriers, allows subscribers zero-rated access to customized content from multiple providers, including Facebook, Wikipedia and a variety of local content providers. First launched in Zambia in 2014, the internet.org app has expanded to Tanzania, Kenya, Columbia, Ghana and India, as shown in Table 1 below. As with Facebook Zero, internet.org does not pay ISPs to zero-rate its content.

Table 1. **Internet.org Deployments, 2014-2015**

Country	Carrier	Launch Date	Free Services*
Zambia	Airtel	July 31, 2014	16
Tanzania	Tigo	October 29, 2014	19
Kenya	Airtel	November 14, 2014	18
Colombia	Tigo	January 14, 2015	16
Ghana	Airtel	January 22, 2015	17
India	Reliance	February 10, 2015	38

Source: internet.org. *Services listed are as of February 27, 2015

Despite its *prima facie* benefits, regulators in a handful of countries have taken steps to limit or ban Zero Rating programs.³ For example, the government of Chile has found that Zero Rating plans violate the country's net neutrality law;⁴ regulators in the Netherlands have fined mobile carrier Vodafone for zero-rating HBO;⁵ and, regulators in Slovenia have fined the country's two largest mobile operators for zero-rating music and cloud storage services.⁶ Canada's CRTC recently banned offerings by mobile providers Bell Mobility and Videotron which offered differential pricing for the companies' mobile TV services.⁷ Regulators in other countries have either suggested that such programs are likely to violate neutrality rules (e.g., Norway),⁸ or have initiated investigations (e.g., India).⁹ In the U.S., Federal Communications Commission officials have indicated that Zero Rating plans will be evaluated on a case-by-case basis under the Commission's new Open Internet Order.¹⁰

The analysis below explains why broad-based bans or restrictions on Zero Rating plans are likely to be counterproductive and harm consumer welfare.

The Competitive Dynamics of Information Technology Markets

In general, the welfare effects of pricing schemes and other business practices depend on the characteristics of the markets in which they are deployed. Zero Rating programs are deployed in information technology (IT) markets, which are distinguished from more traditional “textbook” markets by three primary characteristics: *dynamism; modularity; and demand-side effects.*¹¹

Dynamism refers to the significance of innovation as a measure of market performance: In dynamic markets, the ability of a firm to offer new and improved products plays at least as significant a role in its success (*i.e.*, its profitability) as the ability to produce and sell existing products at lower prices.¹²

Typically, firms create new products by making significant sunk cost investments (which may take the form of either “R&D” or capital expenditures in non-recoverable facilities). As a result, production benefits from economies of scale – *i.e.*, average total costs that decline at higher levels of production, but always exceed marginal costs. Producers are able to recoup their sunk cost investments because products are differentiated through innovation (Innovation can be thought of as simply product differentiation over time.), meaning that long-term prices in such markets are higher than marginal cost, notwithstanding the existence of robust competition. Under traditional antitrust doctrine, the ability to earn high margins might be mistaken for monopoly power (the ability to earn excess profits), but assuming low entry barriers, they are not only consistent with, but necessary for, robust competition and the maximization of consumer welfare in these types of dynamic markets. In these markets, high accounting margins not only allow firms to recoup sunk cost investments, but also provide the incentive to take the risks inherent in innovation.¹³

A second characteristic that distinguishes IT markets is *modularity*, or what is sometimes referred to as “platform competition.” From an economic perspective, modularity is associated with strong complementarities in production or consumption: Operating systems are strong complements with personal computers; smart phones are strong complements with both communications networks and online content, such as mapping services, restaurant reviews, or social networks. Modularity also creates demand for compatibility or “interconnection.” Firms that produce complementary products (*e.g.*, Microsoft and Nokia, or Facebook and Bharti Airtel) may team up to create platforms (sets of compatible complements); in other cases (*e.g.*, Apple, Blackberry) firms choose to achieve compatibility through vertical integration. Competition in such markets takes place both within platforms (*e.g.*, between HTC and Samsung for share on the Android platform) and among them (*e.g.*, between the Android and iOS operating environments).

Finally – and importantly for assessing Zero Rating – IT markets are also characterized by significant *demand-side effects*, including economies of both scale and scope. Demand-side economies of scale, also known as network effects, imply that a product is more valuable to consumers as the number of users increases. The prototypical, if now somewhat dated, example is the fax machine. Demand-side economies of scope, by contrast, imply that a product’s value increases with the diversity (as opposed to simply the number) of users: The value of a credit card network to both consumers and merchants depends on the presence of the other type of participant. Markets characterized by demand-side economies of scope are referred to as “two-sided” or “multi-sided.”

The relationship between competition and consumer welfare in markets with demand-side effects is more complicated than in more traditional markets in several ways. For example, it is well established that the operator of a two-sided market has strong incentives to set efficient relative prices (*i.e.*, to engage in efficient price discrimination).¹⁴

The Economic Foundations of Zero Rating

The discussion above provides a conceptual framework for assessing the effects of Zero Rating. This section applies this framework to assess the economic implications of Zero Rating for online content and applications, mobile access, and the Internet ecosystem overall. Specifically, it discusses: (a) the role of Zero Rating in capturing network externalities (demand side economies of scale); (b) Zero Rating as a form of efficient differential pricing; (c) Zero Rating as an efficient pricing mechanism in the two-sided market for mobile wireless services; and, (d) Zero Rating as a mechanism for competitive product differentiation on mobile wireless markets. In each of these respects, Zero Rating is a market-driven mechanism for achieving economically efficient (and socially desirable) outcomes.

Zero Rating and Network Effects

Online content providers and mobile networks operate in markets that can have network effects, in that the value of the network to customers grows with the addition of other customers. As described below, the extent and type of network effect can vary significantly in particular cases. In some cases, expansion increases the value for all customers on the network. In others, the effects are limited to additions within smaller groups. And in others, benefits arise when different kinds of participants join a network.¹⁵ Thus, it is often in the interests of current participants in a network to promote its growth in some form, and sometimes in the interests of society generally to promote universal participation. Governments often subsidize participation in industries with network effects through direct or indirect government subsidies (e.g., universal service for telephone and, more recently, broadband adoption).

One obvious and likely significant benefit of Zero Rating is to expand participation in zero-rated online content and applications, while also increasing mobile wireless penetration, especially in developing economies.¹⁶ There is a substantial literature in support of the proposition that expanded Internet access, principally through higher mobile wireless adoption, has a variety of economic and societal benefits.¹⁷

It is also important to understand that the power of network effects is greatest within “communities of use.” That is, the value of adding an additional member is greater for members who are more closely connected with (*i.e.*, who value interactions with) existing members than those who are (in the same sense) further away. In this context, Zero Rating is appropriately understood as a mechanism for achieving increased participation within relatively small communities, including within lower-income populations in developing economies.¹⁸

By promoting the positive network effects of increased adoption, Zero Rating thus generates positive social as well as economic externalities.

Zero Rating and Differential Pricing

Both online content providers and mobile broadband services are characterized by dynamic competition – that is, both industries make large, non-recoupable investments in R&D and physical infrastructure which are largely invariant to the number of users. As discussed above, in such industries, the average cost curve is declining over the relevant range of output: Simply put, it always costs less to produce an incremental unit of output than it costs, on average, to make the previous ones.

In such industries, consumer welfare can be increased if firms are able to identify and offer discounts to “marginal” customers, that is, those with lower willingness (or ability) to pay, thus expanding the size of the market and generating the additional revenues that can be used to defray the fixed costs of investment and innovation. It is widely agreed that such differential pricing – referred to by economists as – “competitive price discrimination” – is not only widespread, but generally improves economic efficiency and increases consumer welfare.¹⁹

In this context, zero rating of offerings like Wikipedia Zero, Facebook Zero and the internet.org app can be understood economically as a mechanism by which mobile carriers engage in efficient price discrimination through the bundling of two goods (mobile wireless service and content), thereby creating the ability for marginal consumers to pay a reduced price by choosing a differentiated product in the form of a “basic” form of online access.²⁰ In so doing, Zero Rating improves economic efficiency by supporting continuing investment and innovation in both networks and content while expanding Internet access to consumers who would otherwise be unserved.

Zero Rating and Two-Sided Markets

The central economic challenge for an operator of a multi-sided platform is to set prices and other product characteristics in such a way as to attract the optimal mix of customers and thus maximize the value of the platform. Newspapers, for example, must run enough advertisements to defray costs, but not so many as to drive away customers.

The economics of multi-sided markets help to explain Zero Rating programs in at least two respects. First, thinking of mobile operators as the platform provider, Zero Rating is a means by which carriers create opportunities for distribution by content providers (by increasing the number of subscribers), while enhancing the value of the platform for subscribers (by increasing the amount of available content). To the extent content providers contribute financially to Zero Rating through sponsored data programs, they do so in reflection of the increased value (at least over the long run) of enhanced distribution. But carriers may (and do) choose to offer Zero Rating even without a financial payment from content providers simply because it increases the value of their platforms.

A second aspect of multi-sidedness relevant to Zero Rating relates to the dual nature of consumers in relation to platforms like Facebook, Twitter and Wikipedia, in which “consumers” are also content creators. Thus, by attracting additional participants onto the platforms of such services, Zero Rating increases *both* the number of content consumers and the amount of content available. This “double whammy” effect helps to explain why firms like Facebook are taking the lead in encouraging Zero Rating programs.²¹

Zero Rating and Competition in Mobile Wireless Markets

Lastly, firms in dynamic industries are better able to defray their fixed costs to the extent they can differentiate their products and attract more consumers. Zero Rating programs are an instrument by which mobile wireless firms can differentiate themselves from competitors by offering access to customized content with their mobile wireless services. Product differentiation also can serve to intensify competition in such markets. In this context, it is notable that the most prominent examples of Zero Rating in the U.S. have involved MetroPCS, Sprint and T-Mobile, all of which have used zero-rate offerings in order to differentiate their products from larger competitors. Similarly, Zero Rating plays a significant role in product differentiation for Globe (Philippines), which has offered zero-rated access to Facebook and other applications as part of its marketing campaigns.²² Thus, Zero Rating (like other types of innovative pricing plans) generally contributes to the competitiveness of mobile wireless markets.

Addressing Concerns about Zero Rating

As noted above, some net neutrality advocates have challenged Zero Rating by asserting that it violates the principle of non-discrimination and hence (a) risks anticompetitive effects and (b) limits freedom of expression.²³ For the reasons explained immediately below, however, Zero Rating programs typically do not raise serious concerns with respect to anticompetitive effects. Further, as explained in the second subsection below, concerns about diversity of expression appear to be based more on speculation than empirical evidence, and to ignore the positive effects of Zero Rating in increasing access to online communications and information.

Zero Rating and Competition

The types of Zero Rating programs currently observed in the marketplace do not appear to raise significant competition concerns.

First, as noted above, most Zero Rating programs are carrier initiated and do not involve payments to carriers by the providers of the zero-rated content. Particularly in the absence of payments, Zero Rating cannot plausibly be characterized as anticompetitive foreclosure by content providers. Rather, to the extent that carriers elect to include certain content providers in a Zero Rating plan, the decision reflects the carrier's unilateral determination that doing so improves the value of its platform.

Second, even in sponsored data programs where content providers are providing payments to carriers, there appears to be no evidence that such arrangements involve exclusivity: Rather, it appears that opportunities to participate are being held out to content providers of all kinds.²⁴ Without exclusivity – the inclusion of some participants and the exclusion of others – there is no foreclosure, and hence no anticompetitive concern.²⁵

Third, there is no *prima facie* basis for concluding that Zero Rating programs involving exclusivity would be anti-competitive. Exclusivity arrangements are commonplace, and typically are justified by efficiency motivations, such as the desire to avoid "free riding" on brand-specific investments. Exclusivity raises competition concerns, on the other hand, only under limited conditions, including that the exclusive arrangement must be sufficiently widespread so as to foreclose entry (and expansion) by an otherwise equally efficient competitor (*i.e.*, by preventing such a competitor from achieving minimum efficient scale). The characteristics of the mobile wireless and online content markets suggest that exclusivity in Zero Rating programs, to the extent it occurs, is of the efficiency-enhancing variety.²⁶

The case advanced by critics of Zero Rating amounts to a claim that any form of differentiated carriage necessarily advantages some firms over others, and thus has potential competitive effects, and that the “victims” of such discrimination are likely to be small, innovative firms that lack the financial wherewithal to engage in Zero Rating programs of their own.²⁷ There are powerful arguments against this view, including: (a) mobile broadband providers have incentives to maintain a diversity of actual and potential complementors (e.g., content providers) and thus are not likely to willingly participate in activities that might foreclose competition; (b) the most common Zero Rating programs are carrier initiated and do not require financial contributions from the content provider; (c) many small content providers engage in Zero Rating (e.g., Aquto, hipcricket, Syntonic)²⁸ and (as discussed above) Zero Rating is easily explained on efficiency grounds; and, (d) Zero Rating critics have not demonstrated any harm to competition or consumers from Zero Rating, or even shown that any individual competitors have been disadvantaged.²⁹

Zero Rating and Freedom of Expression

While freedom of expression concerns arguably invoke values that go beyond economic efficiency *per se*, economic analysis can nevertheless inform the debate around the key issues. First, as noted above, Zero Rating programs do not generally involve exclusivity. Thus, no one’s views are being foreclosed, or muzzled. Second, the firms engaging in Zero Rating are to a significant extent (e.g., Facebook, Twitter, Wikipedia) vehicles for the open expression of views by all participants, subject only to *de minimis* limitations. Increasing the number of Facebook (or Twitter or Wikipedia) users thus arguably enhances freedom of expression and the diversity of opinion in the public square – especially in developing countries, where such outlets have demonstrably enhanced freedom of political expression. Third, as an empirical matter, the diversity of content suppliers is growing rapidly; concerns about “a few media outlets controlling the news” seem increasingly anachronistic. Fourth, and finally, in order to argue that Zero Rating programs deprive subscribers of access to information (“the full and open Internet”), one needs to argue that nothing is better than something – that those who gain access to online content as a result of Zero Rating would be better off with no access than some access, an argument which seems difficult to sustain.

Conclusions

Concerns about Zero Rating are misplaced. The Zero Rating programs that are observed in the marketplace are readily explained as market-driven mechanisms for capturing economic efficiencies associated with the characteristics of information technology markets. By expanding the reach of online content and distribution services, they generate economic social benefits. Concerns that Zero Rating could serve as a means of foreclosing competition, or limit freedom of expression, appear misplaced and lacking both theoretical and empirical support.

Notes

- ¹ See Matt Hicks, "Fast and Free Facebook Mobile Access with 0.facebook.com," May 18, 2010 (available at <https://www.facebook.com/notes/facebook/fast-and-free-facebook-mobile-access-with-0facebookcom/391295167130>).
- ² See internet.org/about.
- ³ For an interesting discussion of issues associated with Zero Rating programs, see "Net Neutrality, Zero Rating, and Development: What's the Data?" *Internet Governance Forum* (September 3, 2014) (available at <http://www.intgovforum.org/cms/174-igf-2014/transcripts/1969-2014-09-03-ws208-net-neutrality-zero-rating-and-development-room-5>) (hereafter *IGF Transcript*).
- ⁴ See e.g., David Meyer, "In Chile, Mobile Carriers Can No Longer Offer free Twitter, Facebook or WhatsApp," GigaOm (May 28, 2014) (available at <https://gigaom.com/2014/05/28/in-chile-mobile-carriers-can-no-longer-offer-free-twitter-facebook-and-whatsapp/>) (hereafter, Meyer, Chile).
- ⁵ Authority for Consumers & Markets, "Fines Imposed on Dutch Telecom Companies KPN and Vodafone for Violation of Net Neutrality Regulations," (January 27, 2015) (available at <https://www.acm.nl/en/publications/publication/13765/fines-imposed-on-dutch-telecom-companies-kpn-and-vodafone-for-violation-of-net-neutrality-regulations/>)
- ⁶ See "Mobile operators in Slovenia Fall Foul of Net Neutrality Rules," MobileWorldLive.com (January 26, 2015) (available at <http://www.mobileworldlive.com/mobile-operators-slovenia-fall-foul-net-neutrality-rules>).
- ⁷ See Canadian Radio-television and Telecommunications Commission, CRTC, Broadcasting and Telecom Decision 2015-26 (January 29, 2015) (available at <http://www.crtc.gc.ca/eng/archive/2015/2015-26.htm>).
- ⁸ See e.g., David Meyer, "Pro-Net Neutrality Norway Advises Carriers to Avoid Zero-Rating," GigaOm (November 18, 2014) (available at <https://gigaom.com/2014/11/18/pro-net-neutrality-norway-advises-carriers-to-avoid-zero-rating/>).
- ⁹ See e.g., "Net Neutrality Also an Issue in Emerging Markets Like India," *Business Monitor* (February 3, 2015) (available at <http://www.businessmonitor.com/news-and-views/net-neutrality-also-an-issue-in-emerging-markets-like-india>); see also Anandita Singh Mankotia, "Trai examining Bharti Airtel's special deals on Facebook and WhatsApp," *The Economic Times*, November 25, 2014 (available at http://articles.economictimes.indiatimes.com/2014-11-25/news/56455517_1_net-neutrality-mobile-data-services-uninor).
- ¹⁰ The FCC voted to approve a new Open Internet Order on February 26, 2015. See Federal Communications Commission, "FCC Adopts Strong, Sustainable Rules to Protect the Open Internet" (February 26, 2015). The text of the Order has not yet been released, but FCC officials have indicated they will evaluate Zero Rating plans on a case-by-case basis. See Lauren Walker, "Why the Net Neutrality Fight Isn't Over," *Newsweek* (February 6, 2015) (available at <http://www.newsweek.com/why-net-neutrality-fight-isnt-over-305060>).
- ¹¹ This section relies in part on Jeffrey A. Eisenach and Ilene Knable Gotts, "In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector," in Fabrizio Cugia di Sant'Orsola, Rehman Noormohamed, and Denis Alves Guimarães, eds., *Communications and Competition Law: Key Issues in the Telecoms, Media and Technology Sectors* (Wolters Kluwer Law and Business, 2014) 69-90. For a more extensive discussion of these phenomena and their implications for competition analysis, see Jeffrey A. Eisenach, *Broadband Competition in the Internet Ecosystem* (American Enterprise Institute, 2012); see also Oz Shy, *The Economics of Network Industries* (Cambridge University Press, 2001).
- ¹² See William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton University Press, 2002), at 4 ("Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals."); see also Joseph Schumpeter, *Capitalism, Socialism and Democracy* (1942).
- ¹³ Especially in dynamic markets with high rates of innovation, high margins as measured by accounting data do not necessarily equate to high profits from the perspective of economics or competition analysis. The seminal reference is Franklin M. Fisher and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," *American Economic Review* 73;1 (March 1983) 82-97
- ¹⁴ See, e.g., Julian Wright, "One-Sided Logic in Two-Sided Markets," *Review of Network Economics* 3(1) at 44 (2004).
- ¹⁵ The impact of network effects can depend on a variety of factors. For example, some of the network effects of increasing wireless penetration are shared among carriers thanks to the fact that carriers interconnect with one another (so subscribers to each network can call subscribers on other networks). Carriers may seek to capture some of these effects through programs ("friends and family" plans) that encourage in-network calling.

- ¹⁶ The empirical evidence on the impact of Zero Rating on wireless penetration and mobile content usage, though limited, suggests the effects may be substantial. For example, a 2010 program by Turk Cell involving Twitter resulted in a 340 percent increase in Twitter traffic. See *IGF Transcript*.
- ¹⁷ See e.g., *Value of Connectivity: Economic and Social Benefits of Expanding Internet Access* (Deloitte 2014) (available at https://fbcdn-dragon-a.akamaihd.net/hphotos-ak-ash3/t39.2365/851546_1398036020459876_1878998841_n.pdf); see also Digital Entrepreneurship in Kenya 2014 (GSMA, 2014) (available at http://www.gsmaentrepreneurshipkenya.com/GSMA_KENYA-AR2014-060214-WEB-SINGLE-PGS.pdf).
- ¹⁸ Social networks like Facebook and Twitter have been shown to play a significant role in driving Internet adoption in developing countries, where the proportion of Internet users who use such applications is higher than in the U.S. See e.g., Lee Rainie and Jacob Poushter, "Emerging Nations Catching Up to U.S. on Technology Adoption, Especially Mobile and Social Media Use," Pew Research Center (February 13, 2014) (available at <http://www.pewresearch.org/fact-tank/2014/02/13/emerging-nations-catching-up-to-u-s-on-technology-adoption-especially-mobile-and-social-media-use/>)
- ¹⁹ See e.g., William J. Baumol and Daniel G. Swanson, "The New Economy and Ubiquitous Competitive Price Discrimination: Identifying Defensible Criteria of Market Power," *Antitrust Law Journal* 70 (2003) 661-685 at 665; see also See, e.g., Hal R. Varian, "Differential Pricing and Efficiency," *First Monday* 1;2 (August 1996) at 2 ("[M]any important industries involve technologies that exhibit increasing returns to scale, large fixed and sunk costs, and significant economies of scope. Two important examples of such industries are telecommunications services and information services. In each of these cases the relevant technologies involve high fixed costs, significant joint costs and low, or even zero, marginal costs. Setting prices equal to marginal cost will generally not recoup sufficient revenue to cover the fixed costs and the standard economic recommendation of 'price at marginal cost' is not economically viable. Some other mechanism for achieving efficient allocation of resources must be found.").
- ²⁰ Facebook and its partners in Internet.org have made extensive investments to understand the realities of Internet access in the developing world and to use this knowledge to develop ways to expand Internet access in such countries.
- ²¹ Relatedly, to the extent Zero Rating ultimately increases the audience for mobile content services, it also implicates yet another "side" of the multi-sided mobile wireless ecosystem – advertisers. I understand that Facebook Zero does not depend on advertising, but the same is not true for other firms participating in Zero Rating programs, such as Google and Pandora.
- ²² See "Globe Telecom Expands Mobile Data Business with Free Facebook, Free Viber Offer," *Adobo Magazine* (January 8, 2015) (available at <http://www.adobomagazine.com/philippine-news/globe-telecom-expands-mobile-data-business-free-facebook-free-viber-offer>).
- ²³ See e.g., Susan Crawford, "Zero for Conduct," *Medium.com* (January 7, 2015) (available at <https://medium.com/backchannel/less-than-zero-199bcb05a868>, viewed February 6, 2015).
- ²⁴ See, "AT&T Introduces Sponsored Data for Mobile Data Subscribers and Businesses," (January 6, 2014) (available at <http://www.att.com/gen/press-room?pid=25183&cdv=n=news&newsarticleid=37366&mapcode=consumer/mobile-devices>).
- ²⁵ The fact that some content providers choose not to participate in zero rating does not mean they are "foreclosed" in any sense of the word, since they had the opportunity to do so.
- ²⁶ For example, it is worth recalling that each mobile network is not a distinct market, but rather that all mobile networks in a given geographic area compete in the same relevant product market. Hence, an exclusive arrangement with a single carrier does not foreclose competition in the entire market.
- ²⁷ See e.g., Crawford (2015).
- ²⁸ See AT&T, "Our Sponsored Data Providers" (available at <http://www.att.com/att/sponsoreddata/en/index.html#fbid=PYLlaU9knHP>, viewed February 8, 2015).
- ²⁹ The antitrust laws properly focus on protecting competition, not individual competitors. It is also noteworthy that the firms identified by Zero Rating's critics as potential "victims" tend to be established firms like Netflix and Skype (Microsoft), not startups and new entrants. See e.g., New America Foundation, Center for Media Justice, Media Access Project, *Notice of Ex Parte Presentation: GN Docket No. 09-191 (Preserving the Open Internet); WC Docket No. 07-52 (Broadband Industry Practices)* (January 10, 2011) (available at http://newamerica.net/publications/resources/2011/notice_of_ex_parte_presentation_gn_docket_no_09_191_preserving_the_open_).

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Dec. 29, 2015

Mike Godwin
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R Street Institute

Zero-Rating Services and Differential Pricing as Tools to Promote Access and Development

Submitted to the Telecom Regulatory Authority of India

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Differential pricing, as has been observed by the background Chapter 1 of the consultation paper, can manifest in numerous forms, each with different impacts on the market. Regulatory responses therefore ought to be calibrated accordingly, rather than either tolerating or banning all prevalent business models.

The theoretical and practical scope of differential pricing can vary widely in terms of its economic basis. It may be paid for by the end-user subscribers, for example, or subsidized by Internet Service Providers or subsidized by content providers. It may be subsidized or otherwise promoted by governments, or even government imposed. It may be available only on one provider or across all providers. It may be based on market transactions between content and service providers or based on criteria imposed by a platform or a service provider. A platform that seeks to be differentially rated may be based on content or agnostic to it, and imposed by the service provider with or without an opt-out. It may be offered by the service provider and actively opted into by the customer with transparent criteria.

This submission argues that services offered with differences in each of these parameters (and combinations thereof) require different treatment.

Service specific packs paid for by end-user subscribers and provided on a non-exclusionary basis by ISPs.

- Currently available Facebook- and WhatsApp-only packs work under the

- rationale that users use these services significantly more than they would other parts of the Internet. These should be allowed to exist, as the market corrects for the irregularities. TSPs will only provide those service-specific packs that show high demand, and users will only buy those packs if they see value in purchasing them separately, rather than buying a full volume-based data pack.
- However, TSPs should not be allowed to sign exclusionary deals with content providers to provide only specific packs of their services while excluding other services in the same category and/or those in direct competition.
 - Whenever a user exits the purview of these packs, they must be notified of costs they may incur in cases where they do not have a full data-usage subscription.

Platforms such as Airtel Zero, which allow content providers to subsidize end-consumers' costs through a platform owned and operated by a TSP.

- Airtel Zero is clearly anti-competitive and works against the interests of newer/smaller business that do not have the startup capital to engage in such a transaction.
- Precedent shows these agreements often aren't signed and negotiated transparently, which exacerbates the pricing problems stemming from information asymmetry.
- Leads to the problem of black-holing, where every content provider feels the need to sign up to be a part of these platforms to be able to compete fairly.
- These must not be allowed.

Free access to TSP-provided services such as Wynk that is subsidized by the TSP.

Vertical integration of TSPs and branching out of TSPs into the content market is an emerging trend. This poses both threats as well as opportunities, depending on the TSP's market share and how it seeks to position itself. As a rule of thumb, to the extent that TSPs seek to engage in exclusionary practices that shut out competition in the vertical into which they are expanding (video-streaming, in the case of Wynk), they ought to be banned. However, practices such as T-Mobile's Binge On program in the United States, which provides for free low-bitrate streaming of any content on the Internet, must not be treated the same and ought to be allowed. Aircel has opted to provide free access to 64kBps Internet for all users, which is also a policy that ought to be welcomed instead of clamped down upon.

A curious case arises if the TSP that seeks to zero-rate the service happens to be a TSP without a significant market share and the service happens to be a unique way of differentiating itself in the market as a TSP (not as a content provider). In these instances, an evaluation ought to be made on a case-by-case basis on the potential harms to the market through an application of the principles enshrined in antitrust law.

Zero-rated platforms such as Internet.org/Free Basics/Wikipedia Zero that are subsidized by TSPs, owned and operated by Internet companies and free-for-use to end consumers

- As long as the service is non-exclusionary and open to all developers, they

- ought to be permitted.
- However, opportunities must exist for ALL TSPs to sign up with such intermediary platforms (i.e., they ought not be exclusively signed with one/few TSPs in a way that does not permit other TSPs to access them).
 - Wikimedia's 10 principles are a reasonable rubric for providing content in a manner that is beneficial to end-consumers but does not adversely impact competition. These principles are as follows:
 - o *"A full Wikimedia experience. Carriers will zero-rate access to the regular mobile version of Wikipedia and other Wikimedia sites in all languages. We provide a notice to users with zero-rated access. To ensure that users do not mistakenly incur data charges, they will be prompted with a notice if they are about to leave a zero-rated page."*
 - o *"Working with local Wikimedia communities. Wikipedia Zero also provides us with another opportunity to work with local community members when approaching carriers and locally promoting the free use of the Wikimedia sites."*
 - o *"Promoting open-source. Consistent with our guiding principles, the software we develop to implement Wikipedia Zero is open source licensed. We hope that this will make it easy for other similar nonprofits to spread their information to the people of the world."*
 - o *"Carriers do not get editorial control. Wikipedia articles and other Wikimedia content are community curated and will remain that way."*
 - o *"No exchange of payment. The Wikimedia Foundation does not pay carriers to zero-rate access to the Wikimedia sites and does not receive payments from carriers through Wikipedia Zero."*
 - o *"Personal user information is never shared. Carriers get the IP addresses of sites that will be zero-rated so that they can identify Wikipedia Zero traffic. Wikipedia Zero does not enable carriers to collect or receive personal information about Wikimedia users."*
 - o *"Wikipedia Zero cannot be sold as part of a bundle. Access to the Wikimedia sites through Wikipedia Zero cannot be sold through limited service bundles."*
 - o *"No exclusive rights. We try to partner with as many carriers as possible to maximize the number of users that can benefit from the initiative."*
 - o *"Limited trademark license. Carriers get a license to use Wikipedia trademarks to promote Wikipedia Zero. They cannot use the trademarks to suggest that they are sponsored, approved, or endorsed by the Wikimedia Foundation or Wikipedia."*
 - o *"Open to collaborating with other public interest sites."*¹

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

While evaluating the debate on differential pricing, the first consideration for

¹ https://wikimediafoundation.org/wiki/Wikipedia_Zero_Operating_Principles

regulators ought to be the potential impact on access to the Internet. Services offered by content providers on zero-rated platforms create demand in low-revenue markets. With some platforms (such as Free Basics) opening to all developers, the ability of providers to supply their content to these hitherto untapped markets is comparatively lower than in the status quo. Further, uptake of differentially priced services expands competition to provide access to these communities, through the operation of the forces of demand and supply. Given that, currently, the primary actor in facilitating broadband access to rural communities is the government, expanding the number of players is of value to achieve the noble goals of missions such as Digital India. If differential pricing of various data offerings can catalyze this process by signaling the demand in rural communities to telecommunications service providers, it ought to be adopted wholeheartedly. Caution must be exercised, however, before adopting this mechanism as the panacea to proliferate broadband access. Allowing for this should ideally act in consonance with, as opposed to deterring, other policies in this realm.

On the issue of lock-in and an inability to ever escape a so-called ‘walled garden’, TRAI must evaluate this consideration comparatively: is this phenomenon of free services likely to lock-in users in perpetuity to the use of limited services in a manner that irreparably harms the intrinsic value of an undefined full and free Internet? The answer to that question is currently informed by ideological leanings of various interest groups on the issue: while some believe low-income users are likely to never expand their horizons to explore the potential of the full and free Internet due to the additional costs incur, others would argue that a glimpse into the potential of the Internet acts as a segue to fuel demand for more and more services on the Internet. How these platforms affect user choice, especially in an era where social media websites often act as gateways to content on the rest of the Internet, is a subject that merits more evidence-backed empirical research. Such evidence-based research to determine the full impacts of this practice is essential before further regulatory responses, such a ban or a clamp down on such services.

Content-agnostic zero-rating, and zero-rating provided by Internet companies being available on all services, will ensure barriers to market entry are minimized and that competition can be preserved among both TSPs and content providers who seek to zero-rate their services. Transparency must be enshrined by the regulator to ensure the end consumer is aware of the costs of accessing the Internet outside of the free data available.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models.

Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Equal-rating plans propagated by the Mozilla Foundation, which provide for content-agnostic access to the Internet, form a crucial prong of policies that provide for free

5 | Zero-rating services comments
— Godwin and Srinivasa, R Street Institute

Internet access without a differentiated tariff plan. Other plans include Facebook's policy to use drones to beam Internet access to end consumers, Google's Loom project that uses hot air balloons, and a wide array of experiments in community networks to provide low-cost alternatives for reasonable Internet access in otherwise inaccessible markets.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

A study of the pricing trends of full-service data offerings compared to the zero-rated service-pack offerings may provide useful insight on whether TSPs are proceeding in a manner that makes it unviable for end consumers to switch from a service-specific data pack offering to access to the full Internet.

2.3.39 Savetheinternet in Coalition

To: R. S. Sharma
Chairman, Telecom Regulatory Authority of India

Cc: Vinod Kotwal
Advisor (F&EA), Telecom Regulatory Authority of India

Re: Consultation Paper on Differential Pricing for Data Services

Thank you for conducting this consultation.

As a key representative of an Internet startup, we have been observing the ongoing attempts to subvert net neutrality, we fear an even worse & stifling situation in the future, wherein devising solutions on/through the Internet is posed to become more and more constraining & challenging. The growth and vibrancy of India's Internet economy is at serious risk unless strong regulations to ensure net neutrality are adopted.

Our definition of net neutrality is this: No consumer Internet service may give one website or application a competitive advantage over another. Under this definition, non-discrimination in pricing is absolutely essential to net neutrality — just as non-discrimination in speed or the ability to access.

With that, we would like to address the specific questions raised in the consultation paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No.

A level-playing field among websites and applications is essential to make them compete vigorously to attract users. Consumers, and only consumers have always picked the “winners” in this market. This is why there is an unprecedented pace of improvement in websites and applications today. The market should remain that way for new and better services to be able to emerge.

In many verticals, Indian startups are successfully competing against large cash-rich foreign companies. Differential pricing will allow these large foreign companies to strike deals with TSPs that tilt the playing field in their favour and kill off their Indian competitors. Giving TSPs the key to be able to control these factors will very negatively impact our already thriving start-up ecosystem. India's vibrant startup ecosystem will also suffer irreparable harm. Differential Pricing is therefore directly at odds with the Prime Minister's Digital India and Make In India programs.

Differential pricing will be highly anti-competitive. The reason that the Internet is what it is today is because of continuous innovation and improvement of services, apps and websites. The handful of websites and apps unfairly favoured by TSPs will get so large an advantage that the effective market will become restricted to them. TSPs will therefore get the undue power to pick winners in the websites and applications market, taking that power away from consumers. This

inherent decrease in competition is contrary and detrimental to consumer interest. In addition, the remaining websites and apps will invest heavily into building relationships with TSPs rather than into their products and services, further harming consumers.

As we have mentioned earlier, the purpose of net neutrality is to maintain an open, competitive environment on the Internet. One website being made more expensive to access than another is even more anti-competitive than one website being made slower than another, which is more publicly agreed upon as a clear violation of net neutrality due to the competitive edge provided to the benefiting platform(s). Therefore, we urge you to prohibit differential pricing for data, in any form whatsoever.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing should not be permitted, precisely because it is impossible to ensure non-discrimination, competition, free market entry and innovation in an environment where TSPs have the power to tilt the playing field to favour one website or another.

It is not possible to frame objective rules that permit some instances of discrimination while forbidding others. In the absence of such bright-line rules, case-by-case approval will inevitably devolve into a series of arbitrary and inconsistent rulings. This poses a high risk of causing harm to consumers and a high likelihood of litigation.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes.

Facebook in its Internet.org/FreeBasics campaign has repeatedly claimed that restricting access to a few websites makes it affordable for TSPs to provide free internet access. We're sure you recognize this claim as patently false — there is no material difference in cost to a TSP when a consumer accesses one website vis-a-vis another.

TSPs will provide free internet access if there is a revenue model that makes it profitable for them to do so. There are at least four such models that we are aware of, three of which are consistent with network neutrality.

The model that violates net neutrality is: To block all websites and apps except those that pay the TSP. This model was proposed in Airtel Zero (where websites pay cash) and FreeBasics/Internet.org (where websites pay Facebook by sharing users' private data and Facebook pays the TSP by spending on marketing). This model is highly anti-competitive and should not be permitted.

The second model is to display advertisement to users. Mozilla and GrameenPhone in Bangladesh have successfully introduced a plan where users get 20 MB a day for watching a short ad. Free WiFi spots such as that in Mumbai's Chhatrapati Shivaji International Airport also follow this model.

The third is to bundle a data plan with the phone itself, a model followed by Mozilla in partnership with Orange in Africa and the Middle East.

The fourth model, which can be used in combination with those above, is to upsell customers to paid plans after they have realized the benefits of Internet access. Aircel is offering all its subscribers free data for a limited period, recovering this cost from those that upgrade to a paid plan at the end.

Apart from the above, there are examples like Saankhya Labs, that is working on technologies which leverage unused white-space in the TV spectrum to carry Internet data. With the TV network infrastructure already in place, it has the potential of broadband penetration very fast and at economical costs. Hence, this could be a game-changer for Digital India.

The government has recently started successfully adopting use of technology to crowdsource. The MyGov platform can start inviting pitches & ideas for innovative and cost-effective methods to create new technological solutions that forward the cause of Digital India. The government could further move ahead to fund these startups.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

We applaud TRAI's proactiveness in prohibiting the launch of zero-rating plans while this consultation is in progress. Please ensure that this prohibition is in place until the final regulation on differential pricing is notified.

Thank you again, and best regards.

Kiran Jonnalagadda, Founder, **HasGeek Media LLP**

Nikhil Pahwa, Founder, Editor & Publisher, **Medianama.com**

Baishampayan Ghose, CTO/Co-founder, **Helpshift, Inc.**

Arpit Agarwal, Director, **Headstart Network Foundation**

Ramakrishna Nk, Co-founder & CEO, **Rang De**

Nilesh Trivedi, CTO, **Truweight**

Mahesh Murthy, Founder, **Pinstorm**

Santosh Panda, Co-founder & CEO, **Explara.com (Signure Technologies Private Limited)**

Abhay Agarwal, Co-Founder, **Pothi.com**

Yusuf Motiwala, **TringMe**

Vishal Gondal, Founder & CEO, **GOQii Inc**

Niraj Ranjan, Founder, **GrexIt**

Shashank Kumar, Co-founder, **Razorpay**

Aditi Gupta, Co-Founder, **Menstrupedia.com**

Gaurav Mantri, Founder & CEO, **CloudPortam.com**

Vignesh Vellore, Co-Founder, **TheNewsMinute**

Shreekant Pawar, Founder & CEO, **Diabeto**
K Vaitheeswaran, **Industry Pioneer**
Dilnawaz Khan, **Startup Oasis**
Mitesh Ashar, **StoryOfMe.in**
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Tudy Sai Kalyan, **socioplanet.com**
Sidu Ponnappa, Co-founder & CEO, **C42 Engineering**
Shahul Hameed, **Entri.me**
Saran S , **Tenderwoods Solutions Pvt Ltd**
Annkur P Agarwal, **Co-founder & CEO Pricebaba.com**
Pooran Prasad Rajanna, **Consulting Architect**
Kaustav Das Modak, **Applait**
Abhinav Kumar Gupta, Co-founder & CEO, **Silversparro Technologies**
Kanchan Kumar, Co-founder, **Emportant Technologies Pvt Ltd**
Renu Bisht, Co-Founder, **VanityCube.in**
Siddharth Mangharam, Co-Founder, **Floh Network Pvt. Ltd.**
Kris Nair, Co-Founder, **fusedcow**
Vignesh T Prabhu, Co-Founder, **Triphippie.com ([Our statement on the website](#))**
Sudhanshu Rathore, Founder, **Bugyal.com**
Rajan Gupta, Founder & CEO, **Zappka**
Anand Chitipothu, Co-founder, **Pipal Academy LLP**
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Arushi Aggarwal, Founder, **The Initiative**
Sahil Khan, Cofounder, **Quinto Technologies Pvt Ltd**
Hrishikesh Rajpathank, Cofounder & CEO, **Quinto Technologies Pvt Ltd**
Sameer Jawaharani, Chief Design Officer, **Codesign Labs**
Rohit Parab, Co-founder, **Question Paper Library**

2.3.40 MyRights

To: Ms. Vinod Kotwal, Advisor, F&EA, TRAI

Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. With 1 billion Indian people not yet connected, banning Free Basics would hurt our country's most vulnerable people.

Free Basics provides free access to essential internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all developers who satisfy basic [technical guidelines](#) and non-exclusive so any mobile operator can participate.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Sincerely,
Elca Grobler – *Founder, MyRights*

2.3.41 International Center for Law n Economics



International Center
for Law & Economics

Comments of the International Center for Law & Economics

In the matter of:

*Telecom Regulatory Authority of India's
9/12/15 Consultation Paper on Differential Pricing for Data Services*

International Center for Law and Economics

Geoffrey A. Manne, Executive Director

Kristian Stout, Associate Director for Innovation Policy¹

January 4, 2015

The Telecom Regulatory Authority of India ("TRAI")'s tradition of regulatory humility – the “forbearance and flexibility” that has characterized its approach to telecommunications services regulation – has enabled the explosive growth of internet usage throughout India, including an over 50% surge in the number of users of mobile internet in rural areas since 2001. But as the Authority considers regulations and rules to “ensure orderly growth... and protection of consumer interest,” it is important to keep in mind the fundamental lesson taught by decades of technology regulation throughout the world: where entrepreneurial companies are left relatively free to experiment with innovative new methods of developing and deploying technologies – particularly telecommunications technologies – consumers enjoy the largest increases in their standard of living.²

¹ Geoffrey A. Manne is the founder and Executive Director of the nonprofit, nonpartisan International Center for Law and Economics (ICLE), based in Portland, Oregon. He can be reached at gmanne@laweconcenter.org. Kristian Stout is ICLE's Associate Director for Innovation Policy. He can be reached at kstout@laweconcenter.org.

² “When products are differentiated, they can contribute to welfare not only by offering better prices, but also by incorporating attributes that better satisfy particular customers’ ideal preferences. The multi- dimensionality of competition implies that social welfare cannot be completely determined through simple price-cost comparisons. It is possible, but not definite, that the reduction in welfare associated with the deadweight losses might be offset by the increase in welfare made possible by greater product diversity.” Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 63 (2005).

The importance of humility in regulating highly innovative industries cannot be overstated.³ Even after decades of research, there is still much that economists cannot predict about the broad economic effects of technological innovation on economic growth and development. The unintended and unanticipated costs of preventing new methods of reaching underserved consumers can be substantial, and the consequences enormous to those in greatest need.

Take but one example: In the rush to prevent tariff differentiation in the United States, upstart mobile network provider MetroPCS was forced to abandon a business model expressly designed to benefit the relatively less-connected and less-wealthy segments of the American population.

In 2011, MetroPCS, the fifth largest mobile service provider in the United States, endeavored to differentiate itself from its larger competitors while also providing “wireless for all.”⁴ Its least expensive plan – primarily offered to and adopted by pre-paid customers – offered unlimited voice, text and web-browsing for \$40.00 per month, and, thanks to a partnership with Google, included free access to YouTube. MetroPCS also offered users the ability to purchase additional services on top of the base plan for a nominal fee.

As a basic plan that focused on providing access to consumers who were, in one fashion or another, priced out of the larger carrier’s plans, it was rather feature restricted: although users could access a highly optimized version of YouTube, they were restricted from using other video services. Consumers could choose to purchase expanded access for significantly less than the rates charged by the major carriers, however. Nevertheless, as a result of a coordinated outcry from competitors and for fear of being punished by regulators (for violating the American equivalent of the rules here under consideration), MetroPCS ceased its offerings,⁵ effectively eliminating a desirable wireless service alternative for cost-conscious consumers.

The lesson of the MetroPCS story is a lamentable one. Prevented from competing with larger Telecom Service Providers (“TSPs”), and unable to provide the low-cost services that defined its core mission (and its means of differentiating itself from its competitors), the company was ultimately forced to merge with its next largest

³ See, e.g., Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, 6 J. COMPETITION L. & ECON. 153 (2010).

⁴ MetroPCS Introduces Wireless for All(SM) Nationwide Service Plans with No Hidden Taxes or Regulatory Fees, BUSINESSWIRE (Jan. 19, 2010),

<http://www.businesswire.com/news/home/20100112005629/en/MetroPCS-Introduces-Wireless-All%20SM-Nationwide-Service-Plans>.

⁵ See Edgar Alvarez, MetroPCS raises unlimited LTE data plan to \$70, starts throttling others, ENGADGET, Apr. 4, 2012,

<http://www.engadget.com/2012/04/03/metropcs-new-lte-data-plans-throttling/>

rival in 2013. In contrast to the conventional wisdom about differentiation and prioritization among data services, the only parties that *really* benefited from this outcome were large incumbents that no longer had to compete with an innovative rival.

The risks of squelching the competition that vertical integration enables (like MetroPCS's arrangement with YouTube) can be enormous – and they are certainly unknowable in advance. In the wake of the world's antitrust actions against Microsoft, for example, it is easy to imagine that regulators might have prevented Apple from integrating iOS with its iPhone hardware.⁶ But whatever the perceived costs of Apple's business model (and the perceived benefits of regulating a more "orderly" approach to its objectives), regulators' forbearance helped to usher in the spontaneous and disruptive smartphone revolution.

Indeed, without Apple's vertically integrated approach, to say nothing of its exclusive deal with AT&T (which was also criticized by a range of advocates and competitors at the time⁷), the smartphone revolution might never have happened – or happened as quickly. Moreover, when the smartphone revolution did arrive (if it did), it would likely have been chronically anemic, shunning differentiation among services and avoiding the valuable integration of key services for fear of liability arising out of the preferencing inherent in an integrated model. Today, it is widely understood that the Apple-led smartphone revolution has done more to enable internet access for the world's most disadvantaged citizens than perhaps any other technology.

India is on the cusp of providing an economically and socially transformative service: near-ubiquitous, low-cost, high-value internet access that has the potential to create unprecedented opportunity and advantage for its citizens. The nation stands poised to increase the welfare of its poorest citizens with a rapidity seldom witnessed in human history. We strongly encourage TRAI to chart a wise course that allows for differentiated tariffs and the expanded internet access they can bring to India's citizens.

⁶ One need not look far to see that this hypothetical could easily have been reality. Among many others, internet scholar Jonathan Zittrain in his influential book, *The Future of the Internet – and How to Stop It*, warned of Apple's "walled garden," and claimed that its integrated and tightly controlled iPhone platform would mean the end of innovation on the internet. See JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET—AND HOW TO STOP IT (2008).

⁷ Marguerite Reardon, Exclusive cell phone deals called into question, C-NET (May 20, 2008), <http://www.cnet.com/news/exclusive-cell-phone-deals-called-into-question/>.

TSPs Should Be Allowed to Employ Differential Pricing

Zero-Rated Services

Services such as Facebook’s “Free Basics” or Wikipedia’s “Wikipedia Zero” are offered as a means of connecting underserved populations to particular, high-demand internet services. These zero-rated services are not typically designed to direct users’ broad-based internet access to certain content providers ahead of others; rather, they are a means of moving users from a world of no access to one of access. And once they are connected, the data suggest that these users eventually move on to purchase full internet access as a consequence of their experience with these zero-rated services.⁸

This is a business model common throughout the internet (and the rest of the economy, for that matter). Service providers often offer a free or low-cost tier that is meant to facilitate access – not to constrain it. Dropbox, for instance, offers its file sharing services for free, with the option for consumers to purchase increased storage as necessary. Most users continue to use Dropbox’s free service; the company reports that only about 100K of its 400M users opt to pay the nominal fee for increased storage.⁹ Yet not only is this differentiated tariffing a win for the company, it’s a win for the internet community at large. Dropbox helped to usher in the ubiquity of portable file storage and the consumer use of the “cloud,” offering a range of important benefits particularly appealing to consumers who can’t afford powerful devices, unlimited physical storage and the power required to drive them. And yet, far from having dominated the landscape, Dropbox now faces healthy competition from a plethora of large and small companies offering further refinements on the technology that Dropbox popularized.¹⁰

Zero-rated services can and do function in the same way. If a content provider partners with a TSP to provide some service for free or at nominal cost, the success of such a program could very well be short-lived. Far from being able to lock users into a single platform, the very success of that platform – even at a zero price – encourages other competitors with the ability to finance competitive

⁸ Daniel Sparks, *Understanding Facebook, Inc.’s Internet.org: It’s More Than Charity*, THE MOTLEY FOOL (Oct. 15, 2015), <http://www.fool.com/investing/general/2015/10/15/understanding-facebook-incs-internetorg-its-more-t.aspx>.

⁹ See Eugene Kim, *Dropbox CEO Drew Houston was a little unclear today on how well the company’s business product is doing*, BUSINESS INSIDER (Jun. 24, 2015), <http://www.businessinsider.com/dropbox-ceo-drew-houston-growth-not-profitability-2015-6>.

¹⁰ See Eric Newcomer & Dina Bass, *Dropbox Is Struggling and Competitors Are Catching Up*, BLOOMBERG BUSINESSWEEK (Jun. 24, 2015), <http://www.bloomberg.com/news/articles/2015-06-24/dropbox-is-struggling-and-competitors-are-catching-up>.

services to enter the market and to offer new and innovative alternatives. As with the Dropbox example, even where users start with a free account, eventually more services are offered that provide consumers with more choices and opportunities to expand their consumption well beyond the initial offerings.

Differentiated Tariffs, in General

In fact, considered more broadly, forcing companies to hew to a single “neutral” pricing model is actually an effective way to guarantee that consumers’ demands for data and content are *frustrated*. Under the models advocated by proponents of undifferentiated tariffs, consumers have little incentive or ability (beyond the binary choice between consuming or not consuming) to prioritize their use of data based on their preferences. Thus it creates costly deadweight loss, as users are forced to forego the benefits of consumption of some services simply because they cannot afford or do not want *full* access. But it also leads to inefficient network usage patterns and limits the range of innovative offerings that might take advantage of more nuanced pricing schemes.

Undifferentiated pricing ensures that the marginal cost to users of consuming high-value, low-bit data (like VoIP, for example) is the same as the cost of consuming low-value, high-bit data (like backup services, for example), assuming neither use exceeds the user’s allotted throughput/capacity.

The result is that consumers will tend to over-consume lower-value data and under-consume higher-value data, and, correspondingly, that content developers will over-invest in the former and under-invest in the latter. The ultimate result is a net reduction in the overall value of content both available and consumed, and network under-investment. The idea that consumers and competition generally are better off when users have no incentive to take account of their own usage runs counter to basic economic logic and is unsupported by any evidence. The same is true of content providers.

The proper aim of any regulation of tariffs should be the optimal use of broadband, which maximizes the value of the internet for consumers and creates strong incentives for both content developers and TSPs to innovate and invest. Among other things, this means that, particularly where there is congestion, the optimal solution is for TSPs to encourage users to prioritize their data usage. And because consumer preferences are diverse, there is no one-size-fits-all formula for optimizing either data pricing or content and usage prioritization.

In practice, this would mean allowing TSPs to design a variety of plans aimed at enabling users with low or no adoption of the internet to “step up” into different plans with larger data offerings. Indeed, Facebook’s “Free Basics” program is an

exemplar of this model. Over 50% of users who first access the internet through the company's Free Basics program begin paying for access within 30 days in order to access a fuller set of features.¹¹

The benefits to consumers of differentiated tariffs extend beyond the welfare-enhancing benefits to the poor from zero-rated offerings. It is a simple economic fact that broadband access must be paid for by someone. In flat-rate regimes, TSPs will inevitably find a way to pass the costs on to those who are capable of paying – or at least to those parties the TSPs are legally allowed to charge. If content providers are not permitted to absorb any of this cost directly, there is only one other party in a position to bear the cost: consumers. Content providers and TSPs that have devised business models to subsidize consumer access should be welcomed by those concerned about expanding broadband access and maintaining its affordability.

In the world of multi-sided markets (like the market for internet data services), a one-size-fits-all pricing model (like a requirement that costs be borne by consumers alone, or by all input providers equally) is ill-advised. Not only is experimentation required to discover the optimal allocation of costs, but frequently a variety of business models coexist that permit (or force) different parties to pay for the same or similar services.¹²

Consider the many similar pricing plans devised by traditional industries confronted with analogous market dynamics. Some periodicals, for example, are paid for by readers and offer little or no advertising; others charge a subscription and offer paid ads; still others are offered for free, funded entirely by ads. All of these models work; none is intrinsically more effective at reaching consumers or better for consumer welfare than any other. There is no reason the same isn't true for data services and content – least of all in nascent markets aimed at attracting entirely new consumers whose willingness and ability to pay are uncertain and evolving.

In sum, a *per se* ban on differentiated tariffs is likely to fix prices at an inefficient and undesirable level and to deter or preclude precisely the experimentation and business model innovation that can drive the expansion of internet access to underserved populations.

¹¹ Sparks, *supra*, n. 7.

¹² See, e.g., Daniel A. Lyons, *Innovations in Mobile Broadband Pricing*, The Research Conference on Communication, Information and Internet Policy 42, 15 (2015) available at <http://lawdigitalcommons.bc.edu/lisp/752/>.

Where Market Pressures and the Economics of Platforms Do Not Guarantee Compliance with TRAI's Principles, Antitrust and Consumer Protection Law Can and Should Be Applied

There is a common misunderstanding regarding the role of content providers, particularly with respect to partnerships between content providers and TSPs. In its report on Net Neutrality, for instance, the Department of Telecommunications characterized content providers as potential “gatekeepers”:

The Committee, therefore, is of the firm opinion that content and application providers cannot be permitted to act as gatekeepers and use network operations to extract value, even if it is for an ostensible public purpose. Collaborations between TSPs and content providers that enable such gatekeeping role to be played by any entity should be actively discouraged.¹³

When considering the competitive effects of various internet business models, however, it is important not to assume that vertical agreements between TSPs and content providers are problematic. In fact, it is well understood in the economics literature that vertical integration is presumptively procompetitive.¹⁴ A “real” gatekeeper – one that extracts rents by sufficiently foreclosing access by consumers to content or vice versa) such that competitive alternatives aren’t viable – poses problems that may be worthy of a regulatory response. But a *per se* rule that assumes that all such agreements should be precluded fundamentally misunderstands the competitive dynamics of the internet ecosystem. Among other things, there is a crucial difference between an actual gatekeeper with the economic power to constrain competition and consumer choices, and preferential or exclusive arrangements that ultimately expand choices, lower prices, and incentivize investment by content providers and network operators alike.¹⁵

Multi-sided platforms – like Google’s search services, Facebook’s social network and many others – require critical mass on every side of their platform in order to maintain viability. Platforms must encourage participation from all parties – users and developers – to match supply and demand, and it is squarely within their

¹³ NET NEUTRALITY: DoT COMMITTEE REPORT 70 (May 2015), available at http://www.dot.gov.in/sites/default/files/u10/Net_Neutrality_Committee_report%20%281%29.pdf.

¹⁴ Francine Lafontaine & Margaret Slade, Vertical Integration and Firm Boundaries: The Evidence, 45 J. ECON. LIT. 629, 680 (2007).

¹⁵ See, generally, Comments of the International Center for Law and Economics and TechFreedom In the Matter of Protecting and Promoting the Open Internet GN Docket No. 14-28, § VI available at <http://apps.fcc.gov/ecfs/document/view?id=7521706121>.

interest to be as generally nondiscriminatory as possible.¹⁶ Thus, far from being a “gatekeeper” – that is to say a bottleneck in a process that uses its power to extract rents – these platforms typically operate using open API’s that encourage outside developers to design services for as many consumers as possible.

As of 2012, for instance, Facebook alone had over nine million connected apps available to users of its platform,¹⁷ and as of 2014 over 300,000 different developers integrated with Dropbox to provide the cloud storage service to their users.¹⁸

Thus, the economic incentives faced by application providers impel them not to restrict access, but to open it – frequently by charging nothing for either developer or end user access – in order to ensure that the platform is widely adopted. It simply makes no economic sense for an internet platform to engage in the sorts of discriminatory activity that would cause it to lose critical mass on any side of its platform.

It is often easy to miss the positive feedback effects that occur for telecom operators as a result of users adopting internet applications. In contrast to the view that these application providers “use network operations to extract value,” providers can in fact generate additional value for online activity that drives increasing broadband adoption.

The Effects of Differentiated Tariffs on Innovation

Much of the thinking around differentiated tariffs assumes that they protect incumbents and harm new entrants. But this view is frequently mistaken and precisely backward.

It is often claimed that differentiated tariffs would imperil internet startups that don't have the resources of their incumbent competitors to purchase priority access, placing them at an unfair disadvantage. This is curious given that it is often the very large, incumbent organizations that advocate for neutral tariffs. The truth is that TSP price discrimination is as or more likely to help new entrants as to hurt them.

¹⁶ See, e.g., David S. Evans, *Economics of Vertical Restraints for Multi-Sided Platforms 2* (University of Chicago Institute for Law & Economics Olin Research Paper No. 626, Jan. 2, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2195778.

¹⁷ See, e.g., Brittany Darwell, Facebook platform supports more than 42 million pages and 9 million apps, SOCIALTIMES (Apr. 27, 2012), <http://www.adweek.com/socialtimes/facebook-platform-supports-more-than-42-million-pages-and-9-million-apps/278492>.

¹⁸ Dan Levine, *Make your masterpiece: 4 Dropbox-connected apps for creativity*, DROPBOX (Oct. 7, 2014), <https://blogs.dropbox.com/dropbox/2014/10/make-your-masterpiece-4-dropbox-connected-apps-for-creativity/>.

Offering some services at subsidized or zero prices frees up resources (and, where applicable, data under a user's data cap) enabling users to experiment with new, less-familiar alternatives. Where a user might not find it worthwhile to spend his marginal dollar on an unfamiliar or less-preferred service, differentiated pricing loosens the user's budget constraint, and may make him *more*, not less, likely to use alternative services – *even if they are not among those included in the subsidized or zero-rated arrangement.*

Moreover, differentiated tariffs offer startups the potential to buy priority access, and thus an important means of overcoming the inherent disadvantage of newness.¹⁹ With undifferentiated tariffs, on the other hand, the advantages of incumbency can't be routed around by buying a leg-up in speed, access, or promotion.

There is another systematic flaw embedded in anti-differentiation thinking: that the costs to businesses of accessing subscribers is somehow unique and not one that these businesses should bear. Of course, access is never really “zero cost;” businesses, especially early stage start-ups, wouldn't need capital investment if all their costs were zero. In that sense, why is equality of TSP access any more important than other forms of potential price parity? Why not mandate price controls on rent for businesses, mandate equal rent? Businesses that depend upon any resource rationally include the costs associated with that resource in their investment and planning decisions. And every business enjoys certain cost advantages in some areas and disadvantages in others. But in the end, whether “equal” pricing is maintained or not is irrelevant to long run investment decisions.

To understand this point regarding the inequality of cost inputs to businesses, consider an analogous business need: advertising. Surely some businesses are fortunate enough to have early, anomalous, viral growth, but most invest heavily in advertising and marketing. During the 2015 U.S. Super Bowl, for instance, the cost of purchasing a 30 second advertising spot was \$4.5M USD – that's \$150K USD per second.²⁰ Large companies like Budweiser and PepsiCo paid multiple millions this year to advertise during the event; many of their competitors didn't. Yet, despite this inequality, smaller competitors like Sierra Nevada and Dr. Pepper have not gone bankrupt, and continue to find a way to operate within the unequal

¹⁹ See, e.g., Geoffrey Manne & Berin Szoka, *Net neutrality's hollow promise to startups*, COMPUTERWORLD (Sept. 16, 2014),

<http://www.computerworld.com/article/2684174/net-neutralitys-hollow-promise-to-startups.html>.

²⁰ Lindsay Kramer, *Super Bowl 2015: How much does a 30-second television commercial cost?*, SYRACUSE.COM (Jan. 31, 2015),

http://www.syracuse.com/superbowl/index.ssf/2015/01/super_bowl_2015_how_much_does_commercial_cost_tv_ad_30_second_spot.html.

ecosystem of advertising. In fact, entrepreneurs and their investors thrive in environments where arbitrage is possible – where a creative individual can come up with novel approaches to take advantage of differential conditions better than his competitors.

The Cost of Over Enforcement Can Be Greater Than The Risk of Underenforcement

The approach taken in this Consultation to the the question of competition and consumer harm risks putting the cart before the horse. Before special rules are crafted to attempt to address perceived threats to consumer welfare, existing and effective rules of general applicability can and should be employed to address actual harms: most significantly, the well-developed principles of competition law that have been in force in India since the enactment of the Competition Act in 2003.

Importantly, competition laws are typically employed to address actual harms on a case-by-case basis, generally eschewing *per se* condemnation of business arrangements (like vertical integration) that impair competition only in limited circumstances. The error costs of over-enforcement of TRAI's principles of transparency and nondiscrimination.²¹ likely threaten more harm than do the risks of underenforcement. In the face of rapidly accelerating technological changes – which will continue to present new and unanticipated possibilities for different tariff models – an effects-based approach under the competition laws that conducts an *ex post* analysis of conduct would be far more prudent. Instead of foreclosing or mandating specific conduct, such an approach would permit and foster experimentation, innovation and technological development, intervening only where actual competitive harms develop.

TRAI has a commendable history of “light touch” regulation of tariffs, reflecting the Authority’s understanding that proper regulation leaves room for market players to adapt technology and to tailor their services to evolving consumer demand. There is nothing new or unique about internet companies that would justify breaking from this approach – in fact there is much to be gained in continuing to allow differentiation as internet platforms discover better ways to enhance consumer welfare.

²¹ Manne & Wright, *supra* note 3, at 158-63.

2.4 Individuals

2.4.1 Aswini Kumar



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Promotion and protection of all human rights, civil,
political, economic, social and cultural rights,
including the right to development

Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue*

Summary

This report explores key trends and challenges to the right of all individuals to seek, receive and impart information and ideas of all kinds through the Internet. The Special Rapporteur underscores the unique and transformative nature of the Internet not only to enable individuals to exercise their right to freedom of opinion and expression, but also a range of other human rights, and to promote the progress of society as a whole. Chapter III of the report underlines the applicability of international human rights norms and standards on the right to freedom of opinion and expression to the Internet as a communication medium, and sets out the exceptional circumstances under which the dissemination of certain types of information may be restricted. Chapters IV and V address two dimensions of Internet access respectively: (a) access to content; and (b) access to the physical and technical infrastructure required to access the Internet in the first place. More specifically, chapter IV outlines some of the ways in which States are increasingly censoring information online, namely through: arbitrary blocking or filtering of content; criminalization of legitimate expression; imposition of intermediary liability; disconnecting users from Internet access, including on the basis of intellectual property rights law; cyber-attacks; and inadequate protection of the right to privacy and data protection. Chapter V addresses the issue of universal access to the Internet. The Special Rapporteur intends to explore this topic further in his future report to the General Assembly. Chapter VI contains the Special Rapporteur's conclusions and recommendations concerning the main subjects of the report.

* Late submission.

The first addendum to the report comprises a summary of communications sent by the Special Rapporteur between 20 March 2010 and 31 March 2011, and the replies received from Governments. The second and third addenda contain the findings of the Special Rapporteur's missions to the Republic of Korea and Mexico respectively.

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I. Introduction

1. The present report is submitted to the Human Rights Council by the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression pursuant to Human Rights Council resolution 7/36. In particular, the resolution requests the Special Rapporteur “to continue to provide his/her views, when appropriate, on the advantages and challenges of new information and communication technologies, including the Internet and mobile technologies, for the exercise of the right to freedom of opinion and expression, including the right to seek, receive and impart information and the relevance of a wide diversity of sources, as well as access to the information society for all”.¹ On this basis, the report expands upon the previous mandate holders’ reports on topics related to the Internet,² taking into account recent developments and information gathered through five regional consultations organized by the Special Rapporteur in 2010 and 2011.³

2. While the Internet has been in existence since the 1960s, its current use throughout the world across different age groups, and incorporation into virtually every aspect of modern human life, has been unprecedented. According to the International Telecommunication Union, the total number of Internet users worldwide is now over 2 billion.⁴ Active users of Facebook, an online social networking platform, grew from 150 million to 600 million between 2009 and 2011. The Special Rapporteur believes that the Internet is one of the most powerful instruments of the 21st century for increasing transparency in the conduct of the powerful, access to information, and for facilitating active citizen participation in building democratic societies. Indeed, the recent wave of demonstrations in countries across the Middle East and North African region has shown the key role that the Internet can play in mobilizing the population to call for justice, equality, accountability and better respect for human rights. As such, facilitating access to the Internet for all individuals, with as little restriction to online content as possible, should be a priority for all States.

3. In this regard, the Special Rapporteur would like to underscore that access to the Internet has two dimensions: access to online content, without any restrictions except in a few limited cases permitted under international human rights law; and the availability of the necessary infrastructure and information communication technologies, such as cables, modems, computers and software, to access the Internet in the first place. The first dimension is addressed in Chapter IV of the report, which outlines some of the ways in which States are restricting the flow of information online through increasingly sophisticated means. The second dimension is examined in Chapter IV. The Special Rapporteur intends to explore the latter issue further in his future report to the General Assembly.

¹ Human Rights Council resolution 7/36, para. 4(f).

² E/CN.4/1998/40; E/CN.4/1999/64; E/CN.4/2000/63; E/CN.4/2001/64; E/CN.4/2002/75; E/CN.4/2005/64; E/CN.4/2006/55; A/HRC/4/27; A/HRC/7/14.

³ See para. 5 for further information.

⁴ International Telecommunication Union, StatShot No.5, January 2011 Available from: <http://www.itu.int/net/pressoffice/stats/2011/01/index.aspx>.

II. Activities of the Special Rapporteur

A. Communications

4. Between 20 March 2010 and 31 March 2011, the Special Rapporteur sent 195 communications, 188 of which were submitted jointly with other special procedures mandate holders. The geographical distribution of the communications was as follows: 29 per cent for Asia and the Pacific; 26 per cent for the Middle East and North Africa; 16 per cent for Africa; 15 per cent for Latin America and the Caribbean; and 14 per cent for Europe, Central Asia and North America. The summary of communications sent and replies received from Governments can be found in the first addendum to this report (A/HRC/17/27/Add.1).

B. Participation in meetings and seminars

5. The Special Rapporteur, with the support of local organizations, organized a series of expert regional consultations, beginning in March 2010 in Stockholm, followed by Buenos Aires (18-19 October 2010), Bangkok (18-19 November 2010), Cairo (11-13 January 2011), Johannesburg (15-16 February 2011), and Delhi (2-3 March 2011). The regional consultations concluded on 30 March 2011 with an expert meeting in Stockholm, organized by the Ministry of Foreign Affairs of Sweden. These meetings brought together experts and human rights defenders working on a range of Internet and freedom of expression-related issues in order to better understand their experience, needs and priorities in different countries and regions for the purposes of this report.

6. From 14 to 17 September 2010, the Special Rapporteur attended the Fifth Internet Governance Forum in Vilnius.

7. On 30 November 2010, the Special Rapporteur participated in an expert round table entitled “Equality, Non-discrimination and Diversity: Challenge or Opportunity for the Mass Media?” in Geneva, organized by the Office of the High Commissioner for Human Rights (OHCHR).

8. On 9 and 10 February 2011 and on 6 and 7 April 2011, the Special Rapporteur participated as an expert in the regional expert workshops on the prohibition of incitement to national, racial or religious hatred organized by OHCHR in Vienna and Nairobi respectively.

9. On 16 March 2011, the Special Rapporteur shared his views regarding the compatibility of blocking child pornography on the Internet with the right to freedom of expression in the context of discussions on the proposal for a directive of the European Parliament and of the Council on combating the sexual abuse and sexual exploitation of children and child pornography.

10. The Special Rapporteur also participated in a series of academic events in other countries, including Guatemala, Mexico, the Philippines, South Africa, Sweden and the United States of America.

C. Country visits

11. The Special Rapporteur notes that country visits remain central to his mandate. Requests sent to Governments to undertake a country mission are based on several factors, such as visits undertaken and requested by the former mandate holders, trends that emerge from communications sent on alleged violations of the right to freedom of opinion and

expression, and consideration of geographical balance. The Special Rapporteur hopes that visit requests will be favourably received by the Governments concerned.

1. Missions undertaken in 2010 and 2011

12. From 5 to 15 May 2010, the Special Rapporteur undertook a mission to the Republic of Korea. The mission report is included as an addendum to this report (A/HRC/17/27/Add.2).

13. From 10 to 21 August 2010, the Special Rapporteur undertook a mission to Mexico, together with the Special Rapporteur for Freedom of Expression for the Inter-American Commission on Human Rights, Catalina Botero. The mission report is included as an addendum to this report (A/HRC/17/27/Add.3).

14. From 3 to 5 April 2011, the Special Rapporteur visited the Republic of Hungary, at the invitation of the Government, to provide expert advice to the Government regarding Hungarian media legislation. The press release with his conclusions and recommendations can be found on the OHCHR website.⁵

15. From 10 to 17 April 2011, the Special Rapporteur undertook a mission to Algeria. The mission report will be presented at a future session of the Human Rights Council in 2012. The press release with his initial conclusions and recommendations can be found on the OHCHR website.⁶

2. Upcoming missions

16. The visit to Israel and the occupied Palestinian territory, which was scheduled to take place in May 2011, has been postponed. The new dates of the visit have yet to be agreed upon.

17. The Special Rapporteur would like to thank the Italian Government for its letter dated 6 August 2010 in response to his request for a visit. He hopes that a mutually convenient set of dates can be agreed upon for a visit in 2011.

3. Pending requests

18. As of March 2011, the following visit requests from the Special Rapporteur were pending: the Islamic Republic of Iran (requested in February 2010), Sri Lanka (requested in June 2009), Tunisia (requested in 2009), and the Bolivarian Republic of Venezuela (requested in 2003 and 2009).

III. General principles on the right to freedom of opinion and expression and the Internet

19. Very few if any developments in information technologies have had such a revolutionary effect as the creation of the Internet. Unlike any other medium of communication, such as radio, television and printed publications based on one-way transmission of information, the Internet represents a significant leap forward as an interactive medium. Indeed, with the advent of Web 2.0 services, or intermediary platforms that facilitate participatory information sharing and collaboration in the creation of content, individuals are no longer passive recipients, but also active publishers of information. Such

⁵ Available from:
<http://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=10916&LangID=E>.

⁶ Ibid.

platforms are particularly valuable in countries where there is no independent media, as they enable individuals to share critical views and to find objective information. Furthermore, producers of traditional media can also use the Internet to greatly expand their audiences at nominal cost. More generally, by enabling individuals to exchange information and ideas instantaneously and inexpensively across national borders, the Internet allows access to information and knowledge that was previously unattainable. This, in turn, contributes to the discovery of the truth and progress of society as a whole.

20. Indeed, the Internet has become a key means by which individuals can exercise their right to freedom of opinion and expression, as guaranteed by article 19 of the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights. The latter provides that:

- (a) Everyone shall have the right to hold opinions without interference;
- (b) Everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his choice;
- (c) The exercise of the rights provided for in paragraph 2 of this article carries with it special duties and responsibilities. It may therefore be subject to certain restrictions, but these shall only be such as are provided by law and are necessary:
 - (d) for respect of the rights or reputations of others;
 - (e) for the protection of national security or of public order (*ordre public*), or of public health or morals.

21. By explicitly providing that everyone has the right to express him or herself through any media, the Special Rapporteur underscores that article 19 of the Universal Declaration of Human Rights and the Covenant was drafted with foresight to include and to accommodate future technological developments through which individuals can exercise their right to freedom of expression. Hence, the framework of international human rights law remains relevant today and equally applicable to new communication technologies such as the Internet.

22. The right to freedom of opinion and expression is as much a fundamental right on its own accord as it is an “enabler” of other rights, including economic, social and cultural rights, such as the right to education and the right to take part in cultural life and to enjoy the benefits of scientific progress and its applications, as well as civil and political rights, such as the rights to freedom of association and assembly. Thus, by acting as a catalyst for individuals to exercise their right to freedom of opinion and expression, the Internet also facilitates the realization of a range of other human rights.

23. The vast potential and benefits of the Internet are rooted in its unique characteristics, such as its speed, worldwide reach and relative anonymity. At the same time, these distinctive features of the Internet that enable individuals to disseminate information in “real time” and to mobilize people has also created fear amongst Governments and the powerful. This has led to increased restrictions on the Internet through the use of increasingly sophisticated technologies to block content, monitor and identify activists and critics, criminalization of legitimate expression, and adoption of restrictive legislation to justify such measures. In this regard, the Special Rapporteur also emphasizes that the existing international human rights standards, in particular article 19, paragraph 3, of the International Covenant on Civil and Political Rights, remain pertinent in determining the types of restrictions that are in breach of States’ obligations to guarantee the right to freedom of expression.

24. As set out in article 19, paragraph 3, of the Covenant, there are certain exceptional types of expression which may be legitimately restricted under international human rights law, essentially to safeguard the rights of others. This issue has been examined in the previous annual report of the Special Rapporteur.⁷ However, the Special Rapporteur deems it appropriate to reiterate that any limitation to the right to freedom of expression must pass the following three-part, cumulative test:

- (a) It must be provided by law, which is clear and accessible to everyone (principles of predictability and transparency); and
- (b) It must pursue one of the purposes set out in article 19, paragraph 3, of the Covenant, namely (i) to protect the rights or reputations of others, or (ii) to protect national security or of public order, or of public health or morals (principle of legitimacy); and
- (c) It must be proven as necessary and the least restrictive means required to achieve the purported aim (principles of necessity and proportionality).

Moreover, any legislation restricting the right to freedom of expression must be applied by a body which is independent of any political, commercial, or other unwarranted influences in a manner that is neither arbitrary nor discriminatory, and with adequate safeguards against abuse, including the possibility of challenge and remedy against its abusive application.

25. As such, legitimate types of information which may be restricted include child pornography (to protect the rights of children),⁸ hate speech (to protect the rights of affected communities),⁹ defamation (to protect the rights and reputation of others against unwarranted attacks), direct and public incitement to commit genocide (to protect the rights of others),¹⁰ and advocacy of national, racial or religious hatred that constitutes incitement to discrimination, hostility or violence (to protect the rights of others, such as the right to life).¹¹

26. However, in many instances, States restrict, control, manipulate and censor content disseminated via the Internet without any legal basis, or on the basis of broad and ambiguous laws, without justifying the purpose of such actions; and/or in a manner that is clearly unnecessary and/or disproportionate to achieving the intended aim, as explored in the following sections. Such actions are clearly incompatible with States' obligations under international human rights law, and often create a broader "chilling effect" on the right to freedom of opinion and expression.

27. In addition, the Special Rapporteur emphasizes that due to the unique characteristics of the Internet, regulations or restrictions which may be deemed legitimate and proportionate for traditional media are often not so with regard to the Internet. For example, in cases of defamation of individuals' reputation, given the ability of the individual concerned to exercise his/her right of reply instantly to restore the harm caused, the types of sanctions that are applied to offline defamation may be unnecessary or disproportionate.

⁷ A/HRC/14/23, paras. 72 - 87.

⁸ Dissemination of child pornography is prohibited under international human rights law, see e.g. Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography, art. 3, para. 1(c).

⁹ See for example *Faurisson v. France*, United Nations Human Rights Committee, communication 550/1993, views of 8 November 1996. The issue of hate speech has also been addressed in previous reports, see inter alia E/CN.4/1999/64; E/CN.4/2000/63; E/CN.4/2002/75; and A/HRC/4/27.

¹⁰ See for example article 3(c) of the Convention on the Prevention and Punishment of the Crime of Genocide.

¹¹ See for example article 20, paragraph 2, of the International Covenant on Civil and Political Rights.

Similarly, while the protection of children from inappropriate content may constitute a legitimate aim, the availability of software filters that parents and school authorities can use to control access to certain content renders action by the Government such as blocking less necessary, and difficult to justify.¹² Furthermore, unlike the broadcasting sector, for which registration or licensing has been necessary to allow States to distribute limited frequencies, such requirements cannot be justified in the case of the Internet, as it can accommodate an unlimited number of points of entry and an essentially unlimited number of users.¹³

IV. Restriction of content on the Internet

28. As outlined under Chapter III, any restriction to the right to freedom of expression must meet the strict criteria under international human rights law. A restriction on the right of individuals to express themselves through the Internet can take various forms, from technical measures to prevent access to certain content, such as blocking and filtering, to inadequate guarantees of the right to privacy and protection of personal data, which inhibit the dissemination of opinions and information. The Special Rapporteur is of the view that the arbitrary use of criminal law to sanction legitimate expression constitutes one of the gravest forms of restriction to the right, as it not only creates a “chilling effect”, but also leads to other human rights violations, such as arbitrary detention and torture and other forms of cruel, inhuman or degrading treatment or punishment.

A. Arbitrary blocking or filtering of content

29. Blocking refers to measures taken to prevent certain content from reaching an end-user. This includes preventing users from accessing specific websites, Internet Protocol (IP) addresses, domain name extensions, the taking down of websites from the web server where they are hosted, or using filtering technologies to exclude pages containing keywords or other specific content from appearing. For example, several countries continue to block access to YouTube,¹⁴ a video-sharing website on which users can upload, share and view videos. China, which has in place one of the most sophisticated and extensive systems for controlling information on the Internet, has adopted extensive filtering systems that block access to websites containing key terms such as “democracy” and “human rights”.¹⁵ The Special Rapporteur is deeply concerned that mechanisms used to regulate and censor information on the Internet are increasingly sophisticated, with multi-layered controls that are often hidden from the public.

30. The Special Rapporteur is also concerned by the emerging trend of timed (or “just-in-time”) blocking to prevent users from accessing or disseminating information at key political moments, such as elections, times of social unrest, or anniversaries of politically or historically significant events. During such times, websites of opposition parties, independent media, and social networking platforms such as Twitter and Facebook are

¹² Center for Democracy & Technology, “Regardless of Frontiers: The International Right to Freedom of Expression in the Digital Age,” version 0.5 - Discussion draft (April 2011), p.5.

¹³ However, this does not apply to registration with a domain name authority for purely technical reasons or rules of general application which apply without distinction to any kind of commercial operation.

¹⁴ See OpenNet Initiative, “YouTube Censored: A Recent History”. Available from:
<http://opennet.net/youtube-censored-a-recent-history>.

¹⁵ Reporters without Borders, “Enemies of the Internet,” March 2010. Available from:
http://en.rsf.org/IMG/pdf/Internet_enemies.pdf, pp. 8-12.

blocked, as witnessed in the context of recent protests across the Middle East and North African region. In Egypt, users were disconnected entirely from Internet access.

31. States' use of blocking or filtering technologies is frequently in violation of their obligation to guarantee the right to freedom of expression, as the criteria mentioned under chapter III are not met. Firstly, the specific conditions that justify blocking are not established in law, or are provided by law but in an overly broad and vague manner, which risks content being blocked arbitrarily and excessively. Secondly, blocking is not justified to pursue aims which are listed under article 19, paragraph 3, of the International Covenant on Civil and Political Rights, and blocking lists are generally kept secret, which makes it difficult to assess whether access to content is being restricted for a legitimate purpose. Thirdly, even where justification is provided, blocking measures constitute an unnecessary or disproportionate means to achieve the purported aim, as they are often not sufficiently targeted and render a wide range of content inaccessible beyond that which has been deemed illegal. Lastly, content is frequently blocked without the intervention of or possibility for review by a judicial or independent body.

32. The Special Rapporteur notes that child pornography is one clear exception where blocking measures can be justified, provided that the national law is sufficiently precise and there are effective safeguards against abuse or misuse, including oversight and review by an independent and impartial tribunal or regulatory body. However, he is also concerned that States frequently rely heavily on blocking measures, rather than focusing their efforts on prosecuting those responsible for the production and dissemination of child pornography. Additionally, as child pornography is often a by-product of trafficking and prostitution of children, the Special Rapporteur urges States to take holistic measures to combat the root problems that give rise to child pornography.

B. Criminalization of legitimate expression

33. The types of action taken by States to limit the dissemination of content online not only include measures to prevent information from reaching the end-user, but also direct targeting of those who seek, receive and impart politically sensitive information via the Internet. Physically silencing criticism or dissent through arbitrary arrests and detention, enforced disappearance, harassment and intimidation is an old phenomenon, and also applies to Internet users. This issue has been explored in the Special Rapporteur's report to the General Assembly under the section on "protection of citizen journalists" (A/65/284). Such actions are often aimed not only to silence legitimate expression, but also to intimidate a population to push its members towards self-censorship.

34. The Special Rapporteur remains concerned that legitimate online expression is being criminalized in contravention of States' international human rights obligations, whether it is through the application of existing criminal laws to online expression, or through the creation of new laws specifically designed to criminalize expression on the Internet. Such laws are often justified on the basis of protecting an individual's reputation, national security or countering terrorism, but in practice are used to censor content that the Government and other powerful entities do not like or agree with.

35. One clear example of criminalizing legitimate expression is the imprisonment of bloggers around the world. According to Reporters without Borders, in 2010, 109 bloggers were in prison on charges related to the content of their online expression.¹⁶ Seventy-two

¹⁶ Available from: <http://en.rsf.org/press-freedom-barometer-journalists-killed.html?annee=2010>.

individuals were imprisoned in China alone, followed by Viet Nam and Iran, with 17 and 13 persons respectively.¹⁷

36. Imprisoning individuals for seeking, receiving and imparting information and ideas can rarely be justified as a proportionate measure to achieve one of the legitimate aims under article 19, paragraph 3, of the International Covenant on Civil and Political Rights. The Special Rapporteur would like to reiterate that defamation should be decriminalized, and that protection of national security or countering terrorism cannot be used to justify restricting the right to expression unless the Government can demonstrate that: (a) the expression is intended to incite imminent violence; (b) it is likely to incite such violence; and (c) there is a direct and immediate connection between the expression and the likelihood or occurrence of such violence.¹⁸

37. Additionally, the Special Rapporteur reiterates that the right to freedom of expression includes expression of views and opinions that offend, shock or disturb. Moreover, as the Human Rights Council has also stated in its resolution 12/16, restrictions should never be applied, *inter alia*, to discussion of Government policies and political debate; reporting on human rights, Government activities and corruption in Government; engaging in election campaigns, peaceful demonstrations or political activities, including for peace or democracy; and expression of opinion and dissent, religion or belief, including by persons belonging to minorities or vulnerable groups.¹⁹

C. **Imposition of intermediary liability**

38. One of the unique features of the Internet is that the way in which information is transmitted largely depends on intermediaries, or private corporations which provide services and platforms that facilitate online communication or transactions between third parties, including giving access to, hosting, transmitting and indexing content.²⁰ Intermediaries thus range from Internet service providers (ISPs) to search engines, and from blogging services to online community platforms. With the advent of Web 2.0 services, individuals can now publish information without the centralized gateway of editorial review common in traditional publication formats. The range of services offered by intermediaries has flourished over the past decade, mainly due to the legal protection that they have enjoyed from liability for third-party content that Internet users send via their services. However, the Special Rapporteur notes that in recent years, intermediaries' protection from liability has been eroding.

39. Many States have adopted laws which impose liability upon intermediaries if they do not filter, remove or block content generated by users which is deemed illegal. For example, in Turkey, Law 5651 on the Prevention of Crime Committed in the Information Technology Domain, which was enacted in 2007, imposes new obligations on content providers, ISPs and website hosts. It also grants authority to an agency to issue administrative orders to block websites for content hosted outside of Turkey, and to take down eight broad types of unlawful content,²¹ including "crimes against Ataturk", which

¹⁷ Reporters without Borders, "Enemies of the Internet," March 2010. Available from: http://en.rsf.org/IMG/pdf/Internet_enemies.pdf.

¹⁸ Johannesburg Principles on National Security, Freedom of Expression and Access to Information, Principle 6, as endorsed in E/CN.4/1996/39.

¹⁹ Human Rights Council resolution 12/16, para. 5(p).

²⁰ Organisation for Economic Cooperation and Development, *The Economic and Social Role of Internet Intermediaries* (April 2010).

²¹ Law 5651, art. 8.

includes “insulting” the founder of the Republic of Turkey, Mustafa Kemal Ataturk. In Thailand, the 2007 Computer Crimes Act imposes liability upon intermediaries that transmit or host third-party content and content authors themselves.²² This law has been used to prosecute individuals providing online platforms, some of which are summarized in the first addendum.

40. In other cases, intermediary liability is imposed through privacy and data protection laws. For example, a court in Italy convicted three Google executives for violating the Italian data protection code after a video depicting cruelty to a disabled teenager was posted by a user on the Google video service. Even though the video was taken down within hours of notification by Italian law enforcers, the judge found the Google executives guilty.²³ The Government of China requires ISPs and web platforms to conduct surveillance on their users, and they are also held directly responsible for content posted by users.²⁴ Companies that fail to comply with this obligation risk losing their business licences. Holding intermediaries liable for the content disseminated or created by their users severely undermines the enjoyment of the right to freedom of opinion and expression, because it leads to self-protective and over-broad private censorship, often without transparency and the due process of the law.

41. Several States have sought to protect intermediaries through adopting variations on what is known as a “notice-and-takedown” regime. Such a system protects intermediaries from liability, provided that they take down unlawful material when they are made aware of its existence. For example, under the European Union-wide E-Commerce Directive, a provider of hosting services for user-generated content can avoid liability for such content if it does not have actual knowledge of illegal activity and if it expeditiously removes the content in question when made aware of it.²⁵ Similarly, the Digital Millennium Copyright Act of the United States of America also provides safe harbour for intermediaries, provided that they take down the content in question promptly after notification.²⁶

42. However, while a notice-and-takedown system is one way to prevent intermediaries from actively engaging in or encouraging unlawful behaviour on their services, it is subject to abuse by both State and private actors. Users who are notified by the service provider that their content has been flagged as unlawful often have little recourse or few resources to challenge the takedown.²⁷ Moreover, given that intermediaries may still be held financially or in some cases criminally liable if they do not remove content upon receipt of notification by users regarding unlawful content, they are inclined to err on the side of safety by over-censoring potentially illegal content. Lack of transparency in the intermediaries’ decision-making process also often obscures discriminatory practices or political pressure affecting the companies’ decisions. Furthermore, intermediaries, as private entities, are not best placed to make the determination of whether a particular content is illegal, which requires careful balancing of competing interests and consideration of defences.

²² Computer Crimes Act B.E.2550 (2007), sections 14 and 15.

²³ Reporters without Borders, “Google conviction could lead to prior control over videos posted online”, 24 February 2010.

²⁴ Reporters without Borders, “Enemies of the Internet,” March 2010. Available from: http://en.rsf.org/IMG/pdf/Internet_enemies.pdf, pp. 8-12.

²⁵ E/Commerce Directive, 2000/31/EC, art. 14.

²⁶ Digital Millennium Copyright Act, Section 512.

²⁷ N. Villeneuve, “Evasion Tactics: Global Online Censorship is Growing, but so are the Means to challenge it and Protect Privacy”, *Index on Censorship* Vol. 36 No. 4, (November 2007); Center for Democracy and Technology, “Campaign takedown troubles: how meritless copyright claims threaten online political speech” (September 2010).

43. The Special Rapporteur believes that censorship measures should never be delegated to a private entity, and that no one should be held liable for content on the Internet of which they are not the author. Indeed, no State should use or force intermediaries to undertake censorship on its behalf, as is the case in the Republic of Korea with the establishment of the Korea Communications Standards Commission, a quasi-State and quasi-private entity tasked to regulate online content (see A/HRC/17/27/Add.2). The Special Rapporteur welcomes initiatives taken in other countries to protect intermediaries, such as the bill adopted in Chile, which provides that intermediaries are not required to prevent or remove access to user-generated content that infringes copyright laws until they are notified by a court order.²⁸ A similar regime has also been proposed in Brazil.²⁹

Responsibility of intermediaries

44. Given that Internet services are run and maintained by private companies, the private sector has gained unprecedented influence over individuals' right to freedom of expression and access to information. Generally, companies have played an extremely positive role in facilitating the exercise of the right to freedom of opinion and expression. At the same time, given the pressure exerted upon them by States, coupled with the fact that their primary motive is to generate profit rather than to respect human rights, preventing the private sector from assisting or being complicit in human rights violations of States is essential to guarantee the right to freedom of expression.

45. While States are the duty-bearers for human rights, private actors and business enterprises also have a responsibility to respect human rights. In this regard, the Special Rapporteur highlights the framework of "Protect, Respect and Remedy" which has been developed by the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises. The framework rests on three pillars: (a) the duty of the State to protect against human rights abuses by third parties, including business enterprises, through appropriate policies, regulation and adjudication; (b) the corporate responsibility to respect human rights, which means that business enterprises should act with due diligence to avoid infringing the rights of others and to address adverse impacts with which they are involved; and (c) the need for greater access by victims to effective remedy, both judicial and non-judicial.³⁰

46. The Special Rapporteur notes that multi-stakeholder initiatives are essential to deal effectively with issues related to the Internet, and the Global Network Initiative serves as a helpful example to encourage good practice by corporations.³¹ Although only three corporations, namely Google, Microsoft, and Yahoo!, have participated in this initiative so far, the Special Rapporteur welcomes their commitment to undertake a human rights impact assessment of their decisions, including before entering a foreign market, and to ensure transparency and accountability when confronted with situations that may undermine the rights to freedom of expression and privacy. Google's Transparency Report³² is an outcome of such work, and provides information on Government inquiries for information about users and requests for Google to take down or censor content, as well as statistical information on traffic to Google services, such as YouTube. By illustrating traffic patterns for a given country or region, it allows users to discern any disruption in the free flow of information, whether it is due to Government censorship or a cable cut.

²⁸ Ley No. 20435, Modifica La Ley No.17.336 Sobre Propiedad Intelectual, chap. III, art. 85-L – art. 85-U, adopted on 4 May 2010.

²⁹ "New Draft Bill Proposition: Available for Download", Marco Civil da Internet, 21 May 2010.

³⁰ A/HRC/17/31, para. 6.

³¹ See <http://www.globalnetworkinitiative.org/principles/index.php>.

³² See www.google.com/transparencyreport.

47. The Special Rapporteur commends such initiatives to enhance the responsibility of Internet intermediaries to respect human rights. To avoid infringing the right to freedom of expression and the right to privacy of Internet users, the Special Rapporteur recommends intermediaries to: only implement restrictions to these rights after judicial intervention; be transparent to the user involved about measures taken, and where applicable to the wider public; provide, if possible, forewarning to users before the implementation of restrictive measures; and minimize the impact of restrictions strictly to the content involved. Finally, there must be effective remedies for affected users, including the possibility of appeal through the procedures provided by the intermediary and by a competent judicial authority.

48. More generally, the Special Rapporteur encourages corporations to establish clear and unambiguous terms of service in line with international human rights norms and principles, increase transparency of and accountability for their activities, and continuously review the impact of their services and technologies on the right to freedom of expression of their users, as well as on the potential pitfalls involved when they are misused.

D. Disconnecting users from Internet access, including on the basis of violations of intellectual property rights law

49. While blocking and filtering measures deny access to certain content on the Internet, States have also taken measures to cut off access to the Internet entirely. The Special Rapporteur is deeply concerned by discussions regarding a centralized “on/off” control over Internet traffic.³³ In addition, he is alarmed by proposals to disconnect users from Internet access if they violate intellectual property rights. This also includes legislation based on the concept of “graduated response”, which imposes a series of penalties on copyright infringers that could lead to suspension of Internet service, such as the so-called “three-strikes-law” in France³⁴ and the Digital Economy Act 2010 of the United Kingdom.³⁵

50. Beyond the national level, the Anti-Counterfeiting Trade Agreement (ACTA) has been proposed as a multilateral agreement to establish international standards on intellectual property rights enforcement. While the provisions to disconnect individuals from Internet access for violating the treaty have been removed from the final text of December 2010, the Special Rapporteur remains watchful about the treaty’s eventual implications for intermediary liability and the right to freedom of expression.

E. Cyber-attacks

51. Cyber-attacks, or attempts to undermine or compromise the function of a computer-based system, include measures such as hacking into accounts or computer networks, and often take the form of distributed denial of service (DDoS) attacks. During such attacks, a group of computers is used to inundate a web server where the targeted website is hosted with requests, and as a result, the targeted website crashes and becomes inaccessible for a certain period of time. As with timed blocking, such attacks are sometimes undertaken during key political moments. The Special Rapporteur also notes that websites of human

³³ “Reaching for the kill switch”, *The Economist*, 10 February 2011.

³⁴ Decision 2009-580, Act furthering the diffusion and protection of creation on the Internet, (original: Loi favorisant la diffusion et la protection de la création sur internet), Conseil Constitutionnel, 10 June 2010. Available from: http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank/_mm/anglais/2009_580dc.pdf.

³⁵ Digital Economy Act 2010, sections 3-16.

rights organizations and dissidents are frequently and increasingly becoming targets of DDoS attacks, some of which are included in the first addendum to this report.

52. When a cyber-attack can be attributed to the State, it clearly constitutes *inter alia* a violation of its obligation to respect the right to freedom of opinion and expression. Although determining the origin of cyber-attacks and the identity of the perpetrator is often technically difficult, it should be noted that States have an obligation to protect individuals against interference by third parties that undermines the enjoyment of the right to freedom of opinion and expression. This positive obligation to protect entails that States must take appropriate and effective measures to investigate actions taken by third parties, hold the persons responsible to account, and adopt measures to prevent such recurrence in the future.

F. Inadequate protection of the right to privacy and data protection

53. The right to privacy is essential for individuals to express themselves freely. Indeed, throughout history, people's willingness to engage in debate on controversial subjects in the public sphere has always been linked to possibilities for doing so anonymously. The Internet allows individuals to access information and to engage in public debate without having to reveal their real identities, for example through the use of pseudonyms on message boards and chat forums. Yet, at the same time, the Internet also presents new tools and mechanisms through which both State and private actors can monitor and collect information about individuals' communications and activities on the Internet. Such practices can constitute a violation of the Internet users' right to privacy, and, by undermining people's confidence and security on the Internet, impede the free flow of information and ideas online.

54. The Special Rapporteur is deeply concerned by actions taken by States against individuals communicating via the Internet, frequently justified broadly as being necessary to protect national security or to combat terrorism. While such ends can be legitimate under international human rights law, surveillance often takes place for political, rather than security reasons in an arbitrary and covert manner. For example, States have used popular social networking sites, such as Facebook, to identify and to track the activities of human rights defenders and opposition members, and in some cases have collected usernames and passwords to access private communications of Facebook users.

55. A number of States are also introducing laws or modifying existing laws to increase their power to monitor Internet users' activities and content of communication without providing sufficient guarantees against abuse. In addition, several States have established a real-name identification system before users can post comments or upload content online, which can compromise their ability to express themselves anonymously, particularly in countries where human rights are frequently violated. Furthermore, steps are also being taken in many countries to reduce the ability of Internet users to protect themselves from arbitrary surveillance, such as limiting the use of encryption technologies.

56. The Special Rapporteur also notes that there are insufficient or inadequate data protection laws in many States stipulating who is allowed to access personal data, what it can be used for, how it should be stored, and for how long. The necessity of adopting clear laws to protect personal data is further increased in the current information age, where large volumes of personal data are collected and stored by intermediaries, and there is a worrying trend of States obliging or pressuring these private actors to hand over information of their users. Moreover, with the increasing use of cloud-computing services, where information is stored on servers distributed in different geographical locations, ensuring that third parties also adhere to strict data protection guarantees is paramount.

57. The right to privacy is guaranteed by article 12 of the Universal Declaration of Human Rights and article 17 of the International Covenant on Civil and Political Rights. The latter provides that “(1) no one shall be subjected to arbitrary or unlawful interference with his privacy, family, home or correspondence, nor to unlawful attacks on his honour and reputation; (2) everyone has the right to the protection of the law against such interference or attacks.” Although “correspondence” primarily has been interpreted as written letters, this term today covers all forms of communication, including via the Internet.³⁶ The right to private correspondence thus gives rise to a comprehensive obligation on the part of the State to ensure that e-mails and other forms of online communication are actually delivered to the desired recipient without interference or inspection by State organs or by third parties.³⁷

58. In addition, the protection of personal data represents a special form of respect for the right to privacy.³⁸ States parties are required by article 17(2) to regulate, through clearly articulated laws, the recording, processing, use and conveyance of automated personal data and to protect those affected against misuse by State organs as well as private parties. In addition to prohibiting data processing for purposes that are incompatible with the Covenant, data protection laws must establish rights to information, correction and, if need be, deletion of data and provide effective supervisory measures. Moreover, as stated in the Human Rights Committee’s general comment on the right to privacy, “in order to have the most effective protection of his private life, every individual should have the right to ascertain in an intelligible form, whether, and if so, what personal data is stored in automatic data files, and for what purposes. Every individual should also be able to ascertain which public authorities or private individuals or bodies control or may control their files.”³⁹

59. The Special Rapporteur notes that the right to privacy can be subject to restrictions or limitations under certain exceptional circumstances. This may include State surveillance measures for the purposes of administration of criminal justice, prevention of crime or combating terrorism. However, such interference is permissible only if the criteria for permissible limitations under international human rights law are met. Hence, there must be a law that clearly outlines the conditions whereby individuals’ right to privacy can be restricted under exceptional circumstances, and measures encroaching upon this right must be taken on the basis of a specific decision by a State authority expressly empowered by law to do so, usually the judiciary, for the purpose of protecting the rights of others, for example to secure evidence to prevent the commission of a crime, and must respect the principle of proportionality.⁴⁰

V. Access to the Internet and the necessary infrastructure

60. The Internet, as a medium by which the right to freedom of expression can be exercised, can only serve its purpose if States assume their commitment to develop effective policies to attain universal access to the Internet. Without concrete policies and

³⁶ Manfred Nowak, *UN Covenant on Civil and Political Rights. CCPR Commentary* (Kehl am Rhein, Engel, 2005), p. 401.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Human Rights Committee, general comment No. 16 on article 17 of the International Covenant on Civil and Political Rights, para. 10.

⁴⁰ Manfred Nowak, *UN Covenant on Civil and Political Rights. CCPR Commentary* (Kehl am Rhein, Engel, 2005), pp. 401-402.

plans of action, the Internet will become a technological tool that is accessible only to a certain elite while perpetrating the “digital divide”.

61. The term “digital divide” refers to the gap between people with effective access to digital and information technologies, in particular the Internet, and those with very limited or no access at all. In contrast to 71.6 Internet users per 100 inhabitants in developed States, there are only 21.1 Internet users per 100 inhabitants in developing States.⁴¹ This disparity is starker in the African region, with only 9.6 users per 100 inhabitants.⁴² In addition, digital divides also exist along wealth, gender, geographical and social lines within States. Indeed, with wealth being one of the significant factors in determining who can access information communication technologies, Internet access is likely to be concentrated among socio-economic elites, particularly in countries where Internet penetration is low. In addition, people in rural areas are often confronted with obstacles to Internet access, such as lack of technological availability, slower Internet connection, and/or higher costs. Furthermore, even where Internet connection is available, disadvantaged groups, such as persons with disabilities and persons belonging to minority groups, often face barriers to accessing the Internet in a way that is meaningful, relevant and useful to them in their daily lives.

62. The Special Rapporteur is thus concerned that without Internet access, which facilitates economic development and the enjoyment of a range of human rights, marginalized groups and developing States remain trapped in a disadvantaged situation, thereby perpetuating inequality both within and between States. As he has noted previously, to combat situations of inequality it is critical to ensure that marginalized or disadvantaged sections of society can express their grievances effectively and that their voices are heard.⁴³ The Internet offers a key means by which such groups can obtain information, assert their rights, and participate in public debates concerning social, economic and political changes to improve their situation. Moreover, the Internet is an important educational tool, as it provides access to a vast and expanding source of knowledge, supplements or transforms traditional forms of schooling, and makes, through “open access” initiatives, previously unaffordable scholarly research available to people in developing States. Additionally, the educational benefits attained from Internet usage directly contribute to the human capital of States.

63. The Special Rapporteur notes that several initiatives have been taken in an attempt to bridge the digital divide. At the international level, Target 8f of the Millennium Development Goals calls upon States, “in consultation with the private sector, [to] make available the benefits of new technologies, especially information and communications.” The necessity of achieving this target was reiterated in the 2003 Plan of Action adopted at the Geneva World Summit on the Information Society, which outlines specific goals and targets to “build an inclusive Information Society; to put the potential of knowledge and [information communication technologies] (ICTs) at the service of development; to promote the use of information and knowledge for the achievement of internationally agreed development goals.”⁴⁴ To implement this plan of action, in 2005, the International Telecommunication Union launched the “Connect the World” project.⁴⁵ Another initiative to spread the availability of ICTs in developing countries is the “One Laptop Per Child”

⁴¹ “Key Global Telecom Indicators for the World Telecommunication Service Sector,” International Telecommunication Union, 21 October 2010.

⁴² Ibid.

⁴³ See A/HRC/14/23.

⁴⁴ WSIS-03/GENEVA/DOC/5-E, World Summit on the Information Society, 12 December 2003. Available from: <http://www.itu.int/wsis/docs/geneva/official/poa.html>.

⁴⁵ “Connect the World,” International Telecommunication Union. Available from: <http://www.itu.int/ITU-D/connect>.

project that has been supported by the United Nations Development Programme. This project distributes affordable laptops that are specifically customized for the learning environment of children. Since this project was mentioned in the previous mandate holder's report in 2006, 2.4 million laptops have been distributed to children and teachers worldwide.⁴⁶ In Uruguay, the project has reached 480,000 children, amounting to almost all children enrolled in primary school.⁴⁷ States in Africa lag behind, but in Rwanda, over 56,000 laptops have been distributed, with plans for the figure to reach 100,000 by June 2011.⁴⁸

64. At the national level, the Special Rapporteur notes that a number of initiatives have also been taken by States to address the digital divide. In India, Common Service Centres, or public "e-Kiosks", have been established by the Government in collaboration with the private sector as part of the National E-Governance Plan of 2006. As of January 2011, over 87,000 centres have reportedly been established,⁴⁹ although the Special Rapporteur notes that the majority of the country's population still remains without Internet access. In Brazil, the Government has launched a "computers for all" programme which offers subsidies for purchasing computers.⁵⁰ Additionally, over 100,000 publicly sponsored Internet access centres, known as "Local Area Network (LAN) Houses" with fast broadband Internet connections, have been established.⁵¹ Such public access points are particularly important to facilitate access for the poorest socio-economic groups, as they often do not have their own personal computers at home.

65. In some economically developed States, Internet access has been recognized as a right. For example, the parliament of Estonia passed legislation in 2000 declaring Internet access a basic human right.⁵² The constitutional council of France effectively declared Internet access a fundamental right in 2009, and the constitutional court of Costa Rica reached a similar decision in 2010.⁵³ Going a step further, Finland passed a decree in 2009 stating that every Internet connection needs to have a speed of at least one Megabit per second (broadband level).⁵⁴ The Special Rapporteur also takes note that according to a

⁴⁶ E/CN.4/2006/55, 30 December 2005, para. 34; "Map," One Laptop per Child. Available from: <http://one.laptop.org/map>.

⁴⁷ Available from: <http://laptop.org/en/children/countries/index.shtml>.

⁴⁸ Frank Kanyesigye, "OLPC Extends to Over 100 Schools," New Times, 11 February 2011. Available from: <http://www.newtimes.co.rw/index.php?issue=14533&article=38241>.

⁴⁹ "ICT Ministers meet tomorrow for speeding-up delivery of e-services," Press Information Bureau, Government of India, 26 October 2009; and "E-Governance Initiatives-Changing Lives for the better," Press Information Bureau, Government of India, 24 January 2011. Available from: <http://pib.nic.in/newsite/ererelease.aspx?relid=69324>.

⁵⁰ Ronaldo Lemos and Paula Martini, "LAN Houses: A new wave of digital inclusion in Brazil", 21 September 2009. Available from: http://publius.cc/lan_houses_new_wave_digital_inclusion_brazil/091509.

⁵¹ Ibid.

⁵² Colin Woodard, "Estonia, where being wired is a human right," Christian Science Monitor, 1 July 2003.

⁵³ Decision 2009-580, Act furthering the diffusion and protection of creation on the Internet.

⁵⁴ "732/2009, Decree of the Ministry of Transport and Communications on the minimum rate of a functional Internet access as a universal service," (original: Liikenne- ja viestintäministeriön asetus tarkoituksenmukaisen internet-yhtyeden vähimmäisnopeudesta yleispalvelussa), FINLEX, 22 October 2009. Available from: <http://www.finlex.fi/en/laki/kaannokset/2009/en20090732>.

survey by the British Broadcasting Corporation in March 2010, 79% of those interviewed in 26 countries believe that Internet access is a fundamental human right.⁵⁵

66. Given that access to basic commodities such as electricity remains difficult in many developing States, the Special Rapporteur is acutely aware that universal access to the Internet for all individuals worldwide cannot be achieved instantly. However, the Special Rapporteur reminds all States of their positive obligation to promote or to facilitate the enjoyment of the right to freedom of expression and the means necessary to exercise this right, including the Internet. Hence, States should adopt effective and concrete policies and strategies – developed in consultation with individuals from all segments of society, including the private sector as well as relevant Government ministries – to make the Internet widely available, accessible and affordable to all.

VI. Conclusions and recommendations

67. Unlike any other medium, the Internet enables individuals to seek, receive and impart information and ideas of all kinds instantaneously and inexpensively across national borders. By vastly expanding the capacity of individuals to enjoy their right to freedom of opinion and expression, which is an “enabler” of other human rights, the Internet boosts economic, social and political development, and contributes to the progress of humankind as a whole. In this regard, the Special Rapporteur encourages other Special Procedures mandate holders to engage on the issue of the Internet with respect to their particular mandates.

68. The Special Rapporteur emphasizes that there should be as little restriction as possible to the flow of information via the Internet, except in few, exceptional, and limited circumstances prescribed by international human rights law. He also stresses that the full guarantee of the right to freedom of expression must be the norm, and any limitation considered as an exception, and that this principle should never be reversed. Against this backdrop, the Special Rapporteur recommends the steps set out below.

A. Restriction of content on the Internet

69. The Special Rapporteur is cognizant of the fact that, like all technological inventions, the Internet can be misused to cause harm to others. As with offline content, when a restriction is imposed as an exceptional measure on online content, it must pass a three-part, cumulative test: (1) it must be provided by law, which is clear and accessible to everyone (principles of predictability and transparency); (2) it must pursue one of the purposes set out in article 19, paragraph 3, of the International Covenant on Civil and Political Rights , namely: (i) to protect the rights or reputations of others; (ii) to protect national security or public order, or public health or morals (principle of legitimacy); and (3) it must be proven as necessary and the least restrictive means required to achieve the purported aim (principles of necessity and proportionality). In addition, any legislation restricting the right to freedom of expression must be applied by a body which is independent of any political, commercial, or other unwarranted influences in a manner that is neither arbitrary nor discriminatory. There should also be adequate safeguards against abuse, including the possibility of challenge and remedy against its abusive application.

⁵⁵ “Four in five regard Internet access as a fundamental right: global poll,” BBC News, 8 March 2010. Available from: http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/08_03_10_BBC_internet_poll.pdf.

1. Arbitrary blocking or filtering of content on the Internet

70. The Special Rapporteur is deeply concerned by increasingly sophisticated blocking or filtering mechanisms used by States for censorship. The lack of transparency surrounding these measures also makes it difficult to ascertain whether blocking or filtering is really necessary for the purported aims put forward by States. As such, the Special Rapporteur calls upon States that currently block websites to provide lists of blocked websites and full details regarding the necessity and justification for blocking each individual website. An explanation should also be provided on the affected websites as to why they have been blocked. Any determination on what content should be blocked must be undertaken by a competent judicial authority or a body which is independent of any political, commercial, or other unwarranted influences.

71. With regard to child pornography, the Special Rapporteur notes that it is one clear exception where blocking measures are justified, provided that the national law is sufficiently precise and there are sufficient safeguards against abuse or misuse to prevent any “mission creep”, including oversight and review by an independent and impartial tribunal or regulatory body. However, the Special Rapporteur calls upon States to focus their efforts on prosecuting those responsible for the production and dissemination of child pornography, rather than on blocking measures alone.

2. Criminalization of legitimate expression

72. The Special Rapporteur remains concerned that legitimate online expression is being criminalized in contravention of States’ international human rights obligations, whether it is through the application of existing criminal laws to online expression, or through the creation of new laws specifically designed to criminalize expression on the Internet. Such laws are often justified as being necessary to protect individuals’ reputation, national security or to counter terrorism. However, in practice, they are frequently used to censor content that the Government and other powerful entities do not like or agree with.

73. The Special Rapporteur reiterates the call to all States to decriminalize defamation. Additionally, he underscores that protection of national security or countering terrorism cannot be used to justify restricting the right to expression unless it can be demonstrated that: (a) the expression is intended to incite imminent violence; (b) it is likely to incite such violence; and (c) there is a direct and immediate connection between the expression and the likelihood or occurrence of such violence.

3. Imposition of intermediary liability

74. Intermediaries play a fundamental role in enabling Internet users to enjoy their right to freedom of expression and access to information. Given their unprecedented influence over how and what is circulated on the Internet, States have increasingly sought to exert control over them and to hold them legally liable for failing to prevent access to content deemed to be illegal.

75. The Special Rapporteur emphasizes that censorship measures should never be delegated to private entities, and that intermediaries should not be held liable for refusing to take action that infringes individuals’ human rights. Any requests submitted to intermediaries to prevent access to certain content, or to disclose private information for strictly limited purposes such as administration of criminal justice, should be done through an order issued by a court or a competent body which is independent of any political, commercial or other unwarranted influences.

76. In addition, while States are the primary duty-bearers of human rights, the Special Rapporteur underscores that corporations also have a responsibility to respect human rights, which means that they should act with due diligence to avoid infringing the rights of individuals. The Special Rapporteur thus recommends intermediaries to: only implement restrictions to these rights after judicial intervention; be transparent to the user involved about measures taken, and, where applicable, to the wider public; provide, if possible, forewarning to users before the implementation of restrictive measures; and minimize the impact of restrictions strictly to the content involved. Finally, there must be effective remedies for affected users, including the possibility of appeal through the procedures provided by the intermediary and by a competent judicial authority.

77. The Special Rapporteur commends the work undertaken by organizations and individuals to reveal the worldwide status of online impediments to the right to freedom of expression. He encourages intermediaries in particular to disclose details regarding content removal requests and accessibility of websites. Additionally, he recommends corporations to establish clear and unambiguous terms of service in line with international human rights norms and principles and to continuously review the impact of their services and technologies on the right to freedom of expression of their users, as well as on the potential pitfalls involved when they are misused. The Special Rapporteur believes that such transparency will help promote greater accountability and respect for human rights.

4. Disconnecting users from Internet access, including on the basis of intellectual property rights law

78. While blocking and filtering measures deny users access to specific content on the Internet, States have also taken measures to cut off access to the Internet entirely. The Special Rapporteur considers cutting off users from Internet access, regardless of the justification provided, including on the grounds of violating intellectual property rights law, to be disproportionate and thus a violation of article 19, paragraph 3, of the International Covenant on Civil and Political Rights.

79. The Special Rapporteur calls upon all States to ensure that Internet access is maintained at all times, including during times of political unrest. In particular, the Special Rapporteur urges States to repeal or amend existing intellectual copyright laws which permit users to be disconnected from Internet access, and to refrain from adopting such laws.

5. Cyber-attacks

80. The Special Rapporteur is deeply concerned that websites of human rights organizations, critical bloggers, and other individuals or organizations that disseminate information that is embarrassing to the State or the powerful have increasingly become targets of cyber-attacks.

81. When a cyber-attack can be attributed to the State, it clearly constitutes, inter alia, a violation of its obligation to respect the right to freedom of opinion and expression. Although determining the origin of cyber-attacks and the identity of the perpetrator is often technically difficult, it should be noted that States have an obligation to protect individuals against interference by third parties that undermines the enjoyment of the right to freedom of opinion and expression. This positive obligation to protect entails that States must take appropriate and effective measures to investigate actions taken by third parties, hold the persons responsible to account, and adopt measures to prevent such recurrence in the future.

6. Inadequate protection of the right to privacy and data protection

82. The Special Rapporteur is concerned that, while users can enjoy relative anonymity on the Internet, States and private actors have access to technology to monitor and collect information about individuals' communications and activities on the Internet. Such practices can constitute a violation of Internet users' right to privacy, and undermine people's confidence and security on the Internet, thus impeding the free flow of information and ideas online.

83. The Special Rapporteur underscores the obligation of States to adopt effective privacy and data protection laws in accordance with article 17 of the International Covenant on Civil and Political Rights and the Human Rights Committee's general comment No. 16. This includes laws that clearly guarantee the right of all individuals to ascertain in an intelligible form whether, and if so what, personal data is stored in automatic data files, and for what purposes, and which public authorities or private individuals or bodies control or may control their files.

84. He also calls upon States to ensure that individuals can express themselves anonymously online and to refrain from adopting real-name registration systems. Under certain exceptional situations where States may limit the right to privacy for the purposes of administration of criminal justice or prevention of crime, the Special Rapporteur underscores that such measures must be in compliance with the international human rights framework, with adequate safeguards against abuse. This includes ensuring that any measure to limit the right to privacy is taken on the basis of a specific decision by a State authority expressly empowered by law to do so, and must respect the principles of necessity and proportionality.

B. Access to the Internet and the necessary infrastructure

85. Given that the Internet has become an indispensable tool for realizing a range of human rights, combating inequality, and accelerating development and human progress, ensuring universal access to the Internet should be a priority for all States. Each State should thus develop a concrete and effective policy, in consultation with individuals from all sections of society, including the private sector and relevant Government ministries, to make the Internet widely available, accessible and affordable to all segments of population.

86. At the international level, the Special Rapporteur reiterates his call on States, in particular developed States, to honour their commitment, expressed inter alia in the Millennium Development Goals, to facilitate technology transfer to developing States, and to integrate effective programmes to facilitate universal Internet access in their development and assistance policies.

87. Where the infrastructure for Internet access is present, the Special Rapporteur encourages States to support initiatives to ensure that online information can be accessed in a meaningful way by all sectors of the population, including persons with disabilities and persons belonging to linguistic minorities.

88. States should include Internet literacy skills in school curricula, and support similar learning modules outside of schools. In addition to basic skills training, modules should clarify the benefits of accessing information online, and of responsibly contributing information. Training can also help individuals learn how to protect themselves against harmful content, and explain the potential consequences of revealing private information on the Internet.

2.4.2 Yoo

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January 7, 2016

Ms. Vinod Kotwal
Advisor (F&EA)
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Via Email

Dear Ms. Kotwal:

I appreciate the opportunity to submit the following comments in the Consultation on Differential Pricing for Data Services.¹ The paper initiating the Consultation asks whether TRAI should permit Telecom Service Providers (TSPs) to engage in differential pricing and, if so, whether any regulatory restrictions should be imposed. In fact, differential pricing is something a misnomer, since that term suggests that different end users are being charged different prices for the same service. A similar critique applies to the tendency in European debates to refer to service differentiation as positive or negative price discrimination. A more appropriate term would be service differentiation, since TSPs vary the services being offered and charge the same price to every end user purchasing that service plan.

The analysis is complicated by the fact that different TSPs are using service differentiation for two distinct but sometimes overlapping purposes. The first approach treats service differentiation as a transitional step targeted towards those who are not currently Internet users, such Facebook's Free Basics. These packages offer low-cost or no-cost basic services designed to entice nonusers into beginning to use the Internet with the expectation that these users will eventually trade up to full Internet service. These packages play a critical role in countries like India, where increasing Internet adoption remains a central goal.

The second approach uses service differentiation to target subsegments of existing Internet users, such as T-Mobile's Binge On, which permits users to watch an unlimited amount of premium video without having that traffic charged against their data caps. These packages tend to be premium add-ons to prepaid data plans and serve to differentiate offerings of a new entrant from those of the existing players. These packages play an important role in more established markets by opening a new dimension along which to compete aside from price and network size.

Economic theory suggests multiple ways in which service differentiation can benefit consumers and encourage Internet adoption. On the demand-side, service differentiation

¹ The author acknowledges and thanks Facebook for its financial support for these comments.

addresses what surveys reveal is the major obstacle to adoption—the fact that the majority of nonadopters do not see the value of an Internet connection—by showcasing high value apps that showcase the benefits of adoption. Service differentiation also reflects the growing heterogeneity of the demands that end users are placing on the network and can enable TSPs to create consumer value by providing offerings better tailored to what consumers want. As demand becomes more diverse, offering an increasingly diverse set of service offerings is TSPs' natural response.

On the supply-side, service differentiation promotes competition by broadening the number of ways that TSPs can compete. Offering service-specific plans targeted at key subsegments of the population can allow new entrants to survive even when they suffer from disadvantages in cost and network size. Conversely, prohibiting service differentiation would limit the dimensions of competition to price and network size, considerations that tend to favor the largest players. Service differentiation also responds to the technical realities of mobile broadband by reflecting the fact that certain services can be provided more cost effectively than others as well as how expensive it can be to support every application over every connection.

These insights are confirmed by a review of the policies that different countries around the world have adopted with respect to service differentiation. Although press reports claim as many as a dozen countries have banned zero rating, a close analysis reveals that only four countries have pursued enforcement actions against zero rating plans. Of those four, three clearly did not categorically ban the practice, and the fourth may not have either and has been overridden by subsequent legislation enacted by the European Union. These enforcement actions tend to be applied more vigorously against service differentiation plans based around proprietary services than to service differentiation plans based on services provided by third parties. They also tend to reflect the fact that service differentiation is primarily the province of smaller providers attempting to challenge well-entrenched incumbents.

An analysis of competition policy reveals that ex ante prohibition of service differentiation would be inappropriate. The circumstances identified by the theoretical literature under which a degree of coordination between services and conduit can harm consumers are stylized and limited. Moreover, surveys of the empirical literature indicate that vertical integration is usually benign or beneficial and conclude that consumers would be better off if regulators did not bar vertical restraints. Competition policy has long recognized that ex ante prohibition is appropriate only for practices that are well established and well understood. When practices are novel and in a state of flux, as is the case with service differentiation, consumer welfare and innovation would be better served by an ex post regime that places the burden on the party challenging the practice to provide empirical evidence of harm. The economic literature also suggests the propriety of recognizing certain safe harbors (e.g., lack of market power, nonexclusively, and nonproprietary services) that should immunize TSPs from liability. A review of the alternatives proposed by the Consultation Paper reveals that they are unlikely to be as effective.

I. DEMAND-SIDE CONSIDERATIONS

Service differentiation also responds to demand-side considerations. First and foremost, the applications and services featured by a TSP can provide strong, tangible motivation to nonadopters who do not see the need for an Internet subscription. In addition, service

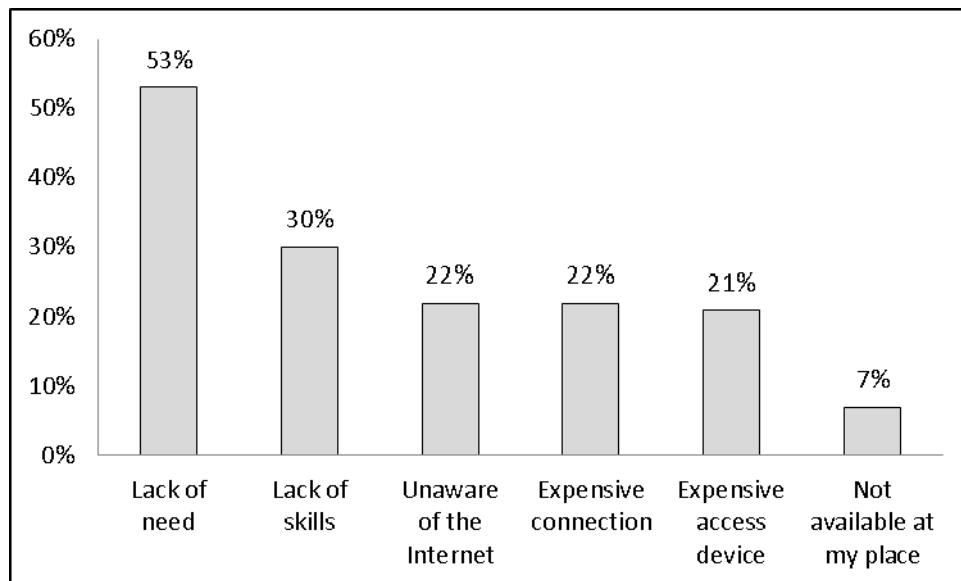
differentiation reflects the fact that the universe of Internet users is becoming increasingly diverse and that different consumers are likely to want different bundles of services. From this perspective, service differentiation may be nothing more than the natural outgrowth of TSPs attempts to respond to the increasing heterogeneity of consumer demand.

A. Demonstration of the Value of an Internet Connection

Service differentiation represents one of the most effective ways to overcome what has emerged as the most significant obstacle to broadband adoption. Surveys have repeatedly shown that the primary reason that most nonadopters choose not to subscribe to the Internet is that they do not see the value in doing so (European Commission 2013; Ofcom 2013; Zickuhr 2013; World Economic Forum 2015). A survey of U.S. nonadopters conducted by the staff of the U.S. Federal Communications Commission and Connected Nation, an organization specializing in connecting rural communities, revealed that two-thirds of nonadopters would not subscribe to the Internet at any price (Carare et al. 2015).

These findings have been confirmed in India. A recent World Economic Forum report cited a Boston Consulting Group study revealing that primary reason for nonadoption is the perceived lack of need to do so. This finding was robust across the more and less affluent segments of society.

Figure 1 – India: Reasons for Nonadoption



Source: World Economic Forum (2015, 19), citing 2014 BCG CCI India study.

These results underscore that making network access more available and less expensive is not enough. Any adoption strategy must also focus on providing clear demonstrations of the value of an Internet connection. By featuring key apps, such as WhatsApp, Wikipedia, and social media, service differentiation can make the benefits of an Internet connection tangible to nonadopters. The empirical studies presented at the recent Internet Governance Forum in Brazil

provided an eloquent demonstration of service differentiation's potential to overcome these demand-side obstacles to Internet adoption. These studies indicated that half of all subscribers to zero-rated services upgraded to a full data plan within thirty days.

B. The Increasing Diversity of the Internet

Another force driving the emergence of service differentiation is the increasing diversity of Internet users (see generally Yoo 2012a). Debates over Internet policy tend to be framed by the way the network existed in the mid-1990s, when the Internet became a mass-market phenomenon. At that time, the Internet was used by a small number of *users* to run a limited number of *applications* over a narrow range of *technologies* interconnected through a fairly simple set of *business relationships*. In short, the Internet was a playground used by academics and tech-savvy early adopters to send email and browse the web over a personal computer connected to a telephone line. The user population and the primary applications were sufficiently uniform that the logical approach is to design a single network optimized for what people wanted.

Technological and economic change has rendered each of those statements obsolete. The number of Internet users has exploded, which in turn has increased the diversity of the ways that the network is being used. Applications are no longer dominated by simple file transfer applications, such as email and web browsing. Instead, interactive and real-time applications, such as VoIP and video have become increasingly important.

The fact that end users, applications, technologies, and business relationships on the Internet are becoming more heterogeneous suggests that the natural response is for the network to become more diverse as well. Indeed, increasing specialization is a common phenomenon as industries mature. In addition, different groups of users tend to use different clusters of apps. These differences in taste lead to variations in the services offered. As a result, service-specific plans are becoming increasingly common in India and other countries around the world. A recent industry study observed how TSPs are becoming increasingly app centric and are starting to regard OTT service providers as friends and not foes. As many as 85% of TSPs offer value-based plans based around premium services (Allot Communications 2014).

This diversification can create real benefits for consumers. Creating more specialized and lower cost services better tailored to what particular subgroups of users want provides real economic benefits. A brief analysis of developments in the UK offers some useful insights. British DSL provider PlusNet uses deep packet inspection (DPI) to divide the data stream into multiple different levels of priority, providing the highest service to VoIP and online gaming. In so doing, PlusNet has served as a model of public disclosure, explaining what it is doing to prioritize traffic, why connection speeds vary in particular cases, and offering meaningful guidance as to expected speeds during different times of day. Targeting its services in this manner has enabled PlusNet to win numerous industry awards for the quality of their network connections and for customer satisfaction (Yoo 2012b).

Other British TSPs have followed suit. Only one of the providers operating in the UK offers unmanaged access to the Internet. All of the others engage in some form of application-specific management (Cooper 2013). The benefits of such service differentiation are illustrated by the following thought experiment. Suppose instead that all of these TSPs had offered identical services providing unmanaged access to the entire Internet. The availability of a surfeit of me-too offerings would provide little benefit to Internet users and would deprive users with clear

preferences for certain applications of the opportunity to subscribe a service better crafted to their desires.

The ability to use service differentiation to target subsegments is illustrated nicely by T-Mobile. Zero rating streaming music (Music Freedom) and streaming video (Binge On) has tremendous appeal to younger customers. Indeed, one might regard the unlimited text plans that have now become the staple of the market as a classic example of service differentiation.

This growing diversity underscores the benefits of permitting TSPs to offer a range of services and prices instead of restricting them to providing a uniform product at a single price point (Kroes 2012). Indeed, in such a dynamic world, changes in the services offered may prompt competitors to make changes in response. For example, most mobile phone plans today offer unlimited SMS text messaging as a matter of course. Given the commonness of the practice and the benefits to consumers, such plans are not seen as objectionable in any way. But suppose that a company offers the same bundle of no-incremental-cost text messaging services, but chooses to do so via an Internet-based service such as WhatsApp. Too great hostility towards service differentiation could lead regulators to invalidate such a practice, as happened in Chile, even though the provider in that case was arguably simply trying to match the services being offered by its competitors.

Such demand-side service differentiation is completely compatible with the nondiscrimination mandate associated with traditional tariff regulation. The textbook definition of discrimination is a price differential for the same product that is not justified by differences in product quality or cost (see, e.g., Tirole 1988, 133-34; Scherer and Ross 1990, 489). Tariff regulation simply requires that every service plan be available to every interested end user. It has always permitted TSPs to create different classes of service and to charge different amounts for them. Such differentiation is the natural outgrowth of consumer demand that is becoming increasingly diverse.

II. SUPPLY-SIDE CONSIDERATIONS

The benefits that service differentiation can create in stimulating demand for Internet adoption and in delivering greater value to consumers is mirrored by potential benefits on the supply side. Service differentiation can offset the tendency towards natural monopoly that has long been the central policy problem posed by network industries and promote competitive entry notwithstanding the cost advantages enjoyed by the incumbents. Service differentiation also provides ways to deal with the problems stemming from the reality that bandwidth is limited.

A. Service Differentiation as a Way to Mitigate Economies of Scale

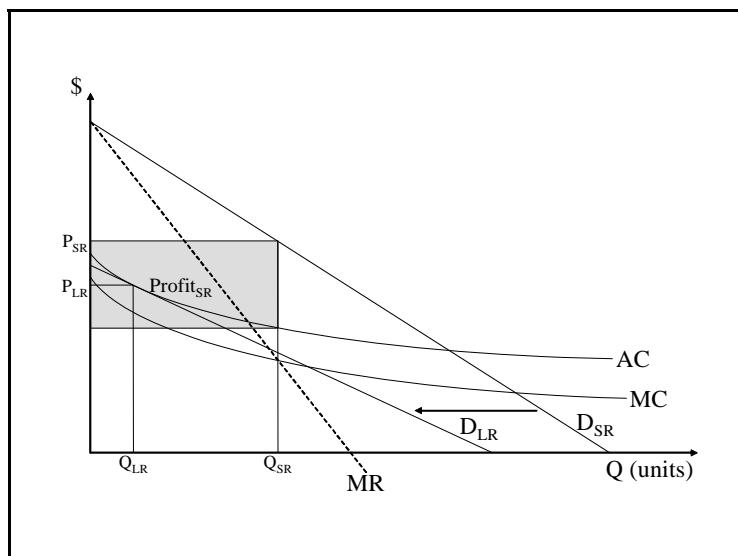
The traditional justification for regulating network industries is the presence of scale economies that are not exhausted even when the entire industry output is produced by a single firm. The traditional source of scale economies is the need to undertake large, up-front capital investments. Large fixed costs give the largest firms a decisive economic advantage. The ability to spread the cost of those up-front investments over a larger customer base allows them to underprice their smaller competitors. Eventually, the cost advantage enjoyed by the largest player widens to the point where it is able to drive all of its competitors out of the market. In that case, even markets that are initially competitive are doomed to collapse into monopolies.

The other force supposedly driving markets for telecommunications networks toward monopoly is network economic effects.² Network economic effects exist when the value of a network is determined by the number of people connected to it and the network becomes more valuable as more people become part of it. Because the value of telecommunications networks increases with the number of people attached to them, they have long been regarded as a paradigmatic case in which network economic effects arise. Because the network becomes more valuable as it becomes larger, network economic effects are often described as creating demand-side economies of scale that also tend to favor the largest networks.

What has been largely overlooked is how allowing networks to differentiate themselves can also alleviate the economies of scale associated with declining average costs (see generally Yoo 2005). It is the fact that price is the only dimension along which firms can compete that gives the largest players their decisive advantage. A different equilibrium can result if competitors are allowed to compete along dimensions other than price. If so, a smaller player may be able to survive notwithstanding lower sales volumes and higher unit costs (and thus higher prices) by tailoring its network towards services that a subsegment of the market values particularly highly. The greater value provided by the differentiation of the network allows a specialized provider to generate sufficient revenue to cover its up-front costs even though its volume is significantly smaller than that of the leading players.

How product differentiation can mitigate the tendency towards natural monopoly caused by significant fixed costs is most easily understood through the theory of “monopolistic competition” pioneered by Edward Chamberlin (1962). Monopolistic competition adopts the same assumptions as the standard natural monopoly model except for two: it allows for the possibility of new entry and it relaxes the assumption that competing products constitute perfect substitutes.

Figure 2 – Short-Run and Long-Run Equilibrium Under Monopolistic Competition



² For the seminal articles, see Rohlfs (1974); Katz and Shapiro (1985); Farrell and Saloner (1985); David (1985); and Arthur (1989).

In the short run, firms engaged in monopolistic competition set price in exactly the same manner as monopolists. Should the resulting equilibrium price exceed average cost, the producer may earn short-run supracompetitive profits. Were products undifferentiated, this short-run equilibrium would be stable. Because competition would be restricted to a single dimension — price — further entry would be futile, since scale economies would allow the producer with the highest volume to seize the entire market.

Allowing for the possibility of product differentiation causes the short-run equilibrium to become unstable. New producers can enter despite cost disadvantages by offering a product with attributes that differ from those offered by the incumbent. Entry by a new product causes the demand curve confronting existing products to shift inwards, as some customers shift their purchases to the new product. Under classic Chamberlinian monopolistic competition, entry by other variants continues until all of the supracompetitive returns have been dissipated, which occurs when the demand curve becomes tangent to the average cost curve.

The result is an equilibrium in which multiple players co-exist despite the presence of unexhausted economies of scale. Even though entrants may operate at a cost disadvantage vis-à-vis their larger rivals, they are able to survive by offering products designed to appeal to a smaller subsegment of the customer base. Conversely, preventing product differentiation could cause the market to devolve into a natural monopoly. Such differentiation is particularly critical for Mobile Virtual Network Operators (MVNOs). Because MVNOs lease all network elements from one of the existing TSPs, they cannot differentiate in terms of the network. The only dimension available for attracting customers aside from price is by emphasizing particular services.

At the same time, service differentiation can ameliorate the demand-side economies of scale created by network economic effects. If the smaller network is optimized for particular functions that a particular subgroup of end users values particularly highly, those end users may be willing to join the smaller network notwithstanding the presence of network economic effects. The increase in value provided by network diversity can dominate any reductions in value resulting from market size (Katz and Shapiro 1985, at 106; Farrell and Saloner 1986b).

So long as consumer preferences are sufficiently heterogeneous, network diversity can mitigate whatever demand-side economies of scale exist by virtue of network economic effects in much the same manner as it mitigates the supply-side economies of scale created by fixed costs. In addition, to the extent that different groups of end users derive utility from adopting one standard over another, network diversity can increase welfare by allowing end users to consume network services that lie closer to their ideal preferences.

The presence of multiple, incompatible networks may thus reflect nothing more than the network owners' attempts to satisfy the underlying heterogeneity in consumer demand. Prohibiting service differentiation threatens to preempt this potential solution by narrowing the dimensions along which firms can compete. Forcing providers to compete solely on the basis of price and network size would reinforce the advantages enjoyed by the largest players.

B. Service Differentiation as a Way to Reduce and Reflect Differences in Cost

Service differentiation may reflect real differences in cost. Consider for example zero rating plans that provide no-cost access to video services. To the extent that the content being downloaded is cached locally, once the content is prepositioned in the cache, the traffic

associated with that video will not have to pay transit to any other network. The lower prices paid for accessing such services may reflect real differences in cost. Under these circumstances, it would be potentially discriminatory not to zero rate access to those services.

Service differentiation may also reflect the fact that building networks is costly. Constructing larger networks requires more capital, which in turn increases the cost of service. For fixed-line networks, the ability to add capacity is constrained only by the physical space in the conduits and the rights of way. For mobile broadband, bandwidth is constrained in large part by the amount of spectrum that the government chooses to allocate, which means that adding capacity is not always a feasible solution. It is for this reason that regulators find it unproblematic that some Internet access providers in airports and other similar locations provide free access to only part of the Internet while restricting certain high bandwidth uses.

It is for this reason that some connections do not offer the full range of IP-enabled services. A familiar example is that Internet access on airplanes and trains often do not support all applications, because a small number of users running video would rapidly exhaust all of the available capacity. Similarly, programs such as Free Basics exclude video and full resolution graphics. As noted below in the discussion of the Netherlands, these high-volume applications can serve as a useful proxy for apportioning the available bandwidth (Yoo 2006).

Another consideration that causes some applications to be supported instead of others are the cost and limitations of modern mobile devices. A significant percentage of data-enabled phones sold today are not true smart phones. Instead, they are feature phones that offer a more limited amount of functionality at a cheaper price. The result is that certain applications may not run in certain environments. Under these circumstances, the differences in services supported may go hand in hand with saving money on devices.

* * *

These theoretical considerations underscore the fact that zero rating can often encourage Internet adoption and promote consumer welfare. These theoretical insights have been confirmed by empirical studies of zero rating. These scholars uniformly conclude that zero rating is often beneficial and that categorically banning zero rating would likely be a mistake (see, e.g., Elaluf-Calderwood 2015; Futter and Gilliwald 2015; Galpaya 2015; Galperin 2015).

III. POLICIES WITH RESPECT TO SERVICE DIFFERENTIATION IN OTHER COUNTRIES

Economic theory thus provides a wealth of reasons why service differentiation may actually benefit consumers. The consumer benefits are further illustrated by the fact that 55% of TSP offer application-centric plans and 49% of all TSPs offer some form of zero rating (Allot Communications 2014).

This section moves past pure theory to examine the specific cases in which some nation has engaged in an enforcement action against a TSP that was offering zero rating. Interestingly, most countries have taken a relatively permissive approach with respect to zero rating. The result is enforcement actions are relatively rare. Although some media reports have claimed as many as a dozen countries have banned zero rating, a close review of the actual record reveals this to be an overstatement. In the case of seven countries (Finland, Iceland, Estonia, Latvia, Lithuania, Malta, Japan), the claim that these countries have supposedly banned zero rating are based on a misunderstanding (see, e.g., Guha and Aulakh 2015; Bode 2015a; Kivuva 2015). These articles

appear to have misread a report from *Digital Fuel Monitor* (2014) reporting that zero rating had not been deployed in those countries (see Meyer 2014b for a correct characterization of this data). The lack of zero rating plans appears to be more the result of lack of interest by TSPs than from the active discouragement of regulators. Other countries claimed to have banned zero rating (Norway, Germany) have simply discouraged the practice without taking any formal action.

That leaves only four countries that have brought enforcement actions against zero rating plans (Chile, Canada, Slovenia, and the Netherlands). These comments will also review the regulatory history in these countries as well as the situation in the United States.³ Although these countries are sometimes claimed to have banned all forms of zero rating (see, e.g., Savetheinternet.in Coalition 2015), a close review of the actual record reveals this to be a mischaracterization. Three of these countries clearly did not adopt categorical bans and instead explicitly recognized that some forms of zero rating are permissible, and the actions taken by the two European countries have been superseded by subsequent EU legislation. Interestingly, the enforcement actions tend to focus on attempts to zero rate proprietary services and have had the unfortunate tendency to fall the most heavily on smaller providers attempting to challenge the incumbents.

A. United States

The United States was home to the first complaint filed with a communications regulator about a zero rated service. This complaint was rendered moot when a court invalidated the U.S. Federal Communications Commission's (FCC's) first attempt to regulate network neutrality. Since then, U.S. policy has adopted circumspect stance with respect to zero rating, although regulators may be starting to show more interest.

1. 2010 Open Internet Order

The first zero rating complaint was brought in January 2011 against MetroPCS under the Open Internet Order adopted by the U.S. Federal Communications Commission in 2010. At issue was whether MetroPCS's plan permitting users to access YouTube without having that traffic count against their data cap violated the discrimination rule.

As of the end of 2010, MetroPCS was the fifth largest wireless provider in the U.S. With less than 3% market share, MetroPCS was almost twelve times smaller than market leaders AT&T and Verizon. In the markets in which it operated, MetroPCS controlled significantly less spectrum than its national rivals, which limited its ability to support video. The inability to support popular video applications such as YouTube put MetroPCS at a competitive disadvantage.

Despite being a relatively small provider, MetroPCS became the first U.S. provider to offer 4G Long Term Evolution (LTE) service in September 2010. Because video delivered to mobile devices does not require the same resolution as full-sized television screens, MetroPCS was able to reduce the bandwidth needed by using Real Time Streaming Protocol (RTSP) to compress the video signal. In this way, MetroPCS was able to offer limited video in markets in

³ The discussion of the U.S. example draws from Yoo (2012b). The discussion of the Slovenian, Dutch, and Chilean examples draws from Layton and Elaluf-Calderwood (2015).

which it possessed only 10 MHz or even 1.4 MHz of spectrum when the recommended implementation requires 40 MHz.

Unable to offer service through a true smartphone, MetroPCS opted to deploy LTE through the Samsung Craft, a less expensive, but more limited device known as a feature phone that employed an operating system known as Binary Runtime Environment for Wireless (BREW). Providers of many popular applications, including Flash and other web plug-ins, did not regard the BREW platform as sufficiently widespread to justify creating a version compatible with BREW.

MetroPCS self-consciously specializes in offering low-cost plans that provide more limited features than its competitors. As Tom Keys, MetroPCS's chief operating officer, stated when launching LTE, "We didn't build this network or this device to be all things to all people" (Fitchard 2010). Requiring that all of MetroPCS's service plans support all applications on equal basis would have made it impossible for them to compete in this manner. The feature phone platform faced real technical limitations that effectively prevented MetroPCS from supporting all forms of video. Indeed, many CODECS did not have media players capable of running on BREW.

On January 3, 2011, MetroPCS revised its 4G LTE service plans. Most notably for purposes of these comments, its lower-end plans allowed unlimited YouTube access at no additional cost. One week later, a group of advocacy groups submitted a letter complaining that the MetroPCS plans that provided free unlimited access to YouTube plans while subjecting other video services such as Netflix to data caps violated the FCC's 2010 Open Internet Order.

As an initial matter, it is hard to see how any business practice implemented by a firm with less than 3% market share could hurt consumers or competition. Moreover, in an era where creating greater competition in wireless networks remains a major policy goal, service differentiation permitted MetroPCS to compete in LTE even though it controlled less spectrum than its rivals.

The FCC's determination not to act on any enforcement actions while the legal challenge of its 2010 Open Internet Order was pending before the courts meant that it did not take any action on this complaint. MetroPCS was subsequently acquired by T-Mobile in October 2012. The issue was mooted by the judicial invalidation of the 2010 Order by *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

2. 2015 Open Internet Order

After the 2010 Order was struck down, the FCC enacted a new Open Internet Order in February 2015. In order to avoid meeting the same fate as the 2010 Order, the new 2015 Order assiduously avoided framing its prohibitions in terms of discrimination. Instead, the 2015 Order established three bright-line rules against blocking, throttling, and paid prioritization. The FCC also adopted a general standard banning unreasonable interference and unreasonable disadvantage, to be evaluated on a case-by-case basis.

In so ruling, the FCC specifically declined to categorically prohibit zero rating, which it called sponsored data. Because the record was mixed regarding the relative merits of the practice, the FCC balanced the potential to distort competition against the ways new service offerings could benefit consumers and opted to address zero rating on a case-by-case basis (FCC 2015, ¶ 152).

In June 2014, while the proceeding that led to the 2015 Open Internet Order was still ongoing, T-Mobile launched its Music Freedom program that permits subscribers to stream music without having that traffic count against their data caps. Notably, T-Mobile receives no fees from any content providers for this service and has opened it to any music streaming service that can satisfy the technical requirements. At the time, T-Mobile was the fourth largest mobile provider in the U.S. With 12% market share, T-Mobile was less than half the size of market leaders Verizon and AT&T.

On November 10, 2015, T-Mobile launched a new zero rating program called Binge On, which permits subscribers access to video services without having that traffic count against their data caps by optimizing the screen resolution to 480p. Again, this program was available to any video service that met the technical requirements. T-Mobile later introduced free music streaming to its MetroPCS customers through a program called Music Unlimited as well as the ability to watch three times as much video through a program called Data Maximizer.

T-Mobile's zero rating program did not appear to raise many concerns for U.S. regulators. At a November 19, 2015, press conference, FCC Chairman Thomas Wheeler called Binge On pro-competitive and innovative, although he pledged to continue to monitor its impact (Eggerton 2015). That same day, Comcast launched a video streaming service called Stream that for \$15 would not count against subscribers' data caps.

The FCC has begun to examine these zero rating practices more closely. On December 16, 2015, the FCC issued letters to Comcast and T-Mobile to make sure the regulator had all of the facts about their programs. On January 4, 2016, the Electronic Frontier Foundation complained that T-Mobile was applying its optimization techniques to all video and not just to streaming services enrolled in Binge On (Gillula 2016). Given that this is applied to all forms of video, just as some wireless ISPs block all forms of video altogether, it is unclear whether the practice would violate any legal prohibition.

It is too soon to determine what the result of these investigations will be. For purposes of these comments, it suffices to note that as of today, U.S. regulators have not brought an enforcement action against any form of zero rating, and they certainly have not adopted any categorical prohibition of the practice.

B. Chile

Chile is a prime example of a country that is often mistakenly claimed to have banned all forms of zero rating. In April 2012, Virgin Mobile began offering service as an MVNO operating on Movistar's network. It offered unlimited access to WhatsApp to its customers who purchased a data plan. By the end of 2014, it had become the fifth largest mobile provider in Chile with a market share of 1.3%.

Chile takes great pride in being the first country to have adopted a network neutrality law on August 2010. On January 29, 2013, the advocacy group, Neutralidad Sí, claimed that free access to WhatsApp violated Chile's network neutrality law and was harming competing message services, such as Line and Telegram. In February 21, 2013, Subsecretaría de Telecomunicaciones (SUBTEL), the Chilean regulator, rejected the claim, noting that the legislation permits TSPs to manage traffic so long as doing so does not impact competition and concluding that Virgin Mobile's plan did not prevent subscribers from accessing other applications. After a further exchange, SUBTEL closed the complaint.

The situation changed with the accession of network neutrality advocate Pedro Huichalaf as head of SUBTEL in March 2014. SUBTEL issued Circular No. 40 on April 14, 2014.

Although this is sometimes described as a categorical ban of zero rating, SUBTEL did not ban all forms of zero rating. Instead, it simply banned zero rating programs that did not include all apps of a similar nature. Implicitly, this order sanctioned zero rating schemes that granted free access to all of one kind of app.

The debate over zero rating came to a head once again on July 23, 2014, when the Wikimedia Foundation and Wikimedia Chile sent a letter to SUBTEL explaining how their zero rating service, Wikipedia Zero, operates and seeking clarification on whether Circular No. 40 would apply to it. Huichalaf saw a clear difference between the type of zero rating offered by Wikipedia and the type of promotional offers previously banned by SUBTEL. He further emphasized that the Circular was not a law or a regulation, but rather an invitation to companies to end the practice or to provide the same benefits to all traffic of the same class. He further clarified that the Circular was directed toward the practice of bundling social media apps with voice and data and was not a general ban on zero rating. He saw a clear difference between the type of zero rating offered by Wikipedia and the type of promotional offers previously banned by SUBTEL (SUBTEL 2014a ; Welinder and Schloeder 2014). SUBTEL's actions have proven controversial. Advocacy groups criticized the lack of punishment imposed on the TSPs as too lenient. They have also complained that the approval of Wikipedia Zero represents a double standard.

SUBTEL's approval of Wikipedia Zero plainly shows that Chile has not categorically banned zero rating. Simply put, Chile regards some forms of zero rating as permissible and other forms as problematic. In particular, zero rating plans appear to pass legal muster so long as they are open to all similarly situated applications, which is the case with T-Mobile's Music Freedom and Binge On as well as Facebook's Free Basics.

That said, the invalidation of Virgin Mobile's plan seems regrettable. With only 1.3% market share, Virgin Mobile trailed market leaders Movistar (39%), ENTEL PCS (33%), and Claro (24%), as well as fellow new entrant Nextel (1.7%) (SUBTEL 2015). Virgin Mobile's small size makes it inconceivable that its actions could have harmed consumers. Moreover, as a new entrant, the company must provide customers with some reason to choose it above its more established rivals. Because MVNOs necessarily must use the same network as the incumbent, they cannot differentiate on download speeds or service availability. Instead, they may only differentiate on non-network parameters, such as marketing and customer service.

C. Canada

Canada engages in fairly extensive regulation of TSPs, subjecting them to common carrier regulation and wholesale unbundling. Despite (or perhaps because of) this more heavy-handed approach to regulation, Canadian regulators have adopted a middle-of-the road approach to network neutrality. For example, on November 20, 2008, the Canadian Radio-Television and Telecommunications Commission (CRTC) ruled that Bell Canada's traffic shaping policies were nondiscriminatory in that they applied equally to Bell Canada's retail customers and the customers being served by its competitors via wholesale access. On October 21, 2009, CRTC issued an additional regulation on what constituted acceptable Internet traffic management practices that recognized the permissibility of network management as a last resort and banned

practices that are “unjustly discriminatory,” “unduly preferential,” or anticompetitive. On January 25, 2011, CRTC issued a ruling approving of usage-based billing.

Canada’s record is similarly mixed with respect to zero rating. Most notably, on January 29, 2015, CRTC ordered Bell Mobility and Vidéotron to stop zero rating their proprietary mobile video services. Although CRTC generally prohibits TSPs from zero rating their own services, the regulator has indicated its willingness to permit zero rating of services owned by third parties (Nowak 2015). Vidéotron has begun testing these limits by offering a zero-rated service called Unlimited Music, which permits subscribers to access leading third-party music streaming services without that traffic counting against their data caps (Bode 2015b).

In short, claims that Canada categorically bans zero rating miss the mark. In fact, media reports characterize the actions of Canadian regulators as having given zero rating the “green light” (Bode 2015b). To the extent that they restrict zero rating, it tends to be programs favoring proprietary services. Lastly, one of the enforcement actions was against Vidéotron, which is the fifth largest wireless provider in Canada with a mere 2.5% market share.

D. EU

The final two countries that have engaged in enforcement actions against zero rating plans are both in Europe, although other countries such as Norway and Germany have criticized zero rating. All of these efforts have been superseded by the European Union’s recent legislation that is widely regarded as condoning many forms of zero rating.

1. Slovenia

Zero rating, known in Slovenia as free data transfer, has been common in Slovenia since 2007. Market leader Telekom Slovenije (48% of the mobile market and 35% of the fixed market as of the end of 2014) offers zero rated access to video from the UEFA Champions League and HBO Go as well as to the music service Deezer and its TviN proprietary online storage. The second largest mobile provider, Si.mobil (29% of the mobile market), provides zero rated access to the World Cup, the VOYO video service, and the Hangar Mapa cloud storage service. The third largest mobile provider, Tušmobil (13% of the mobile market and 1% of the fixed market) provided zero rated access to its own portal to and content downloaded from its site. Fixed-only provider Amis (12% of the fixed market) provided zero rated content from its own website, email, and from its Amis MobiaTV service.

Slovenia enacted a network neutrality legislation on December 31, 2012. Interestingly, during the legislative process, lawmakers specifically deleted a provision that would have prohibited price differentiation.

On July 17, 2014, Dušan Caf, in his capacity as chair of the Electronic Communications Council (SEK), which advises the government on the development of electronic communications, made a complaint about zero rating practices to both the Slovenian regulator, the Agency for Communications Networks and Services (AKOS), and the Slovenian Competition Authority. The complaint focused exclusively on Telekom Slovenia and Si.mobil and made it appoint to exclude mention of the smaller providers.

The Competition Authority responded on September 4, 2014, with a nonbinding opinion rejecting the call for a per se prohibition of all zero rated services. The Competition Authority concluded that doing so might be detrimental rather than beneficial for consumers and that the

assessment of the legality of the mobile operators' offers should be based on the effects of provision of such services.

AKOS did not take any action with respect to the complaint until December 18, 2014. On January 23, 2015, AKOS issued a decision finding several aspects of zero rating plans provided by the two largest operators violated Slovenia's network neutrality law. Somewhat surprisingly, AKOS focused on relatively minor zero rated services while leaving the most important zero rated offerings intact. With respect to Telekom Slovenije, AKOS ordered it to stop zero rating the Deezer music streaming service while permitting it to continue zero rating the UEFA Champions League and HBO Go. AKOS similarly ordered Si.mobil to stop zero rating the Hangar Mapa cloud storage service while permitting it to continue zero rating the World Cup and the VOYO video service.

AKOS followed up this initial action with a ruling on February 20, 2015, ordering Tušmobil and Amis to end all of their zero rating services. As noted above, Tušmobil was only zero rating content from its own portal, while Amis was also zero rating content from its video service.

The fact that some zero rated services were permitted to continue undercuts any claims that Slovenia categorically banned zero rating. It appears that AKOS subjected zero rating plans that provided no-cost access to proprietary content to greater scrutiny than zero rating plans that provided no-cost access to third-party content. Moreover, the manner in which AKOS applied the network neutrality law to zero rating seems somewhat peculiar. Dušan Caf, who brought the initial complaint, has expressed regret that regulator imposed tougher penalties on the smaller providers by ordering them to stop all their zero rated practices, while the incumbent received a lighter reprimand. With respect to the larger providers, the regulator only ordered them to stop zero rating fairly minor services. In music streaming, Deezer trails far behind market leader Spotify, while Hangar Mapa is a trivial cloud provider compared with companies such as Google and EMC. At the same time, the larger providers were allowed to continue to zero rate their premier video offerings of the World Cup, UEFA Champions League, VOYO, and HBO Go. In short, as was the case in Chile, prohibitions of zero rating appear to have placed a heavier burden on smaller providers.

In any event, the EU's recent legislation on the Single Telecom Market discussed below appears to have superseded Slovenia's policies with respect to zero rating. Indeed, members of the government acknowledged that the EU's actions effectively override Slovenia's zero rating decisions (RTV SLO 2015).

2. Netherlands

In the Netherlands, zero rating is known as positive price discrimination, and the Dutch regulator, the Authority for Consumers and Markets (ACM), has enforced the network neutrality law it enacted on June 4, 2012, against zero rating plans on three separate occasions. ACM brought its first enforcement action against zero rating on June 25, 2013, when it issued an order sanctioning Sizz, a mobile phone brand created jointly by Vodafone and the television channel RTL targeted at young women. The problem was that the Sizz app permitted access to RTL content without having that traffic count against subscribers' data caps. The regulator ordered Vodafone to offer the Sizz app as a separate service that can be purchased independently (ACM 2013c). Although the joint venture was supposed to run through 2016, Sizz stopped accepting

new customers on June 1, 2014, two years before its scheduled end (Telecompaper 2011; Schellevis 2014).

The second time occurred on December 18, 2014, when ACM fined Vodafone for allowing customers to access HBO Go for three months without having that traffic count against their data caps. In imposing this fine, the regulator noted that Vodafone's previous experience with Sizz, while not an aggravating circumstance, did put Vodafone on notice that its arrangement with HBO Go likely violated the Dutch network neutrality law (ACM 2014).

On May 27, 2015, after a year of preparation, the Dutch Department of Economic Affairs issued guidelines on network neutrality. These guidelines effectively prohibited zero rating when it ruled that all forms of positive and negative price discrimination violated the Dutch network neutrality law (Kamp 2015). Pursuant these guidelines, on July 22, 2015, ACM ordered Vodafone to stop selling subscriptions to its Endless Spotify service offered as part of its youth-oriented Hi brand, which allowed subscribers to stream music without having that traffic count against their data cap. ACM did grandfather in existing Endless Spotify customers for up to two years when their contract expired (ACM 2015).

The Dutch regulator has thus enforced the network neutrality law fairly aggressively with respect to zero rating plans, applying it to services provided by third parties as well as proprietary services. ACM has not been wholly inflexible in applying the network neutrality. Most notably, on December 30, 2013, ACM allowed T-Mobile to continue to block streaming services such as YouTube and Spotify on the free Wi-Fi service it offered on NS trains. Given the bandwidth limitations, ACM concluded that such blocking was an appropriate measure to minimize the effects of congestion in a way that allowed as many riders as possible to use the internet connection (ACM 2013a, 2013b).

T-Mobile's experience with its free train service makes it clear that Dutch law is not so extreme as to invalidate any practice that favored or disfavored any application. That said, such leniency has its limits. On December 18, 2014, ACM fined KPN for the manner in which it was providing Free Basic Internet service in 176 locations, including Schiphol Airport. The Hybrid Hotspots turned off all of the ports except for ports 80 to 443, which had the effect of blocking applications such as BitTorrent, File Transfer Protocol, SSH, Telnet, VPN, and VoIP. Users who wished to use those services had to purchase Premium Internet service (ACM 2014b).

In addition, certain Dutch policy leaders have been critical of ACM's hostility towards service differentiation. For example, Remko Bos, the former director of the Dutch Independent Post and Telecommunications Authority (*Onafhankelijke Post en Telecommunicatie Autoriteit*), has questioned whether the difficulties in offering a variety of services caused by the regulations might actually be harming consumers (Schoemaker 2012). Similarly, then-European Commissioner for Digital Agenda Neelie Kroes (2012) asked, so long as consumers know what they are getting, "If consumers want to obtain discounts because they only plan to use limited online services, why stand in their way?" (see also Meyer 2014a).

In any event, as will be discussed below, the EU's recent legislation on the Single Telecom Market has effectively displaced Dutch law on zero rating.

3. EU's Single Telecom Market

Slovenia's and Netherlands policies with respect to zero rating have been superseded by the Single Telecom Market legislation enacted by the European Union. Initially proposed by

Neelie Kroes on June 4, 2013, the European Parliament added amendments on April 3, 2014, that would have made service differentiation much more difficult to sustain. Specifically, the Parliament added a provision defining net neutrality as “the principle according to which all internet traffic is treated equally, without discrimination, restriction or interference, independently of its sender, recipient, type, content, device, service or application.” The Parliament also added a provision specifying, “Providers of internet access to end-users shall not discriminate between functionally equivalent services and applications.”

The legislation was then sent to the European Council, where it soon ran into considerable opposition. Documents from the Italian Presidency in November 2014 showed that the Council advocated deleting both the net neutrality definition and the prohibition on discrimination from the legislation. A subsequent document released by the Latvian Presidency in January 2015 similarly concluded that the provision explicitly banning positive price discrimination (including zero rating) “cannot gain the necessary support” and that “[t]he issue of positive price discrimination could be left outside the scope of this instrument.”

The Parliament, Council, and Commission engaged in a trilogue throughout the spring, eventually reaching a compromise on June 30, 2015, that omitted both of the provisions added by the Parliament. The Council approved the compromise language on October 1, although both the Netherlands and Slovenia issued statements criticizing the failure to include stronger net neutrality protections. The Parliament followed suit on October 27.

A consensus has emerged about the likely import of this compromise. First, the final legislation is widely regarded as legitimating zero rating as a practice. Second, the legislation effectively repeals both the Netherlands and Slovenia law with respect to net neutrality. Indeed, the Netherlands conceded as much in the statement it issued when the Council adopted the legislation, and Dušan Caf acknowledged that the EU law in this area had overridden Slovenia’s.

* * *

Close analysis of the actions by various governments with respect to service differentiation yields a picture that is quite different than the one often described. No country has categorically banned zero rating. Quite the contrary, those few countries that have undertaken enforcement actions against zero rating plans have evaluated those plans on a case-by-case basis, finding some forms of zero rating to be permissible and forms to be impermissible. In particular, enforcement authorities have exhibited a greater willingness to accommodate zero rating plans that involve services provided by third parties and have reserved their harshest criticism for attempts to zero rate proprietary series.

The enforcement history also reveals what scholars who have studied zero rating empirically have consistency pointed out that zero rating tends to be undertaken by smaller providers attempting to compete with more established incumbents. These smaller players should be given wide flexibility over the ways they try to compete. The unfortunate reality is that all too often the enforcement policies have hurt the smaller players that policies should be designed to nurture (see, e.g., Elaluf-Calderwood 2015; Futter and Gilliwald 2015; Galpaya 2015a, 2015b; Galperin 2015).

IV. ANALYSIS OF POTENTIAL ANTICOMPETITIVE EFFECTS

The foregoing economic analysis provides ample reason for inferring that permitting service differentiation could well yield substantial benefits both in promoting Internet adoption and in benefiting consumers. The enforcement history of zero rating provides another reason to be skeptical of calls for categorical prohibition of service differentiation.

These conclusions draw further support from classic principles of competition policy. A review of the literature bolsters the confusion that the propriety service differentiation should be evaluated on a case-by-case basis with the benefit of the doubt going to the innovation.

A. The Unlikelihood of Consumer Harm

Concerns about agreements between applications and TSPs are fundamentally about contractual cooperation between two levels in the same chain of production, an area of competition policy known as vertical restraints. The conventional wisdom about vertical contractual restraints has undergone something of a sea change over the past half century. Although the conventional economic wisdom was once quite hostile towards vertical restraints, the modern economic literature has shown the circumstances under which vertical restraints can harm consumers are considerably more rare than once thought. Many models show ambiguous results (see, e.g., Vernon and Graham 1971; Salinger 1988) or even consumer benefit (see, e.g., Spengler 1950; Machlup and Taber 1960). The models that do exist that show potential consumer harm tend to be highly stylized and subject to restrictive assumptions (see, e.g., Hylton and Salinger 2001). This makes the equilibria in game theoretic models quite sensitive to changes in assumptions and often causes them to exhibit large, discontinuous changes in response to small changes to the underlying parameters. This has led some to call game theoretic models “Goldilocks theories,” because every parameter must neither be too big or too small for the theory even to be plausible (Liebowitz and Margolis 1999, 251). Thus, policymakers must be careful that all of the factual predicates of each model are satisfied before inferring that consumers are being harmed (Ayres 1990, 1313-14 and 1317).

Even more fundamentally, the game theoretic models typically cited as supporting consumer harm make no attempt to formalize the overall impact on consumer welfare, either by offering a metric for determining optimal innovation or by taking into account potential efficiencies. The problem is that these models assume precisely the type of market structure that is likely to give rise to these efficiencies (Hylton and Salinger 2001, 471). It is for this reason the creators of these models have cautioned that they would not support the broad per se rules (Whinston 1990, at 855-56).

The inference that vertical restraints would harm consumers only under unusual circumstances indicated by the theoretical literature is backed by a solid empirical literature showing that vertical restraints tend to promote consumer welfare. For example, a recent study conducted by four members of the FTC’s staff surveying twenty-two published empirical studies found “a paucity of support for the proposition that vertical restraints/vertical integration are likely to harm consumers.” Indeed, only one study unambiguously found that vertical integration harmed consumers, and “in this instance, the losses are minuscule (\$0.60 per cable subscriber per year).” On the other hand, “a far greater number of studies found that the use of vertical restraints in the particular context studied improved welfare unambiguously.” The survey thus

concluded that “[m]ost studies find evidence that vertical restraints/vertical integration are pro-competitive.” The weight of the evidence thus “suggests that vertical restraints are likely to be benign or welfare enhancing,” which in turn provides empirical support for placing the burden on those opposing the practice (Cooper et al. 2005).

Another survey published in the *Handbook of Antitrust Economics* similarly reviewed twenty-three published empirical studies of vertical restraints. Despite the relatively small sample size, the authors found the empirical evidence to be “quite striking,” “surprisingly consistent,” “consistent and convincing,” and even “compelling.” As a general matter, “privately imposed vertical restraints benefit consumers or at least do not harm them,” while government mandates or prohibitions of vertical restraints “systematically reduce consumer welfare or at least do not improve it.” Together “[t]he evidence . . . supports the conclusion that in these markets, manufacturer and consumer interests are apt to be aligned, while interference in the market [by the government] is accomplished at the expense of consumers (and of course manufacturers).” The authors conclude that “the empirical evidence suggests that in fact a relaxed antitrust attitude towards [vertical] restraints may well be warranted” (Lafontaine and Slade 2008).

Taken together, the theoretical and empirical literature on vertical restraints provide a strong reason for inferring that vertical combinations could well benefit consumers. The question is what implications that inference has for calls for prohibiting vertical combinations in the Internet industry.

B. Ex Post Case-by-Case Review Over Ex Ante Per Se Illegality

The U.S. Supreme Court’s antitrust jurisprudence provides a useful framework for answering this question (Yoo 2007). The primary decision is whether to engage in the type of ex post case-by-case inquiry that characterizes the rule of reason or to apply the type of ex ante categorical prohibition associated with per se illegality.

Since the earliest antitrust decisions, the U.S. Supreme Court has recognized the default rule is the rule of reason (*Standard Oil Co. of N.J. v. United States*, 221 U.S. 1 (1911)). Thus competition policy authorities should generally undertake a fact-specific inquiry into a practice’s actual effect on consumers when evaluating a practice. The Supreme Court has repeatedly recognized that case-by-case analysis is particularly important for new practices that are not well understood. Only when long experience has convincingly proven that practice is almost always harmful should a practice be treated as illegal per se.⁴

The Supreme Court reiterated its framework for determining whether to deviate from the rule of reason and instead treat a practice as illegal per se in its recent decisions on vertical restraints. In *State Oil Co v Khan*, 522 U.S. 3 (1997), the Court recognized that “most antitrust claims are analyzed under a ‘rule of reason,’” under which courts evaluate the competitive impact of a particular practice on a case-by-case basis in light of all of the facts. If, however, a court has sufficient experience with a particular vertical restraint to conclude with confidence

⁴ See *FTC v. Ind. Fed’n of Dentists*, 476 U.S. 447, 458-59 (1986); *Arizona v. Maricopa Cty. Med. Soc’y*, 457 U.S. 332, 342 (1982); *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 9, 19 n.33 (1979); *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 49-50, 58-59 (1977); *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 607-08 (1972); *White Motor Co. v. United States*, 372 U.S. 253, 263 (1963); *N. Pac. Ry. Co. v. United States*, 356 U.S. 1, 5 (1958).

that it evinces “such predictable and pernicious anticompetitive effect, and such limited potential for procompetitive benefit” that nothing would be lost by prohibiting it without any detailed inquiry into the specific facts, it should be categorically prohibited and declared illegal *per se*. If, on the other hand, “the economic impact of [the challenged] practices [are] not immediately obvious,” courts should refrain from imposing a *per se* rule and continue to apply the rule of reason.

The Court reiterated these same principles in *Leegin Creative Leather Products, Inc v PSKS, Inc.*, 551 U.S. 877 (2007). The Court began by noting, “[t]he rule of reason is the accepted standard for testing whether a practice restrains trade in violation of” the antitrust laws and that courts should declare a practice illegal *per se* only if it evinces “manifestly anticompetitive” effects and a “lack [of] any redeeming virtue.” The Court continued:

As a consequence, the *per se* rule is appropriate only after courts have had considerable experience with the type of restraint at issue and only if courts can predict with confidence that it would be invalidated in all or almost all instances under the rule of reason. It should come as no surprise, then, that “we have expressed reluctance to adopt *per se* rules with regard to restraints imposed in the context of business relationships where the economic impact of certain practices is not immediately obvious.” And, as we have stated, a “departure from the rule-of-reason standard must be based upon demonstrable economic effect . . .”

The implications for the debate over service differentiation are clear: categorical prohibition of new practices like service differentiation with which policymakers do not have much experience would be improper. In the absence of a clear indication of what the competitive impact of permitting service differentiation might be, those practices are better analyzed under the type of *ex post*, case-by-case approach that characterizes the rule of reason rather than the *ex ante*, categorical approach that characterizes *per se* illegality, with the burden of proof placed on the party challenging the practice. Indeed, scholars who study zero rating empirically, many of whom are quite skeptical of the practice, acknowledge that such practices may well be beneficial. Accordingly, they caution against erecting a *per se* prohibition of zero rating (Futter and Gilliawald 2015; Galperin 2015; Galpaya 2015a, 2015b; Layton and Elaluf-Calderwood 2015; Thakur 2015).

C. Factors Cutting Against Liability in Case-by-Case Review

Competition policy and the case studies exploring the way that net neutrality laws have been enforced against zero rating provide some guidance as to how to apply a case-by-case approach. Basic features such as the lack of market power, the lack of exclusivity, and the noninvolvement of proprietary services can provide safe harbors that can give clear guidance to those attempting to promote broader network deployment and adoption. That is not to say that the absence of such factors means that the practice is necessarily problematic. If one of the safe harbors is not met, whether a regulator should block practice depends on a complete assessment of its likely impact on consumers.

1. Lack of Market Power

First step under any competition policy analysis is determining whether a firm has market power. The U.S. Supreme Court has clearly established that per se illegality is inappropriate in cases in which the defendant lacks market power (*Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 13-18 (1984); *Northwest Wholesale Stationers, Inc. v. Pac. Stationery & Printing Co.*, 472 U.S. 284, 296 (1985)). Even under the case-by-case approach associated with the rule of reason, market power is a “significant consideration” (*Leegin*, 551 U.S. at 885-86).⁵

Market power represents a threshold inquiry for inferring anticompetitive effects (Werden 2014, 750 & n.249), although direct proof of anticompetitive effects may render such an inference unnecessary (*FTC v. Indiana Fed'n of Dentists*, 476 U.S. 447, 460 (1986); *NCAA v. Board of Regents*, 468 U.S. 85, 109-10 (1984)).

2. Nonexclusivity

Another factor that tends to absolve parties from liability is a lack of exclusivity. In this regard, the U.S. Supreme Court’s decision in *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*, 441 U.S. 1 (1979), is particularly instructive. That case involved a joint venture that licensed copyrighted music together as a bundle under a blanket license. This device was said to create a new product that created real benefits to consumers. The fact that the license was nonexclusive left would-be licensees free to strike deals with composers and vice versa.

According to the Supreme Court, the lack of experience with the practice and the fact that the combination created a new product strongly counseled against subjecting these blanket licenses to a per se rule categorically declaring the practice illegal. Moreover, the nonexclusive nature of the licenses provided another reason cutting against categorical prohibition, since the ability to license outside of the collective mitigated the risk of consumer harm. The Court therefore held that such practices should be evaluated on a case-by-case basis under the rule of reason. Because the lower court had applied a per se rule without considering the rule of reason, the Supreme Court remanded the case so that the lower court could consider the proper application of the rule of reason in the first instance.

On remand, the lower court relied on the fact that CBS remained free to license outside the blanket license. Trial court had found that the viability of individual licensing limited the collective’s ability to harm consumers (*Columbia Broad. Sys., Inc. v. Am. Soc’y Composers, Authors & Publ’rs*, 620 F.2d 930, 936 (2d Cir. 1980)).

The implications of this case for service differentiation is clear. Like the collectives in *Broadest Music*, the combinations at issue here create new products that benefit consumers in unique ways. Like the collectives in *Broadest Music*, zero rating programs such as Binge On and Free Basics are nonexclusive, which allows anyone who wants access to any apps without having to through the zero rating program to do so.

In short, nonexclusivity serves as an important safety valve that greatly limits the ability to harm consumers. Nonexclusivity is thus a key factor that can protect service differentiation plans from liability.

⁵ See also *Copperweld Corp. v. Indep. Tube Corp.*, 467 U.S. 752, 768 (1984) (characterizing the rule of reason as “an inquiry into market power and market structure designed to assess the combination’s actual effect”).

3. Nonproprietary Services

The last consideration is whether the services being used to differentiate the TSP's offerings are proprietary or provided by a third party. When the service being provided is owned by the same company that owns the network, the combination is properly regarded as a form of vertical integration. When the service being provided is owned by a third party who simply signs a contract with the network, the combination is properly regarded as a vertical contractual restraint.

Vertical restraints are widely regarded as less problematic than vertical integration in that they tend to be more flexible, shorter lived, and cover less than the entirety of either firm's price and output decisions (see, e.g., Hovenkamp 2005, 492). Antitrust law thus provides an economic justification for treating service differentiation based around services provided by third parties more leniently.

* * *

These principles provide useful heuristics for making a quick determination of whether a practice is unlikely to harm consumers. The failure to fall within one of these safe harbors does not necessarily imply that the challenged practice is problematic. If none of the safe harbors is met, a regulator should base its decision on a complete assessment of its likely impact on consumers.

D. The Ineffectiveness of Alternatives

The lack of market power, nonexclusivity, and nonproprietary services serve as important safe harbors from any potential liability. The Consultation Paper also sought guidance on two alternative models for providing service to those without service. Unfortunately, neither of the proposed alternatives is likely to serve as an adequate substitute.

1. Restricting Access by Volume or Time

The first alternative approach proposed by the Consultation Paper suggests that a service could provide initial data consumption for free with the access limited by volume or time instead of being limited by particular content.

The biggest problem is that this solution is addressed exclusively to the supply-side of the problem without taking into account the demand side. Although such restrictions could reduce the cost of service, volume and time restrictions would do little to demonstrate the value of an Internet connection to nonadopters.

It is also far from clear that direct metering of usage will prove more effective in reducing cost than restricting or promoting access to certain apps (Yoo 2006). Past experiments with metered pricing have often proven less than effective. This solution is suggested by Ronald Coase's (1974) classic critique of lighthouses as pure public goods. Lighthouses have long been regarded as posing a paradigmatic example of a market failure in need of governmental redress. The standard account posits that the fact that lighthouse usage is difficult to meter made them particularly appropriate to governmental provision (see, e.g., Mill 1847). Coase rebutted this account by pointing out that throughout most of the 17th and 18th centuries British lighthouses

were operated by private, profit-making enterprises. Lighthouse owners were able to finance their lighthouses through tolls collected at nearby ports, since presumably only those ships that were preparing to enter port would come close enough to shore to have need of the lighthouse's services.

Port usage thus represented an easily metered proxy for determining which ships had benefited from the services of nearby lighthouse. The historical record suggests that this system was quite successful. As of 1820, thirty-four of the forty-six lighthouses in existence had been built by private individuals. Over time, these private lighthouses began to be taken over by a quasi-governmental organization known as Trinity House. Even after being acquired by Trinity House, they continued to be privately financed through user fees rather than through tax revenues.

Coase's analysis of lighthouse financing suggests that the choice between metered usage and prohibiting the use of certain applications may be more complex than initially seems. Given the ambiguity, the better course would be to give TSPs the latitude to explore the full range of different ways to attract consumers.

2. Post hoc reimbursement

The second alternative proposed by the Consultation paper would be for content providers to reimburse users for their browsing and downloading after the fact. As an initial matter, forcing end users to pay up front and receive rebates later may serve as a deterrent to indigent people who have trouble assembling the cash needed to make the up-front payment for the service.

More importantly, this solution focuses exclusively on the supply side. While it may be equally effective in reducing the cost of service, it would do nothing to address the demand-side obstacles to adoption. Providing end users with rebates would do nothing to demonstrate the value of an Internet connection.

CONCLUSION

Service differentiation thus yields many benefits. It can promote Internet adoption by demonstrating the value of an Internet connection. It can allow consumers to enjoy service plans that are more closely tailored to their preferences. It can allow smaller providers to compete more effectively with larger and more entrenched incumbents and can provide useful ways to reduce costs.

Service differentiation's relatively novelty and potential benefits counsels strongly against erecting a categorical prohibition of the practice. Instead, the propriety of any practice should be evaluated through the case-by-case approach associated with the rule of reason. Any more restrictive rule threatens to deprive innovation and experimentation of the breathing room it needs to survive.

Ms. Vinod Kotwal

January 7, 2016

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Sincerely,

A handwritten signature in black ink, appearing to read "Christopher S. Yoo".

Christopher S. Yoo

John H. Chestnut Professor of Law, Law School

Professor of Communication, Annenberg School for Communication

Professor of Computer and Information Science, School of Engineering and Applied Science

Founding Director, Center for Technology, Innovation and Competition

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2.4.3 A R Manjunath

To
Ms Vinod Kotwal,
Advisor (F&EA)
Telecom Regulatory Authority of India,
New Delhi

Subject: Response to TRAI's Consultation Paper on Differential Pricing for Data Services, Dated 9th December, 2015

Dear Advisor,

TRAI in its paper has rightly decided on the **guiding principles** which are paramount in discussing the various issues related to this paper viz – Transparency, Non-Discriminatory, Non-Predatory, Non-Ambiguous, Not Misleading and Not Anti Competitive practice.

With reference to the above consultation paper, I'd like to put forward my thoughts which shall stand on record with the office of the Telecom Regulator (TRAI), keeping the interest of the consumer and the ecosystem at large within the ambit of the above guiding principles.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response: In the Negative for the following reasons.

TRAI has very well elaborated and understood the issue as highlighted in paragraphs 12, 13 and 14 of the consultation paper. However, India being the largest democracy in the world, we want our "Communication Network" to function the same way upholding the spirit of the guiding principles as laid down in the paper.

Facebook, the behemoth social network has been advertising aggressively to promote "Free Basics" i.e to have an agreement with TSPs to provide consumers free access to its social network. However, social experience is all about sharing. For example, if consumer "A" shares a video going viral on a Newspaper Website [i.e. content on a Non Facebook Network] and Consumers "B", "C"..."J" views the same, TSP will naturally bill all the 9 consumers and the irate consumers have no choice but to start complaining about the same since they'd be under the impression access to facebook is FREE.

At this stage I'd like to remind myself and the authorities of the massive "[Mobile Deduction Scam](#)" that shocked Pre-Paid mobile subscribers where TSPs were il-legally activating Valued Added Service [You know the Modus Operandi in which it progressed]. It was only when TRAI intervened the scam was laid to rest, though it appears [no fine has been collected from the operators yet](#). From this experience it is amply clear that assuring access to Facebook is Free and **charging for the Video watched on Facebook without leaving the site will lead to unnecessary confusion as the average Indian consumer is not a Network Engineer** to determine from where the bits are streamed and whether he will be charged or not for watching the same.

Additionally, Facebook will definitely cut a deal with the TSP where the former will reimburse the latter which are definitely against the guiding principles of TRAI's consultation paper. This will also kill the concept of fair and open market practice which is very essential to encourage the entrepreneurial spirit of Indians who do not have deep pockets yet their brains and hard work must help them reach the top.

In the larger interest of the student community, I first thought that access to domains like ".edu", ".ac.in" should be granted free internet access at all levels. However, the problem arises if the University has hosted Video / Study Material on a different site such as Amazon Cloud Storage and when the student accesses the same, he'll be billed for it, even though he has not visited outside the .edu domain. In short, the **Web and Social experience is all about cross linking and scripting which is impossible a scenario for an Indian Consumer to know when he will be charged for accessing** what content and this is a paramount factor as India is a highly price sensitive Telecom market.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response: For reasons elaborated in response to Question 1, **please do not let differential pricing for Wireless / Wired Data Services in India. Let the consumer make his own choice on what to access or not** without any bias. It will be a clear case violation of the guiding principles and TRAI certainly doesn't want to have millions of complaints like the VAS – Pre-paid mobile balance deduction scam as Indian consumer is too naïve to avoid pitfalls set by few behemoths and TSPs in shady non transparent deals.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods /technologies/ business models. Also, describe the potential benefits and disadvantages associated with such methods / technologies /business models?

Response: After over six decades of independence, we finally have a government which is willing to listen and evaluate prospects of implementation of ideas from its citizens. In this backdrop, I'd request that the Government to introduce "Massive Multiple Free Data Center" policy where any recognized educational institution in India can host "Unlimited" content in these data centers for the benefit of student community and access to this content should be free at all levels. Similarly, it should be extended to any ".gov.in" web-service as a part of the Policy to promote Digital India.

Regarding other alternative as discussed by TRAI in paragraph 19 of the paper
"delink free internet access from specific content, and instead limit it by volume or time"
it appears to be the **best fit strategy** to go about, **only if it is absolutely necessary.**

The Government must bear in mind the popular quote – **There is no Free Lunch Economics.** We have seen what a burden on the exchequer has been providing Free / Subsidized – Foodgrains, Urea, Kerosene, Healthcare, etc which is also making that strata of Indians crave for more freebies, definitely unhealthy for the nation in the long run.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response: TRAI at length has discussed on various technologies used for mobile data communication in paragraphs 7 and 10 of the consultation paper. However, from our experience we know that operators introduced intermediate technical term such as "Fixed Wireless" where the medium of communication is wireless but does not support mobility of the device / consumer for various vested interests, maybe to dodge the government on Spectrum Usage Charges etc. So keeping in mind of **all such potential malpractices by Telecom Operators**, TRAI must strictly define the scope of this Paper to cover any form of "Wireless Data Communication" when it releases the recommendations or whatever it deems fit to **avoid and plug loopholes in the recommendations at all levels**. At all levels means make the recommendation applicable to all devices - Tablets / PCs / Laptops / TVs / any human usable device not just restricting to Mobile SmartPhones and which are served by "Wireless Network" in general.

Tomorrow, a greenfield telecom service provider will put an intelligent line of defense that Content / Apps are owned (copyright, licenses, etc) and hosted on his own network. This TSP will come and defend stating that his customer is accessing the content / app directly on his WAN (or extended local network or will coin a new network terminology) even before the data packets hit NIXI or other routing infrastructure of the Internet in broader terms and thus the recommendations of the TRAI in this consultation paper are not applicable to this operator. **Do not allow TSPs to bundle selective Content / App with Network Access. Please plug such loopholes as well in your recommendations.** Bottom-line – Grant Equal Access Rights to every content outside local device storage and allow the consumer to makes his own choice for access.

If the scope of the Consultation Paper can be revised at this stage, TRAI must make an effort to include the recommendations applicable to "Wired Data Communication" as well. We should not forget the fact that Internet has progressed to such a center stage only because of it being open without any restriction and free from lobbies and oligarchy.

"When the Government Works with its Citizens, the Nation Progresses".

Thanking You,

Sincerely

A R Manjunath

Acknowledgments: Inputs from my colleague Chetan Kumar in completing this paper.



2.4.4 Shamik Biswas

December 15,2015

To

Ms Vinod Kotwal

Advisor F and E A

TRAI

New Delhi

Sub: Response to TRAI Consultation paper on differential pricing for Data services

Please find attached my response to the consultation paper on differential pricing for Data services. I have 20 years experience in telecom and 15 years experience in handling the data services in 2 continents in about 6 telcos and am interested in the consultation.

Yours sincerely

Shamik Biswas

Telecom and Marketing Consultant

Mumbai

shamikb@yahoo.com

Q1 Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSP's should be allowed to offer toll free access to content on certain websites , however no other differential pricing should be allowed to access content in the same website unless it is premium content and the premium charging methodology is approved by both TSP and Content service provider (The latter would get revenue share for the premium access).

However as correctly noted in the paper, TSPs offering free access are charging for photos and videos via the default data plan which can result in a "bill shock" to the consumer. Hence TSP's offering free access to certain sites must either make all content including videos/ photos free or bar access to paid content unless a subscriber selects a nominal data plan of his choice .

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non -discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

In the case of **B2C services (Consumer)**, telcos should not be allowed differential data prices (except for categories/data packages where the rate decreases based on the increase in package amount and other such plans)

B2C Data Tariffs should have a ceiling mandated by TRAI and filing of tariffs with TRAI to be made mandatory before implementation of differential tariffs

Free access should be allowed under the guidelines specified earlier i.e TSP's offering free access to certain sites must either make all content including videos/ photos free or bar access to paid content unless a subscriber selects a nominal data plan of his choice .

TSP's should not be allowed to differentiate only on quantum of content (MB/GB) and not type of content (eg. Differential pricing for VOIP data packets should not be allowed- pricing should be type agnostic)

In the case of **B2B (Enterprise services)** telcos should be allowed to differentiate on data plans based on ticket size of business, service level promised, future business prospects, term contract or exclusive contract . This is the international practise and based on the above mentioned variables, telcos should be allowed to offer variable discounts on the list price of data plans at their discretion.

Enterprise customers are mature enough to protect their interests and forbearance is recommended for B2B data tariffs.

Question 3.

Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

There are many models. I propose 2 models to start with

MODEL A : SMS based free credit top up of certain amount to be used for free internet use including video and photos (Promo Credit on IN Platform)

Benefits:

SMS is available to anyone

Free credit top up is simple to administer as all TSPs have state of the art IN platforms today. Allowing promo configuration only for Data will require a bit of work.

Disadvantages:

TSPs are not altruistic so free top up will only cater to content providers who can offer some subvention. However there is no free lunch and it is a business rule that one needs to have sufficient funds to start a business. If a Content service provider has a great idea and an USP , it will surely get funding . VCs and Angel investors create a level playing field

MODEL B: Calling a toll free number to listen to advertisement jingles and getting top up credit valid for free internet usage irrespective of content accessed

Benefits:

- Available to everyone: Can revolutionise the industry and be a game changer increasing data penetration to more than 75%
- Consumer product companies will sponsor this model as it gives dedicated userbase (Subscriber profiling can lead to targeted advertising)

Disadvantages

- Needs some backend configuration in the IN/ billing systems.

Question 4:

Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Data currently offers high margins to TSPs and along with VAS cross subsidises the extremely low voice call rates.

However data pricing is increasing unreasonably and needs some regulation.

However care has to be taken by the TRAI to ensure that while data pricing does not exploit consumers , the pricing also has to be high enough to offer sufficient margins to the TSPs.

Due to the reintroduction of the failed auction system (Out of the 42 licenses issued under NTP94 under the auction scheme , only 9 licenses have survived in their original form – 2 belong to Airtel and the balance to Reliance): 2G, 3G and 4G spectrum have been bid for at unreasonable high prices which will result in the business case of most telcos becoming unviable. We can already see high call drops and poor services as TSPs cannot afford to lay the best possible infrastructure. Till the time that sanity prevails and the telecom industry can go back to the successful “One Time access fee and revenue sharing model” (Introduced under NTP 99), the TRAI needs to strike a fair balance between protecting the needs of the consumer and ensuring that telecom companies make sufficient profit to be viable.

2.4.5 S Pandivinayagan

Net Neutrality is very essential for the citizens to use the internet as one of the very essential services of the nations. It is this, which will reflect the peoples' trust, development, free communication, open, honest, knowledgeable citizens and fastest growth, of its nation. Hence net neutrality should be preserved till the people and Government, feel otherwise maybe after a review in 10 year period. However, the essential online services provided for the welfare of the people, like Government, Public, Education, Research, Non-profit Organisation, etc.... should be provided without any requirement to pay for its services. However, all non-profit services, by these organisations/ Govt, should follow net neutrality. Have responded to the questions in attached document.

Q1. No differential pricing. However, the non-profit websites and content, in India that are meant for the welfare of the public are to be allowed for access /downloads without any requirement for any payments.... which mean anyone having the Aadhaar can register by linking their PAN and avail for free access to the non-profit services from the Govt, Public, EDU, RESEARCH, Non-Profit Organisation sites and services without paying for its access/content. However, access to all other websites/content should follow net neutrality, irrespective of it being a social media site or content, which may or maynot be a free service.

Q2. No differential pricing, except for the free access to the Website/application/content/services -in India, the Govt, Public, Education, Research and Non-Profit organisations. As explained in response to Q1, Govt should use this opportunity to take control of and encourage the public to use the internet as means for its development and all its digital initiatives... By having them link Aadhaar, PAN etc.. by the Needy citizens, to avail the free services of those non-profit organisations in India. Govt should establish framework defining- what/who/which is considered as non-profit in India. websites/application/services/platforms/content. This will greatly benefit those needy citizens who are to really benefit from the free access to these essentials, without requiring to pay for it.

This approach will keep both the requirements,- free and Net Neutrality to co-exists for the welfare of its citizens. Net Neutrality will automatically give way for the innovation , while maintaining the non-discrimination, transparency, and affordable internet access.

Q3. As mentioned in above two responses, Govt to workout a mechanism to have the TSP validate the citizens credentials for its free access, using the Aadhaar(+/-)PAN database. As one register their internet connection with their TSP, they need to get the coupon code from the Govt website to be used with their TSP's for their free sites/content access. The coupon code is send to the registered users on their registered mobile. Also, all new connections form, for TSP services should have details of the multiple connections to provide the free access on all these connections the needy citizen, may have.

The benefits, as mentioned earlier, the needy citizens and Govt, will greatly benefit from its free services reaching the people and educating them of their development efforts and progress made so far .Also tracking and getting feedback on the Govt policies, procedure and subsidies for its citizens. Use this opportunity to start building a single database to link, various identity like.. Passport, Aadhaar, PAN, VoterID, Driving License,.....etc.. which will eventually provide a way to successfully have one single identity and in tracking and monitoring of the Govt subsidy very effectively and reliably. Dis-advantages, it is long term effort and time, to reach the point of having single identity for its citizens to avail, all its services. Though it is expected that Big Data and Analytics will very soon narrow the gap and time to make this a reality very soon.

Q4. As the Govt embraces the Digitisation, BBNL, Environment friendly initiatives, Swaach Bharat, it is important that, the educated people or more aware and will contribute significantly to all its development initiatives. For this to happen, Net Neutrality is the foundation and it should be retained. However, as more and more non-educated users are becoming mobile users, it is easy for the Govt to reach these users through the mobile for its effective and reliable way of delivering its free services and subsidies in the future. Hence providing free access to the essential services of- Govt, Public, EDU, Research, Non-profit, will be the first steps towards reaching that goal.

2.4.6 Arijta Kakati

THE TELECOM REGULATORY AUTHORITY OF INDIA

PRESS RELEASE NO.70/2015

CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA SERVICES

NEW DELHI-09.12.2015

Introduction

The consultation paper on “Differential Pricing for Data Services” hereinafter referred to as the (“**Consultation Paper**”) released by the Telecom Regulatory Authority of India, (“**TRAI**”), on 09.12.2015 has been mistakenly reported and promoted by the media as a paper on Net Neutrality. While, it is true that this paper plays a defining role in taking forward the principle of “Net Neutrality” which has been the most debated topic in the year 2015-2016, it must be remembered that the principle of “Net Neutrality” would be unattainable if reviewed in isolation. To ensure Net Neutrality prevails there must be:

- A neutral pricing or tariff mechanism in place which currently is directly handled by the TRAI.
- Amendment to the relevant legislations as the Indian Telegraph Act, 1885 which would need to include and define the term Over the Top Services (“**OTTs**”) in order to bring them within the realm of the Central Government.
- There must be an amendment in the Unified License (“**UL**”) to incorporate all the tenets of Net Neutrality applicable to the Telecom Service Providers (“**TSPs**”) and Internet Service Providers (“**ISPs**”).

All this while, the debate on the topic of Net Neutrality has drawn extreme or rather absolute responses. The Internet forms the fundamental basis of our society, that apart, the debate on Net Neutrality is important to us because any discussion on the future of internet would bring out the volatility on the future of communication, innovation, culture and speech. All apprehensions, that the Government and the Telecom Service Providers are hell bent on changing the way we use or have known the Internet is certainly legitimate. Our past experiences with the Telecom Sector in India have left us with very little faith both, on the Government as well as the TSPs.

We believe that:

1. Telecom Service Providers/ Internet Service Providers (TSPs/ISPs) want to control the internet.
2. TSPs/ISPs would like to control what we access over the internet and would ideally move towards monopolising access to the internet.
3. Certain websites would be readily available, while the others would struggle and die down.

4. Innovators will stop innovating new applications.
5. Internet will be divided, we will be charged for accessing different websites, applications, attaching files etc.
6. Competition in the market would die down, all our innovators will have no incentive to innovate and make India the most promising market in the world.
7. Everything for us will change, the way we know or use the internet.
8. Digital India will remain a “Digital Dream”.

The above is not a meticulous list on the “Evils of Net Neutrality”, it is just indicative one. The only point that I am trying to drive home is; please do not stop believing that, India can be the “largest” and the best “Testing Ground”, for Net Neutrality. We should not underestimate the power of a nation that witnessed a 49% jump on the number of people connected to the internet in matter of a year, while struggling for food, water, pollution, shelter, corruption, governance and other basics that make “Connectivity” a privilege, and not a “Necessity” for us.

Keeping this mind, below are a few Responses to the Consultation Paper. The responses below in no way, suggest or imply that Net Neutrality is not important for India, it only tries to explore responses that go beyond an absolute ‘No’ or an absolute ‘Yes’.

Query I: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response I: TSPs should not be allowed to apply differential pricing for data usage, accessing different websites, applications or platforms.

In the entire debate on Net Neutrality, the terms, ‘zero’ and ‘free’ have been the most dreaded terms. Airtel faced public backlash and hatred with its ‘Airtel Zero’, Facebook has been making statements justifying its services ‘Free Basics’ ever since it contemplated launching in India.

Zero-rated plans as Promotional Offers- A large number of ‘Netizens’, aggressively pursuing the debate on Net Neutrality would be surprised to know that the Internet is provided by telecommunications companies which is a investment oriented and highly regulated sector. The Government i.e the Department of Telecommunications (DoT) decides on who provides ‘telecommunication’ services thus regulating who provides us with ‘Internet’. The TRAI controls how these telecommunication services are tariffed (which includes how internet

services are priced), through various pricing mechanism, the TRAI determines the different services that may be offered in the market and how they may be offered. Under the various regulations/directions issued by the TRAI through the Telecom Tariff Order, 1999 there is a special mention of ‘Promotional Offers’ which allows telecom companies to offer various services that they deem fit to their consumers/subscribers for a limited period of 90 days (ninety). Such offers are subject to the TRAIs approval which is based on careful considerations of the parameters set out in the Consultation paper i.e plans should be transparent, reported, non-discriminatory *vis a vis* their consumers (the principle of non discrimination as mentioned here has nothing to do with Net Neutrality, the term non discrimination mentioned in the Telecom Tariff Order, 1999 means, non discrimination among subscribers. For example: as an Airtel costumer, if I wish to subscribe to the Promotional Offer, I cannot be denied of the same as against another Airtel costumer who subscribed for the same services.) Zero-rated plans should be given an opportunity to be tested for a period of 90 (ninety) days under the current legal framework.

While I agree that access to the internet should be “Open”, “Free” and “Full”, the way it is today. This idea of Open, Free and Full would not make much sense to a Farmer who has never had access to the internet. Zero-rated plans can be offered as hand-holding basic plans that could serve as an effective guide, first time users into the world of ‘Internet’.

Non discrimination: Paragraph 9, @ pg 4 of the Consultation Paper mentions that the key principles for Tariff orders issued by the TRAI are non-discrimination and transparency. Both these principles today apply to Telecom Companies in relation to the Subscribers. This essentially means that TSPs and ISPs cannot discriminate in offering their services among classes of subscribers. This principle is not applicable to a Facebook, Google, Twitter etc. In the absence of clarity under the current regulatory framework a Content Provider can tie-up with a Telecom company to provide any form of service as they like. However, the telecom company would be bound to provide the service to all their Customers/Subscribers without discrimination. Developing regulations focussed at the right direction is essential today. However, it’s unfortunate that we are fighting issues based on presumptions and assumptions.

Conclusion: give Zero-rating a chance. Let India be the testing ground.

Query II: **If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?**

Response II: If Zero-rated plans are adopted for a limited period of time. Listed below are few things that the TRAI must consider through its various directions and orders issued under the Telecom Tariff Order, 1999 (“TTO”);

1. Under the present legal framework all the regulations with respect to the Telecommunications sector, specifically govern the relationship between the TSP and its Subscribers.¹ Under the current framework the TRAI makes it mandatory for Telecom Service Providers to report different tariffs, not discriminate between classes and categories of subscribers, and report their plans in a transparent manner to their subscribers, refrain from over charging their subscribers by setting a tariff ceiling on certain classes of services while maintaining forbearance.
2. The current regulations would need to extend to include Content Providers to adhere to the principles of transparency, competition, non-discrimination, innovation etc.

Illustration: If Airtel, would like to launch a zero rated application in the market. TRAI should develop regulations that make it mandatory for the Application Provider/ Content Provider to maintain the principles of transparency, reason, benefits, non-discrimination, accountability, reporting and non-discrimination. Thus, giving Consumers/Subscribers a choice to make an informed decision while ensuring that the Regulator ensures it maintains the basic principles of transparency, accountability, competition etc. as mentioned above.

Query III: **Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?**

Response III: Permit zero-rated plans on a trial basis as described above.

Question IV: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response IV: Please consider for first time internet users Zero-rated applications that specifically provide access to information, news, education, health and other basic services may be an essential guide. While a free and open Internet is what we would like to have eventually, but baby

¹ Please see the Directions issued by TRAI since the original Telecom Tariff Orders,1999
http://www.trai.gov.in/content/VerReg/97_0_2.aspx

steps towards progress will prevent misuse and help realise the power and potential of the Internet. Most Net Neutrality proponents believe zero-rated plans limit exposure, while this is absolutely true, but it is not reason enough to stop such plans even before testing it. Suggestions as Cash-Backs and Coupons are feasible options. Also, the suggestions for providing free 250 MB -350 MB of free 2G or 3G data are a very good. However, in light of the above, if we take a step back to analyse how much sense would it make to a first time internet user who works as a farmer by the day to get free access to limited data? What would he do, he is not a man who knows Google/Firefox/the internet explorer.

Disclaimer: The opinions expressed in the Opinion above are the personal opinions of the author.

2.4.7 Kumar Saurabh

To: Telecom Regulatory Authority of India (TRAI)

Subject: Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. Differential pricing programs – in particular, zero rating programs like Free Basics – are an essential tool for bringing more unconnected people online across India and should not be banned.

Free Basics provides free access to essential Internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all people, developers and mobile operators.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Below are specific responses to the questions posed by the TRAI in the Consultation Paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

It is not clear that the Free Basics program should be considered as differential pricing, but even if it is, Free Basics should be allowed under any regulatory framework adopted by TRAI.

Free Basics is an essential tool for bringing more people online and expanding connectivity across India. Moreover, the structure of Free Basics is pro-consumer and pro-competition:

- Free Basics is non-exclusive. It is available to all operators on the same terms and conditions.
- Free Basics is an open and non-discriminatory platform. Any content owner can participate as long as it meets the same technical criteria, which are openly published.
- Free Basics is free to both users and content owners. No one is charged for accessing the content on Free Basics. No content owner is charged for participating in the platform.
- Free Basics is transparent. All of the technical standards are published and available online.
- Facebook does not pay carriers to exempt its content from usage limits.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

TRAI should consider whether a program helps to expand connectivity and whether the program is free to both users and content providers, non-exclusive for operators, open to all content providers under objective standards, and transparent about its terms and practices. Free Basics meets all of these criteria.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.

There are various models that could be used to provide free Internet access to consumers. However, Free Basics is the kind of program that should be allowed under any regulatory framework. Free Basics brings more people online faster and provides newly connected users with an onramp to the full Internet. Facebook has shown that when a carrier launches Free Basics, new users are brought onto the carrier's mobile network at an average rate that is 50% faster than before the launch of Free Basics. Free Basics also provides an effective onramp for users to quickly begin accessing the broader Internet. On average, in countries where Free Basics has launched, more than 50% of users who come online through Free Basics choose to pay for data and access the full Internet within 30 days.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TRAI's public consultation on these issues is rightly guided by the goal of connecting the unconnected across India. Despite significant progress, 80% of India's population – 1 billion people – still are not connected. TRAI must therefore ensure that any regulatory intervention does not end up depriving people of the opportunity to come online. Instead, TRAI needs to create a regulatory environment where access-expanding programs can flourish.

2.4.8 Sagar Peswani

Dear sir,

This is a response to [Consultation Paper No. 8/2015](#). The said paper is attached for reference.

Please **do not publish the email address this comment was sent from**. Publish the comment without any of the personal contact information that this email comes with.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response: TSPs must not be allowed to have different websites, applications(apps) or platforms. This is to ensure an equal competing grounds for start-ups. The start-ups already face stiff competition from well-established organisations and corporates. If differential pricing for data usage is employed, resource-rich corporates will pay up the cash enough to kill any small timers or individual who dared to even test those waters. More importantly, this consultation goes, very directly, against the principle of **net neutrality**. As seen from uproar over the year, net neutrality is not something to toy with. The TSPs can profit very well even by adopting net neutrality. Data usage of the country is at all time high and is steadily increasing. As more locations become accessible by cellular towers, more people take their first steps into the Internet. As they increase their data usage, they upgrade their plans by asking for better speed (3G/4G LTE) or more data, or both. The financial graph only seems to rise. In short, the answer is no, any scheme implying or hinting towards data price differentiation must not be executed.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response: Not applicable, since the above response to Question 1 categorically recommends against any form of data price differentiation.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also,

describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response: Yes. As suggested in the response to Question 1, people who take their steps into the world of Internet, always seem to fall short on speed or data and so purchase a better plan to suit their needs. Furthermore, to lure people who only use their cellular phones for voice and text messaging services, 100-200 MB of 2G data can be given complimentary. This will open their world and when they reach their data limit repeatedly or are not satisfied with their speed, they will be encouraged to upgrade their data plan to 3G/ 4G or more data or both.

Potential benefits are very high, depending on the extent to which it is followed. Consumer base in India is only increasing. With popularization of dual sim smartphones, people now have two connections activated at all times. The main disadvantage is higher load on the network with increase in 2G data. But with the consumer base rise and revenue generated, the disadvantage will be easily overcome and be of little concern.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response: It may not be emphasized enough that differential pricing for data services is against net neutrality, and it does not occupy as much of the content of discussions on net neutrality as other discriminatory practices. Net neutrality's importance has been repeatedly emphasized over the last year in India, and as such needs to be protected and nurtured.

Thank you,
Sagar Peswani

2.4.9 Manjunath Jayakrishnan Nair

Response to
TRAI Consultation Paper On

Differential Pricing for Data Services

Authors

D. Manjunath and Jayakrishnan Nair,
Department of Electrical Engineering,
IIT Bombay

30 December 2015

Background

We have been researching the effect of discriminatory pricing of data services by telecom service providers (TSPs) on the market structure. We have applied state-of-the-art network-economic models toward this and our response is based on the findings from our research.

There are two commonly proposed models for discriminatory pricing by TSPs.

Model 1: A TSP provides access to certain services for free by entering into agreements with the content providers. This usually involves payments to the TSP by the content provider.

This model endows the TSP considerable with considerable power to 'shape' the market among the content providers. This is illustrated by the following hypothetical example with two comparable and competing content providers and one TSP. If the TSP is to enter into an agreement to zero-rate one of the two providers, that would naturally skew user traffic in favour of this chosen provider. This in turn would either inhibit the content provider that was not chosen, or force it to enter into a similar arrangement with the same or another TSP. Our detailed analysis of a significantly more realistic model confirms that such a situation will indeed arise. We emphasise that the TSP can force a skewed marketplace if it finds it more profitable.

Now consider the case when the TSP is also a primary or a secondary content provider. We define a secondary content provider as an entity that provides content distribution services, or hosting/caching services, or a combination of these. In this case the anti-competitive practices that are possible are even more obvious. For example, if the TSP launches a music-streaming service and zero-rates it (or subsidises it, or provides a low-delay access), it can effectively kill the usage of any competing services in its subscriber base. Our research indicates that this power is substantial and even small changes in the commercial agreements with different content providers can help a TSP use its power.

Clearly, allowing discriminatory pricing actually *encourages* such behaviour by TSPs.

Model 2: A corporation, say F, sets up a platform that is zero-rated, that TSPs as well as content providers can join.

This model seeks to provide free access to a subset of the Internet. There are several issues that arise.

1. The first issue here is that the subset of the Internet that should be free is decided by F. The conflict of interest is clear here when F itself is a major content service provider on the Internet. Even if the platform is advertised as open, as a profit-seeking organisation that is answerable to its shareholders, we should only expect that F's primary motive is to boost its own user base.
2. A second issue is the technology that will be used in such a platform. The simplest way to provide such a platform would be to set up the equivalent of a proxy server and tunnel Internet access through this proxy server. In fact this is the design of one widely publicised platform. The security and privacy implications of this model with this technology are obvious. What is not so obvious is that if F is also a content service provider, then other such content service providers will be dis-incentivised from joining this platform because F now gets access to their analytics and user data. Thus the view of the Internet seen by the subscribers to this service will be that corresponding to services not competing with F.

We close this background with the following remark. The common argument for zero-rating services is that they enable internet access to the poor and the underprivileged. At first glance this may indeed seem to be the case but a slightly deeper analysis reveals the following aspect. The primary objective of any corporation is to make profit, and not to perform a public service. This means the following.

1. Under Model 1, note that we should not expect any public service. The content service providers that would be willing to pay the TSPs to zero-rate their services are those that offer *paid* services, like e-commerce services, transport services, and so on. These services are not targeted to the poor; indeed, they are targeted to a population that is capable of compensating the providers's expenses of sponsoring the service in the first place.

- Under Model 1, there will be no ‘service’ to the poor and underprivileged who will get free access to a part of the Internet. However, it will be at a significant cost in terms of security and privacy. Furthermore, the content accessible under this model will be ‘curated’ to meet the medium-term and long-term commercial interests of the platform operator.
- Under Model 2, there will be some ‘service’ to the poor and underprivileged who will get free access to a part of the Internet. However, it will be at a significant cost in terms of security and privacy. Furthermore, the content accessible under this model will be ‘curated’ to meet the medium-term and long-term commercial interests of the platform operator.

Thus the summary of our findings is that allowing discriminatory pricing for data services encourages corporations to come up with innovative anti-competitive models that work to their advantage and shortchange the end users and/or their competitors.

Based on the above background, we now provide pointed answers to the four questions in this consultation paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response 1: From the discussion in the background that we present above, the answer is an **unequivocal no**. The TSP should not be endowed with the power to shape the content provider market. Nor should a “zero-rating-platform provider” be allowed to dictate the view of the Internet that the users see and use.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry_and innovation are addressed?

Response 2: The only acceptable discriminatory pricing model that is also technologically feasible, is one where the TSP provides different grades of

service in terms of speed and volume and the user chooses the grade. Under a given grade, there should be no discrimination with across services; which services to use and how much should be the prerogative of the end user. The grade and quality of service to the end user should not be determined by agreements between the TSP and content providers.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response 3: We suggest the following options.

1. An advertisement supported browsing model where the users agree to have a permanent "banner" that displays advertisements that will be supplied by the TSP. This of course means that the TSP should be able to attract sufficient advertisers to this service. Of course, users are free to browse *any* content on the internet under this model.
2. A public service that specifies a format for the webpages much like the "m.*" format that is currently being followed for mobile friendly webpages. Let us denote such a format by "s.*." Web-pages that comply with this format would have to be suitably 'light', and these pages would be available for free. In fact, we believe that such an s.* format can be derived rather easily from the m.* formatted webpages. As an alternate to the content provider providing its webpages in this format, a caching or a middleware service could be developed to convert m.* webpages to corresponding s.* webpages and this should be part of the public option.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response 4: The key to harnessing the power of the Internet is the content and the OTT services. For such a harnessing to be possible, it is imperative that economics and the legal aspects be very very carefully analysed. Our research is aimed at addressing some aspects of this question and it is necessary that TRAI institute a proper study of all aspects of the possible relationships between TSPs and content providers. Specifically, we believe that the following suggestions be analysed.

1. The TSPs should have no role in determining the 'winners' among competing content providers. In the absence of proper regulation, the power that the TSPs have over the content providers is significant and decisive.
2. Agreements between TSPs and content providers be open and be available for public scrutiny. This will ensure that they not make any discrimination among content providers.
3. There should be a law that disallows TSPs to provide any content related service.

2.4.10 S Ramakrishnan

Comments on TRAI Consultation paper on differential pricing for data services

Q1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

The answer is a clear ‘no’. If one were to look at the history, origin and evolution of internet, it differentiated itself from telephone networks and telephony is a number of ways:

- First is the flat, non-discriminating, egalitarian design of the network with only DNS or name servers having a hierarchy; this helped viral growth based on enterprise and innovation. Yet, there was no vendor lock-in. Otherwise, all end systems (servers and clients) were connected to each other in a random maze of routers and switches with the routing and switching of IP packets handled only by considerations of efficiency, low latency, robustness and resilience, quality of service and the like. Every aspect of the relevant technical detail was documented in terms of concepts and protocols made open in RFCs (Request for Comment) which were prepared on an open basis. Small and large companies, developers and users of all hues and colours and from all nationalities could contribute and decisions were driven by consensus, technical merit and demonstration of feasibility through codes. Vendor lock-in issues were clearly avoided in the process without any roadblock to innovation. That’s how internet has grown so fast, so well and has become the life blood of every sphere of life – economic and social and for all users all over the world.
- It is pertinent to remember that internet came against in the backdrop of opposing telephony operators, even in USA. Progress took place despite their resistance because their monopoly was broken by courts (for instance, Judge Green verdict in Ma Bell divestiture case in USA) and packet switching made data communication and data networks far more affordable and robust through the progress of internet. In India too, people know how much the telecom service provider resisted the offering of internet in the early days. So, incumbent players resisting new technologies, services and new players by building road blocks and other clever mechanisms has not been uncommon all over the world, as the regulated telephony faced the deregulated and vibrant internet world. It is only the alert governments, regulatory agencies and courts that have often protected the interests of new technology/industry creators to the advantage of users or consumers – not incumbents.
- In the current instance, the players who are offering or talking of offering free or subsidized internet bundled with their chosen set of contents/ applications providers are becoming arbitrators of use behaviors – which amounts to blatant hoodwinking of innocent or robbing aware consumers of fair competition, innovation and choice. Such providers claim to increase internet penetration, especially among those ‘who can’t afford internet’ or ‘are not aware of the benefit of internet’ and claim that once such users begin to use the ‘opium’ of such a bundled and free internet, they will see the benefit and switch over to paid and *‘level playing field oriented paid internet’*. Such a claim exposes the real truth behind the intentions of such offerings. It’s clearly a model where they know a sizeable percentage will stay back to free

internet and based on survey, the provider can discriminate and bargain with other providers of their choice from a position of strength to include them in the bundle.

- In short, free or discriminatory pricing is a non-transparent mechanism operated by a private provider to gate-keep (license) using his deep pockets – ostensibly in the name of increasing the penetration of internet (among those who cannot afford it).
- Regulatory agency, TRAI, should reject the idea with the contempt it deserves. This is not an innovation, but one that will destroy the level playing field and block other entrants. It is a clever business ploy that should be seen through for what it is.
- Universal internet is not the responsibility of one private player. Those are the responsibilities and opportunities of governments and technology & innovation driven competitive market place where rules are set by government and regulatory agencies to uphold level playing field, competition, innovation and consumer interests. These are very well captured in this TRAI consultation paper and hence I reaffirm that the answer to this question is a big no.

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Measures to be adopted include:

- Each such case must be put to test as to the basis of such differential pricing
- Deep pocket based inclusion or exclusion of content or applications by a private market player must be rejected forthwith. Only those offered by a provider with level playing field based inclusion of various contents/applications providers, the terms of which are made open and verifiable can be considered.
- Carriage and content must be delinked and each offered on an open, competitive and level playing field basis. In the current instance, TSPs and ISPs are to be seen as carriage providers and other content and application providers fall in the second category. The former cannot decide to discriminate from among the latter, while the former can always offer a free or differentiated service to the user as long as that is applicable to all the content or service providers and the terms of such an offering are open.

Q3: Are there alternate methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also describe the potential benefits and disadvantages associated with such methods/technologies/business models.

As mentioned above, carriage providers can all or through a consortium or under the coordination of government contribute to increase of internet penetration in the form of free or subsidized rate internet as a promotional scheme, but without bias to any content or application providers. Second approach could be for DOT to initiate a scheme of Universal Service Obligation fund dedicated to internet and use it to subsidize any TSP/ISP who is ready to offer internet services on a non-discriminatory basis to

targeted groups as in respect of population below a certain income levels or those in rural areas serviced by NOFN or women or mobile users for a certain period etc. As in respect of Jan Dhan Yojana, such initiatives will have the power of triggering a virtuous cycle of demand. Targeted segment of users can, for instance, be extended certain amount of prepaid charge data services free – say Rs.50 to 100 per month arrived at on the basis of reverse auction.

USO or suitable government or multi-stakeholder agency can drive such a drive so that acceleration can take place in internet penetration in general and mobile internet penetration in particular. Applications and contents providers thereof will be part of the fair ecosystem that gets created and help accelerated growth without harmful market distortions, as is being attempted by some players at present.

Q4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The current impasse has arisen partly as a result of too much of reliance on laissez faire approach to internet penetration and lack of appreciation of internet value by government itself. For instance, USO has been focusing only on telephony, not internet. Government had fallen short of proactive measures to accelerated growth of internet (see the contrast with S.Korea), except through initiatives such as NOFN. So, this exercise must be converted into proactive and creative engagement with all stakeholders including government, citizens and market players, including contents/applications providers and TSPs/ISPs to see how internet penetration can be accelerated with the efforts of all. For instance, it might be worthwhile targeting for ‘internet for all’ (full internet penetration) by 2020/2022 and working backward to build synergies among the efforts of all players with intermediate milestones, reviews and course correction based on assessment.

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2.4.11 Narender Gupta

RESPONSE TO TRAI PAPER

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platform

ANSWER1.

The answer is yes. The following Logic will explain in details:

Under the Act TRAI is mandated to protect the interest of consumers as well as of operators. TRAI has no obligation, rights towards the non licensed telecom entities. Therefore the issue of discrimination need to be seen from the point of view of customer classification and not platform operators classification .

This essentially means that the question should be whether a TSP can come out with a plan which offers differential tariff to customers for accessing the same platform?

Discrimination need to be seen from the point of view of customer classification and not platform classification. This is clear from TRAI's own explanation on NON DISCRIMINATION which describes this as under:

"Non discrimination" as defined in Clause 2(k) of the TTO is that service provider shall not, in the matter of application of tariffs, **discriminate between subscribers of the same class and such classification of subscriber shall not be arbitrary.**

From the above there are two ingredients which need to be satisfied :

1. Subscribers should be of the same class
2. Classification should not be arbitrary

Now let us see it in the light of the question raised by TRAI. In the situation mentioned in the question neither the operator is making any discrimination with reference to subscriber of same class nor the classification is arbitrary. The only classification is with regard to portal and not with regard to customer. Therefore, I see no need for TRAI to intervene in any manner in the matter of tariffing in such situations.

Let us now examine para 14 of consultation paper which tries to create a case for intervention on the grounds given below.

TRAI Quote

14. On the other hand, several negative effects might ensue. Differential tariffs results in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). This may potentially go against the principle of non-discriminatory tariff....

Answer

TRAI's explanation is fallacious. The question we need to ask is whether all customers wanting to access participating content will be paying the same tariff or not? So long as the answer to this is yes the question of discrimination does not arise .The same will be true for non participating content.

TRAI QUOTE

.....Secondly, differential tariffs arguably disadvantage small content providers who may not be able to participate in such schemes. Such providers may have difficulty in attracting users, if there exist substitutes for free. This may thus, create entry barriers and non-level playing field for these players stifling innovation. Therefore, the tariff offerings have to be studied from the perspective of whether it promotes or harms competition.

ANSWER

This is what exactly I mentioned earlier that TRAI here is trying to fight the case of discrimination between content providers as a class

First ,while these content providers are neither in the scope of telecom laws and nor covered under the TRAI mandate .

Second it is not the regulators job to provide protection to non licences content provider. It is not the entry cost that decide the decision of a customer to visit a specific platform ,but ITVIS the compelling content that forces a customer to take that decision. Tomorrow can it be TRAI's case to suggest free access to a particular platform which has introduced some innovation but not to big as other platform operators in the same domain are and therefore need to be allowed free access to ensure level playing field ?

THEREFORE ,it is clear that by taking shelter under the term "DISCRIMINATION" TRAI is trying to examine the issue of discrimination amongst content providers under the excuse of customers while no discrimination exists in classification of subscribers.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

ANSWER2.

TRAI has rightly identified the area where it needs to ensure non-discriminatory and fair treatment for both of its stakeholders i.e. Customers and operators. These areas are highlighted in the consultation paper itself:

TRAI checks their consistency with various regulatory principles/guidelines, which include the following:

- **Non-Discriminatory**

By ensuring that there is no discrimination allowed between the customers of same class and not to confuse it with different platforms

- **Transparency**

Make sure that the TRAI guidelines on information sharing and publication are fully complied with.

- **Not Anti-competitive**

Anti competitiveness should be ensured with regard to same class of customers and inter-se between operators. TRAI is neither mandated nor required to go into the anticompetitive issue inter-se different platform services which are not in the domain of telecom licensing. . However, in case there is an intention to ensure that anti competitive activities between various platforms are to be regulated then these services should be brought in the scope of telecom licensing . Alternatively let those be looked after by the Competition Commission of India

- **Non-Predator**

- **Non-Ambiguous**

- **Not Misleading**

These are important issues and the current regulations on tariff, consumer protection have enough safeguards to ensure compliance of these requirements. In case a need is felt to strengthen it further the same should be done after following due process of consultation

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models

ANSWER

The telecom service providers have set up the telecom networks by investing huge sums of money and on top of that have paid huge sums for acquiring spectrum in auction. Therefore these operators cannot be expected to be providing free access to Internet. However in order to bring down the cost of access Govt can give certain concessions to the operators such as no licence fee on revenue arising from data services, concession is spectrum charge, waiver of USO levy etc. The cost reduction that accrues to the operators as a result of such concessions can be passed on to subscribers.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services

Answer

There are several issues which need to be addressed. Some of them are :

1. TRAI should come out with detailed guidelines on net neutrality as is being debated all across the world. However, net neutrality should not be used as via media to allow the un-licensed operators to provide telecom services.
2. Govt should ensure that non discriminatory classification of subscribers is ensured but not to worry and get involved in intra content providers issues.
3. Adopt a light touch approach towards tariffing and allow the market forces to decide tariff and conditions of providing service. It will be wrong to regulate the retail tariffs when the resources for providing services are being allocated through market mechanism. Therefore market mechanism should be allowed for retail tariffing as well
4. Strictly regulate and enforce its founding principles enunciated in the consultation paper to ensure that the practices followed by operators are:
 - Non-Discriminatory
 - Non Transparency
 - Not Anti-competitive
 - Non-Predatory
 - Non-Ambiguous
 - Not Misleading

2.4.12 George Mattathil

January 06, 2016

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To

Telecom Authority of India
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Jawaharlal Nehru Marg
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New Delhi - 110 002

TO WHOM IT MAY CONCERN

Subject: Consultation Process on Differential Pricing for Data Services.

Here are my answers to the questions on Differential Pricing for Data Services.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platform?

Breakthrough enabling internet capabilities are rich-media communication and mass-interactions (for example, social media), bypassing distance and time limitations. These capabilities must be made available universally, to maximize the economic benefits of the new medium in business, commerce, education, healthcare, culture, politics and governance. Differential pricing to limit access to internet capabilities will inherently create inequalities with cascading side effects.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for access to the internet medium must not be permitted. Internet access should be treated as a "common carrier" public utility. Differential pricing may apply for specific software applications, or service levels -- but not to internet content.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumer? If yes, please suggest/describe these methods/technologies/business models. Also describe the potential benefits and disadvantages associated with such methods/technologies/ business models?

Access to internet is primarily a technology issue. Current market confusion is due to attempts to

bypass technology constraints through non-technology means. Providing "free" internet" is a economic/social policy issue. Therefore, must be achieved through economic/financial methods (subsidies.) Trying to achieve social goals through technology constraints is futile.

There is a mismatch between currently promoted internet architecture and optimum network architecture to maximize economic benefits. Please see more information in the attached document, "Network Reference Model."

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

There is a market gap in the products currently available for effective and efficient internet access. Steps need to be taken to facilitate commercial availability of products that take maximum advantage of available technologies for access networks because internet access is an intrinsic bottleneck.

Additional details available upon request.

Supplementary information

Here are links to articles written when the "Net Neutrality" controversy/debate was raging in the USA.

(1) [Net neutrality: issues and solution](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/01/19/net-neutrality-issues-and-solution/>

(2) [Recommendations to the FCC for the path forward](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/05/05/recommendations-to-the-fcc-for-the-path-forward/>

(3) [An Internet Transit Map](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/05/16/an-internet-transit-map/>

(4) [Internet “Fast lane” and “Slow lane”](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/05/23/internet-fast-and-slow-lanes/>

(5) [Tragedy of Internet Commons](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/06/16/tragedy-of-internet-commons/>

(6) [Financialization in telecom](#)

<http://blogs.strategygroup.net/wp2/viewpoint/2014/09/15/financialization-in-telecom/>

Additional information available upon request.

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* * *

Network Reference Model

The network industry is stagnating -- after the collapse of the *Internet Bubble* and the *Telecom Meltdown*. Getting over this stagnation requires a new direction, a new approach to solving network problems.

Based on historical reasons that were valid in the 1980s, the industry has been using packet-centric models of networks, Fig. 1. These models assume that the future of networks consists of a single converged network -- capable of carrying voice, data and video -- over an all packet network.

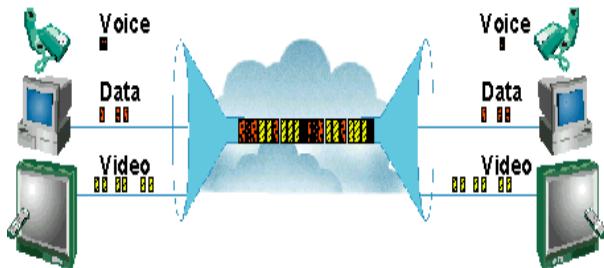


Fig. 1 Current Trend (Source: BellCore)

These models had historical validity in the 1980s, when bandwidth was at a premium. But can no longer serve as the guide for network design, if the infrastructure and technology capabilities developed in the 1990s and since are to be utilized fully.

There are several problems with packet-centric models. The first problem is that major parts of the current infrastructure does not fit neatly into packet-centric models, and will have to be replaced if the models are to be successfully adopted. The second difficulty is the technical challenges involved in the large-scale deployment of real-time voice and video traffic using packet systems, also known as the QoS (Quality of Service) problem. Another limitation of packet-centric models is they restrict deployment and product design choices to only one of the two switching technologies available, namely packet switching.

An alternate top-level view of networks can be helpful in taking different technical approaches for solving network systems design problems. One such model is the Transfer Network Architecture (TNA)TM, Fig. 2.

The TNA model is created by superimposing an architecture framework to the existing network infrastructure; consisting of the Internet, Signaling System 7 (SS7) network, data circuits of the PSTN (Public Switched Telephone Network), and other networks. This super architecture is made possible with the introduction of a new network, the Access Network -- for access and transport functions between customer premise systems and the backbone network systems.

The TNA is a conceptual model that helps to make macro level decisions about network systems, and a framework for an evolutionary upgrading of the existing infrastructure. The key advantage of the TNA model is that it represents the current state of networks closely (compared to the packet-centric ideal, Fig. 1), and thus has more practical value for using in the design and deployment of next generation systems. Underlying the new model is the assumption that a revolutionary approach of replacing all existing systems with new systems is not viable, due to the

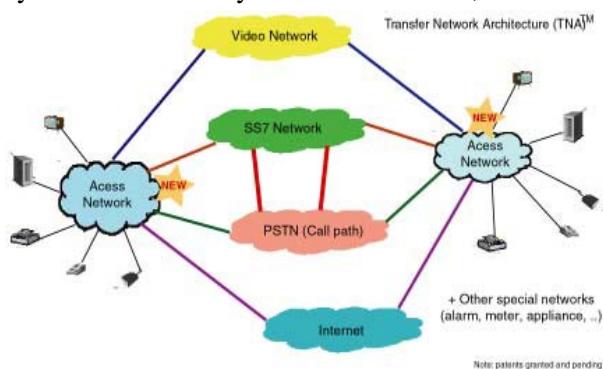


Fig. 2 Transfer Network Architecture (TNA)

costs and operational constraints. The TNA model, in contrast, provides an evolutionary approach that can coexist with current systems, and provides for gradual migration to superior solutions, constructed with best-of-breed heterogeneous systems. The TNA model permits the use of both packet and circuit switching technologies for designing and deploying network systems, and allows for interconnecting different networks using all possible combinations of network technologies.

2.4.13 Mahesh Uppal

Comments on Telecom Regulatory Authority of India (TRAI) “Consultative Document on Differential Pricing for Data Services” dated 9 December 2015

Mahesh Uppal

It is entirely right that TRAI should explore differential pricing and to ensure that is not used to hurt consumer interest or fair competition in the telecom and internet market. However, there are serious problems with the content of this document and the process being employed in this consultation. I am quoting below from my piece entitled “Fudging Net Neutrality” published in the Financial Express on 28 December 2015 to argue that TRAI’s approach to differential pricing, as evidenced in this document, fudges key issues.

“TRAI’s current approach is a fudge because it deals piecemeal with a part of the net neutrality debate - about which another consultation is already underway - and without reference to the ongoing process or explanation as to why a new consultation was necessary.

The TRAI has an ongoing consultation on a related subject which started in March 2015. In this, it sought views on whether telecom operators - India’s main Internet Service Providers (ISPs) - can charge differential rates for OTT (over-the-top) internet services. It was largely focused on services such as Skype and WhatsApp which offer telephony and messaging, using the internet. The document generated a heated debate and attracted over a million responses, both for and against. The TRAI has yet to complete this consultative process and make recommendations to the government.

TRAI’s new consultation seeks views on whether telecom operators must be allowed to provide subsidized or free access to some websites or services. a practice called zero rating in the context of net neutrality regulation.

Most regulators and activists would see a connection between the two consultations. Both relate to whether an ISP should be allowed to charge a differential price –whether a premium price or zero rating - for accessing any web content. Virtually all commentators, media and players, on either side of the net neutrality debate, see the issues as related.

Surprisingly, TRAI seemed to see it much the same way in the earlier document which mentioned net neutrality and differential pricing explicitly in several places. In fact, a specific question was: “Is there a justification for allowing differential pricing for data access and OTT communication services?” This is not much different from first of the four questions in the new consultation. It asks: “Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?” TRAI has not shared any reasons, rationale or urgency for a new consultation.

TRAI's new document conspicuously avoids familiar terminology including net neutrality, paid prioritization or zero rating. Again, without explanation. Chairperson RS Sharma was reported by NDTV as saying the issue "may be a part of net neutrality, but the current exercise refers to "a specific problem which has come to the notice of TRAI" (sic). He is presumably referring to the part of the consultative document which says, "some plans [that] have come to notice of TRAI which amount to differential tariff plans of the TSPs who offer zero or discounted tariffs of certain websites/applications/platforms" (sic).

The new document is largely devoid of any relevant data. With barely 21 short paragraphs with 4 questions, it is brief, (interestingly, like the previous consultative document on call drops). TRAI's consultative documents, barring rare exceptions, have traditionally contained significant background information and relevant market data, besides international experience. The current document, on the other hand, lacks even the data that would be expected from TRAI for analyzing the issues on hand. After all, companies are mandated to file all their tariffs with the TRAI. However, there is no information about the number of companies who offer zero rated services, or of tariffs filed, or otherwise reported from the market, to gauge the nature and size of the challenge.

The TRAI document makes several references to discriminatory tariffs and competition. However, there is little analysis - or guidance provided to stakeholders - of the nature and intensity of competition in the telecom market in India. For instance, in a market with 6-10 major players in each service area, can any player perform the kind of *gate keeping* function, that the document suggests?

Absence of quality information and data is a serious handicap in a consultation about a complex and contentious issue like net neutrality. It prevents a proportional response suited to India's specific environment. For instance, India is unique in three important respects: First, that network bandwidth is a serious handicap in India since the network is predominantly wireless. Second, over 80% of its population have no access to the internet. Third, the very high level of competition between mobile operators. This is unlike almost all countries actively engaged with the issue.

Few countries see the zero rating in binary yes/no terms. Over 90% of countries have no rules in place for zero rating. There is significant difference between the dozen odd countries that do have some rules in place to deal with net neutrality or zero rating. The US, for example, has a net neutrality legislation in place but does not ban zero rating outright. It will treat each type of zero rating on a case by case basis. In the circumstances, it is odd that India is undertaking a separate consultation, almost entirely focused on zero rating and yet with virtually no discussion of its own many facets. This is worrying and defies comprehension."

Answers to question posed in the TRAI consultation paper

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Yes, it is important that players can be innovative and flexible in offering internet access. It is particularly useful in a market where affordability and awareness of internet access is low.

Allowing users to ‘sample’ some internet content can help low income users whose decision to access the internet might depend on perceived utility. Price discrimination should be allowed- even encouraged- as a legitimate way to expand internet access.

However, not all differential pricing is pro-consumer. It can hurt consumers if it is applied to distort competitive markets. For instance, zero rating popular video content of any specific player in an intensely competitive market can have hurt consumers.

In general, it is a good idea to allow zero rating of services which do not disproportionately hog scarce bandwidth – i.e. those where there is little incentive to abuse free access or to explore content beyond the free offering. This include life-saving utilities, educational or health material, governance etc. It would be counterproductive to bar an operator who zero rates access such services.

Therefore, regulatory oversight is necessary. It is important to ensure that tariffs are transparent and do not unfairly discriminate against any licensed operator, user or group of users.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

The following measures will go a long way to ensure the above objectives:

1. Allow flexibility to telecom players in fixing internet tariffs under clearly defined regulatory guidelines.
2. Encourage innovation by operators to reduce cost or add value to internet access.
3. Ensure that operators make all web content conveniently available to all subscribers irrespective of whether they subscribe to price differentiation plans.
4. Ensure that no content is available only through a particular price differentiation plan.
5. Regulate by exception. Act if and only if, there is evidence of tangible harm caused by any zero rating practice.
6. Follow principles of competition economics while evaluating potential harm through differential pricing.
7. Bar differential pricing for any websites which account for say, more than 1% of bandwidth.

8. Bar any operator from offering a tariff that unfairly discriminates between any user or group of users.
9. Make it obligatory for every operator to share complete details of all tariff plans in format prescribed by the regulator.
10. Ensure that any user is able to change his/her subscription to any tariff conveniently and cheaply.
11. Define principles of fair competition to be applicable to telecom operators as well as content providers.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

The issue is not whether other methods exist or not. In an environment of permission-less innovation, operators and content players must be free to explore any method/technology/business model for internet access. The proviso is that any such initiative should not distort current or future competition in the market place.

Operators must be free to use any of the several alternatives. These include, but are not limited to

- free or cheap data for a fixed period,
- free or cheap data for specific set of websites, or using certain technologies or business plans

It has been frequently argued that free data packs, which do not limit access to a specific set of websites or services, are a superior solution encouraging users to explore the wider internet. This may not always be true. Instead of encouraging a user to explore the web, such free packs might, in fact, be welcome subsidy to access just one type of content e.g. popular videos. (This is for example, a major concern when deploying public Wi-Fi.)

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

- The TRAI has shared no evidence of tangible harm to consumers or markets as a consequence of differential pricing. Acting without such evidence is unjustified and risky.
- A blanket bar on differential pricing is illogical. It is not necessarily pro-consumer.
- The goal of permission-less innovation on the internet is compromised if it excludes permission-less innovation in the access segment.
- Differential pricing can be an important way to bring low income users to the internet.
- Expanding access to internet will require tremendous innovation at every level.

2.4.14 Dharmendra Misra

PoV on Differential Data Pricing

Dharmendra Misra

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1 Executive Summary

This document is a Point of View on Differential Data Pricing in India in response to request for views on consultation paper on Differential Pricing for Data Services dated Dec 9, 2015

The PoV is an attempt to understand the need for various data pricing structures to make decision making more informed and enrich guidelines for policy making.

2 Context and Relevance

Growth in mobile broadband is attracting new market players and new business models. Most of these models are disruptive in nature and may have significant impact in overall data services eco-system. Therefore it is essential to have clear approach towards such business cases to provide an environment for consumer protection while retaining healthy competition in market and supporting proliferation of the innovative business models in data oriented futuristic growth models.

Any approach accepted needs to consider

- 1- Opportunity for under privileged population to access services of choice (not only imposed services)
- 2- Opportunity for small and emerging players to have a level playing field
- 3- Opportunity for service providers to have sustained and growth oriented business
- 4- Opportunity for consumers to make decisions about service consumption
- 5- Opportunity for legal framework to safeguard interests of consumer

3 Response to Questions

Following response may be considered for the questions listed in consultation paper.

3.1 Question 1

Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

3.1.1 Response

TSPs need to work along with OTT players and content providers. Therefore TSPs need an attractive business model to compete and business model can be based on collaboration. Therefore it may be suggested that TSPs should have opportunity to decide their own business model based on any collaboration format that they may wish to use.

But there is need for a check and balance to protect interest of new entrants in content as well as Data service area. There is also need for some checks to make sure that consumers are not adversely affected.

Therefore it may be recommended that TSPs should have some obligations towards non-preferred data services and TSPs should also make sure that they can differential price certain content to reduce the price but they cannot differentially price any content to increase consumption price.

To elaborate further. It may be suggested that TSPs need to have a common price plan for all other services and differential price plan at reduced rate for services of choice of TSP but total usage of data in the network of TSP for common price plan cannot be less than 75% (an example) of total data usage on the network of TSP. It may also be said that any differential pricing cannot be less than 20% (an example) to common price plan. There may be some other method to put checks and balance.

Such kind of approach will force TSPs to allow traffic from non-preferred services to flow into the network at reasonable rate.

3.2 Question 2

If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

3.2.1 Response

There is need to have some obligation of service support towards non-discrimination services. As mentioned in response above, service providers may be forced to make sure that their total data usage of discrimination driven traffic cannot more than a fixed amount of data usage in network. Without some strong compliance measure any discriminatory pricing should not be recommended because it'll directly impact small content players, specially Indian content providers because most of the large content and OTT providers are non-

PoV on Differential Data Pricing Regulations

Indians. Not only OTT players but e-retailers and e-commerce based innovation will also get hampered because any new player who may be even an individual will have to either join any such association or invest heavily to make access to his content free or cheaper.

Therefore a free flow of discriminatory services is bound to adversely affect interest of Indian business and it will also provide gateway to large players to impose their content on Indian society with no opportunity for Indian players to counter and such content flooding.

3.3 Question 3

Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

3.3.1 Response

There may not be any need to rely much on differential tariff plan based business models because the attractiveness of such model is going to substantially reduce with rapid decrease in data tariffs that is expected to happen with proliferation in 4G services and adoption of more access oriented business scenarios.

Moreover India is a very diversified nation therefore service consumption pattern and related intelligence provides goldmine for analytics based business case that non-telecom industries are looking for. Discretionary services may act as a big obstacle in this.

Therefore it is important to look at growth in service penetration and create opportunity for everyone to subscribe the service at much lower rate than solely relying on Differential pricing for internet penetration. There is no free lunch and therefore all differential models are based on some intrinsic business interests that may not always be in interest of India. India has its own work environment and its own problems as well as opportunities. Since prices of broadband are destined to drop rapidly therefore it is short lived idea to promote differential pricing in a big way. Moreover all such services need to use same network bandwidth. It needs to be made sure that quality of service follows net neutrality and provides free treatment in QoS parameters in network.

It is not only pricing that will come under consideration but there is high chance that other services will be provided poor treatment in network and therefore slowly end the competitive content.

3.4 Question 4

Is there any other issue that should be considered in the present consultation on differential pricing for data services?

3.4.1 Response

The consultation should not be restricted to differential pricing but should consider overall service availability and service quality.

PoV on Differential Data Pricing Regulations

Any differential pricing should not affect towards basics of freedom of Internet and it should always follow principles of Net Neutrality.

Any consultation should look at overall interest of the nation and social fabrics because internet access requires some basic qualification and desire unlike pure voice. Consultation paper should focus on Indian social aspects and relevance of services in the interest of all industries.

Consultation must provide opportunity for innovation, freedom to launch new service without baggage of big contracts and support for IT services organizations.

4 Appendix

4.1 Author Details

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Author is communication business consultant providing consulting services to global players in communication domain.

4.2 Disclaimer

The document is personal point of view and approach of author without any financial or non-financial benefits. Neither it reflects any views from any of organizations with whom author has worked or is working.

2.4.15 K S Gopinath

Response to TRAI Consultation Paper No. 8/2015
Differential Pricing for Data Services

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response Q1: No. TSPs should **not be allowed** to have differential pricing for data usage for accessing different websites, applications or platforms.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response Q2: A firm stand should be taken to prohibit any form of **differential pricing in data usage which directly impacts access to specific parts of Internet**. The justification for this stance is the “*thin edge of the wedge*” argument - once differential pricing (including Zero-rating for some content) for data is permitted, the TSPs can exercise the power that they technically have to become active *Gatekeepers* of the Internet. They can hold both the consumers of Internet, and the content providers to ransom – and in the long run lead to the shrinkage of Internet access, and simultaneous increase in cost of access. The content providers will be willing partners to this “ransom”. In a networked age where Power law distribution with increasing concentration is becoming the norm, even a small advantage can make all the difference between success and failure. Thus content providers would be willing to pay a substantial amount to the TSPs to be given preferential treatment in access to their site by consumers, say by getting it Zero-rated. If this option of getting zero rated is kept open to all content providers without any discrimination- then the advantage to any individual content providers is lost, but the cost of content distribution over the Internet would go up. This would adversely affect the dynamism and innovation potential of Internet.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response Q3: Internet is all of the Web as we understand it. Any subset of the Internet – say a few websites, and apps **cannot** be called Internet. The zero-rated plans which allow access to a subset of Internet cannot be construed as a model for providing universal access to Internet. They are best viewed as sponsored content – and hence not at all meeting the “objective” of providing free Internet access.

Enabling a certain basic access of Internet to all is a laudable objective. Digital divide is understood to be a form of social and economic inequality which needs to be tackled by society. However, since provisioning of Internet access consumes economic resources, we need to accept that somebody has to pay for it even if it is not the end consumer. The key decision lies in identifying the party which would pay for Internet access to meet the societal goal of bridging the digital divide.

One possible model of funding universal Internet access to meet the challenge of Digital Divide is through the CSR spending which has been made mandatory by the Companies Act 2013. The Act which applies to large companies meeting certain financial criteria¹ mandates such companies to

¹ Net profit of Rs. 5 crore or more or net worth of Rs. 500 crore or more or a turnover of Rs. 1000 crore or more in any financial year [Section 135(1)]

spend a minimum of 2 per cent of the average net profit made during the three immediately preceding financial years. Government may make funding universal internet access as one of the permissible activities for CSR spending, and include it in Schedule VII of the Companies Act 2013.

All TSPs may then voluntarily contribute their CSR spend towards providing this universal Internet Access.

The universal Internet access may be based on a bare bones data plan to be specified by TRAI, comprising a fixed amount of data access (say 200 MB per month to begin with – this can be periodically revised upwards). This plan can then be made available by all TSPs to their subscribers for free – to the extent of availability of funds. The plan may come with the rider that any person who would like to consume Internet access more than the minimum provided in the plan has to pay for additional access at a rate which also covers the cost of the “free” component.

While it is understood that CSR contribution by the TSPs by themselves would not be able to provide the basic Internet access to all their subscribers, this can be supplemented by the CSR contributions from other corporates. A suitable message can be displayed to the Internet consumer informing him/her that the Internet access has been sponsored by the particular corporate entity/TSP. TSPs may be encouraged to report on the number of subscribers being provided free Internet access through such CSR funding.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response Q4: TRAI may consider porting of Broadband internet access service provider over mobile networks in the same way as porting of mobile numbers ie unbundle Internet access from voice communication service.

2.4.16 Shailesh V Halarnkar

Consultation Paper on Differential Pricing for Data Services

Responses by Shailesh V. Halarnkar (Mobile : 9819796650)

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSPs should not be allowed differential pricing for data usage for accessing different websites, applications or platforms.

The reasons :

1. TSPs will direct subscribers to certain content/websites for which they earn revenue. Subscribers will be charged higher or barred access to those websites which offer cheaper alternatives.

Eg. If an ecommerce website is a preferred partner to the TSP, the subscriber may be barred from accessing competition ecommerce sites or charged for doing so.

2. It will stifle innovation.

If this model comes in use - Whatsapp, Skype, Viber etc (OTT apps) would be barred or charged per call/per message by Telecom Operators. They will force subscribers to use Telecom Network rather than innovative applications.

3. There is no value add from TSP in this case.

4. Someone will bear the cost of free access. It's still unknown incase of freebasics or zero rating platforms.

While such differential pricing is technically possible it will be used by TSP to earn higher revenues by forcing their choices on subscribers. This is not the objective of Internet free access.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Some suggestions here :

1. All free content on the Net should be accessible free of charge.

Example : a) Messengers, Calls and Emails from Whatsapp, Hotmail, Outlook, Gmail,Youtube, etc b) Company internet sites meant for

- public information is free of charge for subscribers. TSP cannot charge for it.
2. All websites of governments (Indian and foreign ,state, local, embassies), search engines and their results, educational institutions, Wikipedia should be free of charge.
 3. Access to commercial sites B2B, B2C websites should be chargeable. They are the ones which consume data.
 4. Data consumed by advertisement on the web cannot be charged to the subscriber.
 5. Data consumed by subscribers in Villages should be free of charge.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

1. Charging methods based on data speeds and data limit based on duration is the best way to achieve objective of internet access to customer. Customer can access any content available for his benefit and for benefit of the society.

This also enable new applications to be generated which help in accelerating downloads, innovations disrupting the traditional means of communications.

2. For free of charge internet access, villages could be considered. Anyone using the internet in the village zone of could be given a free access of upto 100MB per month by the TSP.

Eg. If subscriber uses 110MB in a month, he should be charged for 10MB for that month. It would mean people have real free access for whatever they wish to do.

The TSP infrastructure would be funded by voice calls , higher charges in the towns and cities and rental of devices.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Data growth is beneficial for the Indian economy. It has provided a new revenue stream for mobile operators and fixed operators. Internet access is now available from smart phones to almost every Indian.

It's essential that this data access or Internet access continues to grow in a financially viable manner. Free internet is not necessary except for those in villages. These villages are really cut off from the cities and technology.

Access speeds are pathetic even in a city like Mumbai for both wired and wireless (3G) TSPs. This needs to be improved all over India. Free internet should not mean low dial up like speeds wherein a person waits for forever to download his webpage. Free and paid internet should have a minimum speed of 2Mbps with a guaranteed throughput of 1.5 Mbps or more.

2.4.17 Anoop Singh

5th January 2016

Ms. Vinod Kotwal,
Advisor (F&EA),
Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan,
Jawahar Lal Nehru Marg,
New Delhi – 110002

Sub: Comments on “Consultation Paper on Differential Pricing for Data Services”, 2015 (No. 8/2015)

Dear Ms Kotwal,

This is with reference to the “Consultation Paper on Differential Pricing for Data Services”, issued on 9th Dec. 2015. I have gone through the paper and record some of my personal and comments on the same. Some additional issues are also highlighted in the comments attached. I would be pleased to address any clarification, if required.

Thanking You.

Sincerely Yours

(Dr. Anoop Singh)
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Comments on “Consultation Paper on Differential Pricing for Data Services”

Dr. Anoop Singh
Associate Professor

Department of Industrial and Management Engineering,
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- 1. Discrimination Defeats Competition:** Non-discriminatory access to key infrastructure assets governing entry to the sector remains the virtue of competition in a number of sectors. With these objectives in mind, power transmission and distribution networks, and oil and gas pipelines have been mandated to provide non-discriminatory open access to electricity network, and oil and gas pipeline network respectively. There is no discrimination based on the content / content provider (For e.g. seller/buyer of electricity / gas etc.). Remove this essential feature and we would have fiddled with the competitive fabric in these sector.

Airwaves are critical social assets that have been allocated to private/public telecom service providers by the DOT, and hence access to the same (for example in provision of data services) should not be discriminated. Discriminatory access based on content/content providers would also be detrimental to the spirit of competition that TRAI as a regulator is expected to safeguard.

This spirit has been rightly translated by TRAI in ensuring 'non-discriminatory' interconnection between telecom operators i.e. a telecom operator cannot discriminate between 'content of their own customers' vs the customers of their competitors.

Following examples portray situations that can seriously undermine competition if the sector 'regulator' violates the principle of 'non-discrimination'.

- Airports giving undue preference to a particular airline operator for allocating parking bays, landing and takeoff rights.
- Multi-lane roads giving fast-lane access to only particular car brands, or to selected taxi / bus operators to
- DTH/ cable operates giving better 'bandwidth' to selected TV channels and, hence, leaving poor transmission quality to other channels.

Basics of regulatory principles should not be sidestepped. Let us ensure that there are no barriers to entry through discriminatory access of the web.

- 2. 'Tax' on Innovation:** Provision of 'free access' to limited number of websites/apps would, in effect, impose a 'tax' on innovators giving serious blow to Innovation drive for Digital India and 'Make in India' initiatives of the country. Further, innovation would be

stifled as 'boundaries' of innovation would be fixed by the 'service providers'/ content providers who would benefit from the discrimination.

3. **Consumer Unfriendly:** The proponents of 'free internet' do not guarantee that the web services to which they currently provide 'free access' without advertisements would continue to do so in perpetuity. Providing 'free access' is like teaser loans on home loans that attracts the home buyers with the lure of low EMIs, while the truth of higher EMIs stares at them in the future. TRAI as a regulator should safeguard the interest of the consumers, who may face a similar situation in the telecom sector as well.
4. **Discriminatory 'free internet' access is not an alternative to Universal Service Obligation for data:** The operators/content providers who would like to ensure internet access to large masses should perhaps offer limited data-pack free of charge and allow them to choose sites they wish to visit rather than being fixed by the 'free internet plan'. This would enhance welfare of data users. TRAI/DOT can mandate the licensees deliver, through regulatory / policy instruments, on their obligation to provide Universal Services Obligation (USO) for voice as well as data services. Hence, the 'Free Internet' plan should not be used to project itself as being the proxy to USO in the context of data.
5. **Violation of the Provisions of the Competition Act 2002:** Section 3 of the Competition Act, 2002 specifically prohibits anti-competitive agreements as well as abuse of dominant position

"No enterprise or association of enterprises or person or association of persons shall enter into any agreement in respect of production, supply, distribution, storage, acquisition or control of goods or provision of services, which causes or is likely to cause an appreciable adverse effect on competition within India." (emphasis added)

Proviso 3 to the section states that

"Any agreement provision of services, which

- (a) directly or indirectly determines purchase or sale prices;
- (b) limits or controls production, supply, markets, technical development, investment or provision of services;
- (c) shares the market or source of production or provision of services by way of allocation of geographical area of market, or type of goods or services, or number of customers in the market or any other similar way;"

Proviso 4 to the section further states that (emphasis added)

"(4) Any agreement amongst enterprises or persons at different stages or levels of the production chain in different markets, in respect of production, supply, distribution, storage, sale or price of, or trade in goods or provision of services, including —

- (a) tie-in arrangement;

- (b) **exclusive supply agreement;**
- (c) **exclusive distribution agreement;**
- (d) refusal to deal;
- (e) resale price maintenance,

shall be an agreement in contravention of sub-section (1) if such agreement causes or is likely to cause an appreciable adverse effect on competition in India."

Discriminatory pricing for data services would be against the letter and spirit of the Competition Act 2002. It is clear that 'agreements' that lead to discriminatory pricing of data services would hamper the spirit of competition in the sector.

6. Irreversibility: Over time, stakes of telecom companies as well as those supporting 'differential' data pricing would grow higher that the process would become increasingly irreversible due to interest of the concerned parties. Such high stakes are already visible as interested parties have spent large sums on media blitz.

7. Competition and TRAI: Proviso (a)(iv) to sub-section (1) to Section 11 of the TRAI Act 1997, states that one of the functions of TRAI is to make recommendations on matters related to

"measures to facilitate competition and promote efficiency in the operation of telecommunication services so as to facilitate growth in such services." (emphasis added)

In this context, it is expected that TRAI would safeguard the ethos of competition in the sector. It is also important to note that the above proviso of the TRAI Act 1997 links growth in the sector with competition.

8. Regulatory Principles of TRAI: The "Consultation Paper on Differential Pricing for Data Services" highlights that TRAI checks consistency of tariffs with various regulatory principles/guidelines, which include the following:

- Non-Discriminatory
- Transparency
- Not Anti-competitive
- Non-Predatory
- Non-Ambiguous
- Not Misleading

The proposal on discriminatory data pricing would clearly violate the regulatory principle of being **non-discriminatory, anti-competitive** as well as **predatory** in nature.

9. The proposed Differential Pricing for Data Services goes beyond the "Non-discrimination" as defined in Clause 2(k) of the Telecommunication Tariff Order (TTO), 1999 as it also aims to discriminate based on the 'use of the data' to access a particular

website, web service or app. This kind of discrimination is barred in other sectors as it undermined competition.

Further, the TTO highlights that while applying discrimination in tariff between subscribers of the same class, such classification of subscriber shall not be arbitrary. The proposed discrimination of data services uses arbitrariness in 'classification of subscribers'.

10. Response to the specific questions asked in the Consultation Paper are given below.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer: No. Reasons for the same have been discussed above.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer: Since answer to Question #1 is No, this question does not arise. Differential pricing for data usage would fail on all four counts i.e. nondiscrimination, transparency, competition and market entry, and innovation. The idea of affordable internet access is misleading and is only short-term in nature as there is no assurance of the 'free access' being available later on and without additional advertisements. Even if limited 'free internet' access is made available perpetually, the same would be 'cross-subsidised' by the voice/data services that are paid for by the consumers. This would be detrimental to the interest of the consumers, who would be attracted by the 'freebies' for which they would pay in any case.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer: The 'differential pricing' for data services does not provide solution in terms of making 'services accessible' (both in-terms of basic telecom & data services) to those who can't access it due to missing telecom footprint and unaffordability of services, and unavailability/affordability of a suitable device which can make use of the data services more meaningful.

Let all telecom/data service providers provide a limited quantum of data services made available free of cost/ at very low cost to consumers. This is in line with the 'Lifeline' tariff for electricity available across most of the states in India wherein daily household consumption of about 1 kWh of electricity is provided at a very affordable tariff. This is cross-subsidised by other consumers or subsidised by the state government. In telecom, need for government subsidy may not arise as marginal cost of providing 'minimum basic data services' is close to zero.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer: TRAI should clearly define 'net neutrality' in its pure form so that a similar debate could be guided more productively. Further, TRAI should also spell out its vision and issue regulations to promote competition and protect consumer welfare in the telecom sector.

2.4.18 Aayush Aggarwal

Question 1: Should the TSPs be allowed to have differential pricing for accessing different websites, applications or platforms?

No they should not. TSPs are simply data carriers. There are many reasons to oppose differential pricing:

- There is no differential cost to transmitting data borne by the TSP. Whether the consumer is connecting to another consumer via VOIP, or sending an email, or serving a request to a server to view a web page, the cost is always identical and simply dependent on the amount of data transmitted. Is even true that there is no real cost to transmitting data, but only enabling access, i.e. giving a continuous connection.
- They have no right to inspect the information being transmitted, which is a massive breach of privacy and tantamount to a MITM (man in the middle) attack. For example if I am sharing confidential information with a business associate, a legal representative etc, I would not wish for a 3rd party to read the contents without my knowledge or express permission. Encryption is always an option, but differential pricing can enable TSPs to employ decryption and deep packet inspection tools under the excuse of verifying if consumers are disguising their packets as a “cheaper kind” of data.
- Differential pricing is very anticompetitive because it forces consumers who cannot afford to visit more expensive sites to visit cheaper sites, which can adversely affect small and medium businesses and entrepreneurs while giving underhanded advantages to large businesses as well as TSPs, many of which nowadays are members of large corporate groups or themselves offer non-TSP services such as music streaming, instant messaging etc. Smaller businesses and entrepreneurs will not be able to afford partnerships to reduce costs to their customers, or if they are able to, the charge is still unfair because it is comparable to “double-dipping” - these companies already pay to get themselves online (server hosting, leased lines etc). On the other hand larger companies and conglomerate-TSPs are able to attract even more revenue because they changed the level playing field into an unbalanced home advantage.
- In light of the previous point, it creates confusion for consumers who are forced to make choices between TSPs not based on their quality of service but based on which sites they visit more often or based on affordability which becomes dictated by TSPs and their partners, instead of innovation in the market.
- Many TSPs, especially the major ones (Tata Indicom/Docomo, Airtel, Reliance etc.) are also ISPs which are notorious for their poor quality of broadband service and anti-consumer practices (ex. forced data caps). It is difficult to not see an anti-consumer design behind their support for differential pricing.
- By enabling differential pricing, TSPs are permitted
- From all of the above, it follows that differential pricing is anticompetitive and anti-consumer in nature.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

If differential pricing for data usage is permitted, no measures will ever be enough to ensure that all of the above principles can be addressed. The principles of competition, market entry and innovation will especially be adversely affected. The reasoning is explained below:

- Non-discrimination: As discussed in Question 1, differential pricing by its very nature is discriminatory for both companies and consumers alike. The only way to prevent

discrimination would be to force TSPs to let all data to be transmitted at the same price without prejudice or favour.

- Transparency: Perhaps the most easily achievable principle in the given context. TSPs could be forced to make all their partners public, and their revenues due to differential pricing as well. They should also be forced to state publicly the number of poor and other underprivileged citizens they connect to the internet with the help of their differential pricing scheme.
- Competition, market entry and innovation: The only way to address this to some extent would be to force all TSPs to be TSPs exclusively and independent of any other businesses. However, this adversely affects the freedom of a TSP company to branch out and do other kinds of business in India. Another step to take would be to force all TSPs to allow all businesses to partner with them for lower data charges for free. However, there are hundreds of thousands of businesses around the world, and the number going online grows every day. It is not feasible to expect that every business from around the world will partner with TSPs, especially for foreign businesses that may not be fully aware of the rules and regulations that need to be taken into account when partnering with an Indian TSP. They may also not have any reason (eg. small market) to partner with Indian TSPs and this would directly negatively affect the Indian consumer. Moreover, it directly disadvantages users making direct connections with each other using technologies like peer to peer file transmission. It would be absurd to think that a billion citizens could partner with all TSPs in their private capacity. Therefore there are inherent flaws with this model.
- Another important aspect to consider is the piecemeal offering of internet-enabled services (Airtel Zero, Facebook Free Basics etc). These kinds of services depend on the availability of a differential pricing model, are grossly anticompetitive, and most importantly, *do not give access to the internet*! They are simply walled gardens containing some networked services and in the unfortunate event that differential pricing is permitted, it is of critical importance that such services explicitly not be permitted in India to reduce the impact on the aforementioned principles that this answer attempts to address.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

There is no such thing as truly free internet access. I do not believe that it is possible to create a win-win situation where TSPs benefit and all citizens are able to get free/low cost internet access so long as the internet operates under the aegis of capitalism in India. Once this is acknowledged, it is possible to explore steps that make internet access affordable for more people without resorting to differentiated tariff plans.

- ❖ Google Fiber's business model is probably the best alternative model to get people connected to the internet. Speeds can be tuned to match India's network infrastructure.
 - However there are some steps that need to be taken before a similar service can be implemented in a scale as broad as India's
 - The definition of broadband needs to be updated to modern standards. In 2015, the US FCC defined broadband as 25mbps down and 3mbps up. With 3G and 4G services rolled out in India, and with high data use becoming the norm worldwide, there is absolutely no basis for India to define broadband as 512kbps. India should take 5Mbps as the minimum definition today.

- It is of critical importance that national connectivity be comprehensively overhauled to handle high bandwidth so that in the next 5 years the definition of broadband can be upgraded to 50Mbps.
- Access to the internet needs to be made a fundamental right. This will give more motivation and frameworks for legislators and government to implement measures to enable access for all citizens.
- There are no real disadvantages to the Google fiber model, as that model was built on innovation in light of the poor quality service from major ISPs in the US (Comcast, AT&T, Verizon etc). The advantages are high bandwidth, and low cost to the consumer. It is important to note that Google's service is not a charity.
- For wireless networks (3G/4G, citywide WiFi etc), free users can be given a moderate data cap in line with modern data use averages instead of a connection fee.
- ❖ An inferior option compared to the Google fiber model is providing subsidized internet access to underprivileged people
 - This model puts the burden on all taxpayers, as opposed to the TSP's paying customers like in the google model.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Any decision taken by TRAI should first and foremost enshrine the principles of net neutrality. Net neutrality where no kind of data is differentially priced or zero rated. Net neutrality where TSPs and ISPs are simply data carriers who are not permitted to double or triple-dip in revenue on the data being transmitted. In the previous consultation discussing OTT carriers, TSPs had claimed that OTT carriers ate into their telecom revenues, but this was never to the TSPs' detriment as it meant that data use in India rose and therefore revenues from data use made up for, if outright overshadowed their perceived losses in voice.

2.4.19 Ankit Kumar

To: Telecom Regulatory Authority of India (TRAI)

Subject: Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. Differential pricing programs – in particular, zero rating programs like Free Basics – are an essential tool for bringing more unconnected people online across India and should not be banned.

Free Basics provides free access to essential Internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all people, developers and mobile operators.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Below are specific responses to the questions posed by the TRAI in the Consultation Paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

It is not clear that the Free Basics program should be considered as differential pricing, but even if it is, Free Basics should be allowed under any regulatory framework adopted by TRAI.

Free Basics is an essential tool for bringing more people online and expanding connectivity across India. Moreover, the structure of Free Basics is pro-consumer and pro-competition:

- Free Basics is non-exclusive. It is available to all operators on the same terms and conditions.
- Free Basics is an open and non-discriminatory platform. Any content owner can participate as long as it meets the same technical criteria, which are openly published.
- Free Basics is free to both users and content owners. No one is charged for accessing the content on Free Basics. No content owner is charged for participating in the platform.
- Free Basics is transparent. All of the technical standards are published and available online.
- Facebook does not pay carriers to exempt its content from usage limits.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

TRAI should consider whether a program helps to expand connectivity and whether the program is free to both users and content providers, non-exclusive for operators, open to all content providers under objective standards, and transparent about its terms and practices. Free Basics meets all of these criteria.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.

There are various models that could be used to provide free Internet access to consumers. However, Free Basics is the kind of program that should be allowed under any regulatory framework. Free Basics brings more people online faster and provides newly connected users with an onramp to the full Internet. Facebook has shown that when a carrier launches Free Basics, new users are brought onto the carrier's mobile network at an average rate that is 50% faster than before the launch of Free Basics. Free Basics also provides an effective onramp for users to quickly begin accessing the broader Internet. On average, in countries where Free Basics has launched, more than 50% of users who come online through Free Basics choose to pay for data and access the full Internet within 30 days.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TRAI's public consultation on these issues is rightly guided by the goal of connecting the unconnected across India. Despite significant progress, 80% of India's population – 1 billion people – still are not connected. TRAI must therefore ensure that any regulatory intervention does not end up depriving people of the opportunity to come online. Instead, TRAI needs to create a regulatory environment where access-expanding programs can flourish.

2.4.20 Letter of startup founders

December 29, 2015

To,

Shri. RS Sharma,
Chairman,
Telecom Regulatory Authority of India.

Sir,

Sub: Consultation Paper on Differential Pricing for Data Services

We appreciate the efforts taken by TRAI to engage with stakeholders by inviting feedback on issues related to the practice of Telecom Service Providers in offering Differential Tariff to access certain content or applications on the Internet.

The open nature of the Internet has spurred innovation and enabled startups to flourish. The success of Google, Facebook or of several Indian startups, including those founded by the below signatories to the letter, is a result of the open nature of the Internet that permitted innovation without any entry barriers.

The practice of differential pricing of data services results in skewing the dynamics of the Internet with Telecom Service Providers and a few players like Facebook with its Free Basics platform acting as gate-keepers. Differential pricing of data services including practices like zero rating of selected content and applications leads to a tiered Internet instead of a single open Internet. This affects the ability of new players to compete in the market with the established corporations.

The Government of India is taking commendable steps to improve access of citizens to Government services through digital means. Efforts at improving access to the Internet is being undertaken by Governments at all levels including local self Government Institutions. At this stage, there is no reason to create a digital divide by offering a walled garden of limited services in the name of providing access to the poor.

We request TRAI to issue clear Regulations preventing telecom providers or content providers from acting as gate-keepers offering restricted Internet services instead of the Open Internet.

Sincerely,

1. Alok Agarwal, Cofounder and Business Head at Teesort.com
2. Bharat Gulia, Cofounder, Metis Learning
3. Deepinder Goyal, Founder and CEO, Zomato
4. Faisal Farooqui, Founder and CEO, Mouthshut.com
5. Manish Vij, Founder and CEO, SVG Media
6. Sachin Bhatia, Cofounder and CEO, TrulyMadly
7. Vijay Shekhar Sharma, Founder and CEO, Paytm
8. Vineet Dwivedi, Founder and CEO, FlipClass.com
9. Vishal Gondal, Founder and CEO at GOQii

2.4.21 Prof Arturo J Carrillo

Ms. Vinod Kotwal
Advisor (F&EA)
Telecom Regulatory Authority of India
New Delhi, India
Sent via electronic mail

December 30, 2015

Re: Comment on Differential Pricing for Data Services

Dear Ms. Kotwal:

I write in response to the call for comments by the Telecom Regulatory Authority of India (TRAI) regarding the topic of differential pricing for data services. My interest in this topic arises from my role as a law professor at George Washington University in Washington D.C. specializing in the intersection of international human rights law with ICT policy and practice.¹ Along with my colleague, Professor Dawn Nunziato, I recently published an article entitled, “The Price of Paid Prioritization: The International and Domestic Consequences of the Failure to Protect Net Neutrality in the United States.”² In it, we argued that the United States, as a party to the **International Covenant on Civil and Political Rights** (ICCPR), must take into account its international legal obligations regarding the rights to freedom of expression and non-discrimination when formulating or implementing policies to regulate network neutrality. India, also a party to the ICCPR, must now do the same.³

What follows is an overview of the human rights law framework as it applies in India. The TRAI succinctly describes its primary challenge as weighing “the potential benefits and disadvantages of [differential pricing] practices [...] to determine the regulatory approach.”⁴ Fortunately, international human rights law provides needed normative guidance on how to go about that balancing to ensure not only a structured, principled approach, but also one that will maximize the benefits to Indian society in conformity with the country’s human rights obligations.

International Human Rights Law and Network Neutrality

Despite its relatively recent appearance as a critical policy issue, network neutrality is already a consolidated norm of international human rights law due to the seminal role it plays in the protection of freedom of expression and non-discrimination rights in contemporary society. Article 19 of the ICCPR affirms the right “to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in

¹ I am director of the International Human Rights Law Clinic and co-director of the Global Internet Freedom and Human Rights Project at GW Law School. See <http://www.law.gwu.edu/gwl/internetfreedom>.

² *Georgetown Journal of International Affairs*, Volume “International Engagement on Cyber V: Securing Critical Infrastructure,” Summer 2015. (The article is attached as an Annex to this Comment).

³ Though the ICCPR is non-self executing, India has committed itself internationally to respecting, and ensuring respect for, the fundamental human rights enshrined in the Covenant, especially where these are reflected in the Constitution and other laws. See *Third Periodic Report Submitted by India to the UN Human Rights Committee*, CCPR/C/76/Add.6, 17 June 1996, paras. 6-8.

⁴ TRAI, Consultation Paper on Differential Pricing for Data Services, New Delhi, 9 December 2015, para. 17; *hereinafter*, “TRAI Consultation Paper.”

writing or in print, in the form of art, or through any other media of [] choice.”⁵ Freedom of expression enjoys near universal acceptance worldwide, not least because it is an enabler of several other basic human rights. These include not just the corollary rights to hold opinions and religious beliefs without interference, but several others as well, such as the right to education, the rights to freedom of association and assembly, the right to full participation in social, cultural and political life, and the right to social and economic development.⁶

Traditionally, freedom of expression has been broken down into several constituent elements, including the right to impart and express information on the one hand, and the right to seek and receive information on the other.⁷ Since the rise of electronic communications, however, this framework has evolved to accommodate the expression and receipt of information via the Internet. In international human rights law, it is now settled that the constituent rights comprising freedom of expression will apply to all “internet-based modes of communication.”⁸ International experts from the United Nations and other human rights systems have further recognized that “[t]here should be no discrimination in the treatment of Internet data and traffic, based on the device, content, author, origin and/or destination of the content, service or application.”⁹ Among other things, this means that “[a]ny restrictions on the operation of websites, blogs or any other internet-based, electronic or other such information dissemination system, including systems to support such communication, such as internet service providers or search engines, are only permissible to the extent that they are compatible with [the exceptions regime set out in] paragraph 3 [of Article 19].”¹⁰ I’ll come back to this below.

Rounding out the panoply of freedom of expression elements relating to net neutrality is the right to access information *online*, or connectivity.¹¹ Put simply, “[g]iving effect to the right to freedom of expression imposes an obligation on States to promote universal access to the Internet.”¹² This positive obligation means that for States like India to meet their duty to respect and fulfill the right to freedom of expression, they must guarantee that all people within their territory have access to “the means necessary to exercise this right, which [today] includes the Internet.”¹³ Accordingly, the UN Human Rights Committee has called upon States “to take all necessary steps to foster the independence of [...] new media [...] such as internet and mobile based electronic information dissemination systems [...] and to ensure access of all individuals

⁵ International Covenant on Civil and Political Rights, Dec. 16, 1966, arts. 19(1)-(2); *hereinafter* “ICCPR.”

⁶ Special Rapporteur on the Promotion of Freedom of Opinion and Expression, *Rep. on the Promotion and Protection of the Right to Freedom of Opinion and Expression*, U.N. Doc. A/66/290, at 18, para. 61. (Aug. 10, 2011), available at <http://www.ohchr.org/documents/issues/opinion/a.66.290.pdf>; *hereinafter* “UN Special Rapporteur Report 2011.”

⁷ Human Rights Committee, *General Comment No. 34*, 12 Sep. 2011 U.N. Doc CCPR/C/GC/34 at paras. 11, 18; *hereinafter* “HRC General Comment 34.” The other elements are media rights and access to information from public bodies.

⁸ *Id.* at para. 12.

⁹ U.N. Special Rapporteur on Freedom of Opinion & Expression, OSCE Representative on Freedom of the Media, OAS Special Rapporteur on Freedom of Expression, ACHPR Special Rapporteur on Freedom of Expression & Access to Information, *Joint Declaration on Freedom of Expression on the Internet*, June 2011, para. 5(a), available at: <http://www.osce.org/fom/78309>; *hereinafter* “2011 Joint Experts Declaration.”

¹⁰ HRC General Comment 34, para. 43.

¹¹ Connectivity is defined here as access to an Internet connection.

¹² 2011 Joint Experts Declaration, para. 6(a).

¹³ See UN Special Rapporteur Report 2011, para. 61.

thereto.”¹⁴

Connectivity is thus “essential” to realizing freedom of expression.¹⁵ But the good faith duty incumbent on States to work towards the realization of universal access to the Internet is equally relevant to progressively realizing other fundamental rights as well, such as the rights to education, health, socio-economic development, and political participation, just to name a few. In modern times, it is difficult to overstate the transcendental role that connectivity as an integral part of freedom of expression plays in the exercise of human rights generally.

With respect to non-discrimination, the ICCPR establishes in Article 2 that State parties are obligated “to respect and to ensure to all individuals within [their] territory and subject to [their] jurisdiction the [human] rights recognized [...] without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or *other status*.” What counts as “other status” for purposes of determining which additional distinctions might lead to negative (or positive) discrimination is in open question. What is certain is that international human rights law recognizes distinctions based on *economic* status or criteria, and evaluates whether their purpose or effect is to nullify or impair the exercise or enjoyment of other human rights.¹⁶ This is the reason why proposed restrictions on net neutrality like differential pricing must be examined closely to evaluate what their consequences would be for the exercise of freedom of expression.

To the extent that network neutrality is best understood as a principle of non-discrimination applied to users’ rights to request, receive or impart data or information online, it meshes organically with the core non-discrimination norms of international human rights law. But not all discrimination is *per se* illegal. International law differentiates between negative and positive discrimination. The “principle of equality sometimes requires States parties to take affirmative action in order to diminish or eliminate conditions which cause or help to perpetuate discrimination prohibited [by international law].”¹⁷ For this reason, “[n]ot every differentiation of treatment will constitute [unlawful] discrimination, if the criteria for such differentiation are reasonable and objective and if the aim is to achieve a purpose which is legitimate under [international law].”¹⁸ In other words, positive or affirmative discrimination can be an exceptional measure which enhances or increases the *overall* exercise and enjoyment of human rights, producing a net benefit.

International Human Rights Law and Differential Pricing as a Restriction on Net Neutrality

Differential pricing, especially zero-rating, can act as a discriminatory restriction on network neutrality, which, as we have seen, is part and parcel of the rights to freedom of expression and non-discrimination. Under international human rights law, there are some circumstances in which such a restriction may be

¹⁴ HRC General Comment 34, para. 15 (emphasis added).

¹⁵ See UN Special Rapporteur Report 2011, para. 61

¹⁶ See *Haraldsson and Sveinsson v. Iceland*, Communication No. 1306/2004, U.N. Doc. A/63/40, para. 10.3 (2007), available at http://www.worldcourts.com/hrc/eng/decisions/2007.10.24_Haraldsson_v_Iceland.htm.

¹⁷ UN Human Rights Committee, *General Comment No. 18*, 10 Nov. 1989, para. 10; hereinafter “HRC General Comment 18”.

¹⁸ *Id.* at para. 13.

permitted. The issue is whether that discrimination is positive or negative in its effects. This is because human rights norms in general, and freedom of expression in particular, are not absolute.¹⁹ Defamation laws are a classic example of the hard limits imposed on freedom of expression in order to protect the rights of others.²⁰ Similarly, I described in the previous section how international law distinguishes between positive discrimination, which can be legitimate when it advances the aim of human rights, and the negative kind, which is unlawful because its primary effect is to impair or nullify the enjoyment of other rights. In short, just as “legitimate differentiation” in favor of historically disadvantaged groups can affirmatively advance the goals of non-discrimination,²¹ so too can the freedom of expression rights be curtailed through positive discrimination to promote the freedom of expression rights of others.²²

Article 19 of the ICCPR expressly permits certain restrictions on the right to freedom of expression when necessary to “respect of the rights or reputations of others,” or to advance “the protection of national security, or of public order [...], or of public health or morals.”²³ These are, generally speaking, the legitimate aims that may be invoked by States seeking to impose limits on fundamental human rights, including expression.²⁴ In addition to pursuing a legitimate goal, a State seeking to curtail freedom of expression (or any human right for that matter) must ensure that the measures doing so are “provided by law,” “necessary” to meet the stated aim, and “proportional.”²⁵ The operation of the exceptions regime under the ICCPR, however, is not a blank check: “When a State imposes restrictions on the exercise of freedom of expression, these may not put in jeopardy the right itself.”²⁶ In other words, exceptions must remain exceptional, and cannot become the rule.²⁷

Differential Pricing in the Indian Context Under International Human Rights Law

When viewed from the human rights perspective, the touchstone issue before TRAI is this: *Can differential pricing in general, and zero-rating in particular, ever be consistent with net neutrality principles, understood as the freedom enjoyed by persons to seek, receive, and impart information in a non-discriminatory manner?* The applicable international legal framework outlined above seems to suggest that the answer to that question is *yes, sometimes, under certain circumstances*. The challenge then becomes analyzing the current context in India to determine what circumstances might justify any differential pricing deviations from the net neutrality norm. Although others closer to the situation in India are better suited to

¹⁹ A good example is ICCPR Art. 20, which explicitly enumerates a series of offensive forms of expression that *must* be curtailed by States in order to meet their obligations under the treaty. (“1. Any propaganda for war shall be prohibited by law. 2) Any advocacy of national, racial or religious hatred that constitutes incitement to discrimination, hostility or violence shall be prohibited by law.”)

²⁰ HRC General Comment 34, para. 47.

²¹ HRC General Comment 18, para. 10.

²² HRC General Comment 34, para. 28.

²³ ICCPR, art. 19(3).

²⁴ See Frank La Rue, *Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression*, 17 April 2012, A/HRC/23/40, para. 28.

²⁵ ICCPR, art. 19(3); HRC General Comment 34, paras 24-26, 33-34.

²⁶ HRC General Comment 34, para. 21.

²⁷ *Id.* “[T]he relation between right and restriction and between norm and exception must not be reversed.”

carrying out that analysis, I can offer a few relevant observations.

First, it is evident that actively promoting greater connectivity – expanded opportunities for Internet access for economically disadvantaged sectors of society – would substantively advance the realization of freedom of expression and other basic human rights in India. The TRAI is fully aware of India’s daunting digital divide. According to the latest UNDP statistics, Internet users make up less than 20% of the population,²⁸ making India proportionately one of the least connected countries in the world.²⁹ At the same time, at least 74% of the population owns a mobile phone,³⁰ with increasing numbers having access to “smartphones.” Accordingly, as a practical matter, regulatory policies intended to address the lack of Internet penetration by promoting broader and better mobile Internet access would likely meet the first “**legitimate aim**” prong of the exceptions regime test. This is because expanding Internet access is no less essential to realizing freedom of expression than ensuring the general right to impart or receive information in a non-discriminatory manner, which is what net neutrality does.

Second, in addition to pursuing a legitimate goal, a State permitting limits on net neutrality and thus freedom of expression must ensure that any proposed restrictions, including differential pricing or zero-rating, are provided for by law, necessary to meet that goal, and proportional.³¹ This is meant to set a high bar for recognizing a small set of narrowly tailored measures.³² Generally, such laws should be enacted through a transparent and participatory political process and be accessible to the public.³³ In addition, to be “necessary,” legally enacted limits should be indispensable as well as “directly related to [meeting] the specific need on which they are predicated.”³⁴ A restriction “violates the test of necessity if the [aim] could be achieved in other ways that do not restrict freedom of expression.”³⁵ Finally, any steps taken by States to limit expression, even if legitimate and necessary, cannot be “overbroad.”³⁶ Proportionate measures are those that are “appropriate to achieve their protective function” and “the least intrusive … amongst those [available].”³⁷

Finally, determining whether specific differential pricing practices are **necessary** to expand Internet access in India, or **proportional** *vis à vis* the legitimate goal of increased connectivity, is beyond the scope of this Comment. Further research and analysis are needed to establish the extent to which any such exceptions to network neutrality may in fact be essential as well as appropriate to meeting the stated aims. At the same

²⁸ United Nations Development Programme, *Human Development Report 2015*, “India: Human Development Indicators,” available at <http://hdr.undp.org/en/countries/profiles/IND>.

²⁹ See *Success of Digital India hinges on clear-cut net neutrality policy*, ETTELECOM.COM, available at <http://telecom.economictimes.indiatimes.com/news/policy/success-of-digital-india-hinges-on-clear-cut-net-neutrality-policy/47953052>.

³⁰ *Mobile cellular subscriptions (per 100 people)*, THE WORLD BANK, <http://data.worldbank.org/indicator/IT.CEL.SETS.P2/countries>.

³¹ ICCPR, art. 19(3); HRC General Comment 34, paras 24-26, 33-34.

³² See HRC General Comment 34, para 35.

³³ *Id.*

³⁴ *Id.*, para. 22.

³⁵ *Id.*, para. 33.

³⁶ *Id.*, para. 34.

³⁷ *Id.*

time, further study is also required regarding the question of whether any of the network neutral alternatives to differential pricing can achieve the same or comparable levels of Internet access.³⁸ It is reasonable to argue, however, that in the battle to bridge India's deep digital divide, deploying a diversity of arms is the better strategy, so long as the net effect on freedom of expression, and human rights generally, is positive.

Conclusion

The normative framework provided by international human rights law should guide the TRAI in its quest is to strike a just balance between ensuring wider access to the Internet and respecting the basic principles of non-discrimination and transparency in its regulatory approach.

Protecting network neutrality is unequivocally a core tenet of the international human rights law binding on India. Efforts to regulate it should conform to the legal framework governing the State's obligation to respect freedom of expression and speech, as well as basic principles of non-discrimination. As explained in this Comment, freedom of expression or speech is composed of various constituent norms including net neutrality. This is because, first, the traditional right to freely impart or receive information applies equally online, and second, because the right to access the Internet -- "connectivity" -- is essential to the full realization of freedom of expression. Furthermore, the non-discrimination principles built into human rights law are natural receptors of net neutrality because it is itself a principle of non-discrimination.

Differential or discriminatory pricing, especially zero-rating, can act as a restriction on network neutrality. As such, it can and should be analyzed using the legal framework provided by the ICCPR, in particular, the exceptions regime established expressly for resolving conflicts of rights. As outlined above, this framework allows for exceptions to freedom of expression and non-discrimination rules, including net neutrality, under certain circumstances, such as the advancement or protection of the rights of others. Where such restrictions are permitted, however, they must conform to strict parameters to ensure that, on balance, there is a net gain in respect for human rights.

Respectfully submitted,

Professor Arturo J. Carrillo

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³⁸ See TRAI Consultation Paper, paras. 18-20.

The Price of Paid Prioritization

The International and Domestic Consequences of the Failure to Protect Net Neutrality in the United States

Arturo J. Carrillo and Dawn C. Nunziato

On 10 November 2014, President Obama reaffirmed his commitment to a free and open Internet and called on the Federal Communications Commission (FCC) to "implement the strongest possible rules to protect net neutrality."¹ In particular, the president recommended that the FCC reclassify broadband providers as telecommunications services subject to common carriage obligations. The president was responding to the No Commercially Unreasonable Practices section of the May 2014 Proposed Rules for Promoting and Protecting an Open Internet, which would have authorized broadband providers to accord differentiated treatment to Internet traffic, thereby undermining net neutrality and common carriage principles in the United States.

As written, the Proposed Rules of May 2014 would have violated international trade and human rights obligations of the United States. This is because, as a member of the World Trade Organization (WTO) and a party to the International Covenant on Civil and Political Rights (ICCPR), the United States is bound to respect principles of nondiscrimination and free expression when regulating essential communications media like the Internet. Any FCC rule that does not meaningfully protect net neutrality at all levels of interconnectivity would run afoul of these legal obligations and expose the United States to legal action by other governments and individuals prejudiced by its actions.

On March 12, 2015, the FCC adopted a new set of rules to promote and protect an open Internet.² In its 2015 Open Internet Order, the FCC reclassified broadband providers as common carriers subject to nondiscrimination obligations and enshrined strong net neutrality protections. The 2015 Order, contrary to its predecessors, largely meets the

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Dawn C. Nunziato

is a Professor of Law at The George Washington University Law School, where she co-directs the Global Internet Freedom and Human Rights Project. She is an internationally recognized expert in the area of free speech and the Internet and has taught Internet law courses and has been an invited presenter on Internet free speech issues around the world at prominent universities and institutions.

requirements of the international trade and human rights treaties to which the United States is a party. Even so, gaps in the new Rules mean that the United States may still be liable under international law for potential failures to ensure that net neutrality and non-discrimination principles are adequately protected.

In this Article, we first examine the trade and human rights obligations of the United States as they relate to net neutrality to determine the extent to which each of the two most recent approaches adopted by the FCC to promote an open Internet would comply with those obligations. We also examine the history of regulation of broadband providers as common carriers subject to nondiscrimination obligations under U.S. law. We conclude that the FCC has, by and large, successfully complied with its international trade and human rights obligations in its new Open Internet Order.

International Trade Consequences of FCC Failure to Adopt Strong Net Neutrality Rules.

The United States is bound by the WTO's General Agreement on Trade in Services (GATS), and has additionally signed on to the Basic Agreement on Trade in Telecommunications Services (BATS), committing to regulating its telecommunications services on the basis of several principles that are essential to net neutrality.³ In particular, the BATS enshrines the United States' commitment to ensure that "interconnection" in telecommunications services, including Internet service, be provided to the service suppliers of other WTO Member States on

nondiscriminatory terms.⁴ A failure by the FCC to meaningfully protect net neutrality would violate the terms of the BATS.⁵

The BATS integrates clear non-discrimination principles into its primary obligations. It covers packet-switched services, including broadband services, which the United States "expressly included [in the Agreement] to protect its growing IP-based services providers."⁶ The BATS commitments for IP-based services include several key principles that converge with net neutrality, including transparency, anti-competitive practices, and, most importantly, fair interconnection.⁷ Under the BATS, fair interconnection "will be ensured at any technically feasible point in the network" and is to be provided "under nondiscriminatory terms"; "in a timely fashion"; and at "cost-oriented rates that are transparent, reasonable, [economically feasible], and sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided."⁸

What this means is that, if the FCC had retained the May 2014 Proposed Rules, or adopted similar rules allowing broadband providers to accord differentiated treatment to Internet traffic, it would have contravened the United States' legal obligations under the GATS and the BATS to ensure fair interconnection for foreign service suppliers. Such standards would have allowed broadband providers to engage in individual negotiations for paid prioritization with edge providers to create "fast" and "slow" lanes for Internet service,⁹ which by definition would violate the requirement in the BATS that

interconnection be provided on non-discriminatory terms.¹⁰ Adopting such a rule would thus have left the United States open to the risk of a WTO complaint by other WTO member States on behalf of their disadvantaged service suppliers.¹¹

Similarly, the United States would have been at odds with key trade partners in Latin America and Europe. Net

another continent that is, by and large, embracing strong net neutrality protections. In April 2014, the European Parliament passed the European Commission's proposed telecoms reforms that will enable a Digital Single Market,¹⁴ including guarantees safeguarding net neutrality and strict rules for the blocking and slowing of Internet services.¹⁵ The Netherlands, Slovenia, the

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neutrality is of particular importance in Latin America, where approximately 85 percent of the region by population and trade lives under a legal regime that strongly protects this principle. Over the last five years Paraguay, Chile, Mexico, Colombia, Ecuador, Peru, Argentina, and Brazil have all adopted legislation or regulation guaranteeing net neutrality. More to the point, at least 90 percent of all Latin American Internet traffic passes through Miami and would therefore be subject in some form to U.S. regulation.¹² If the FCC had not guaranteed strong protection for net neutrality, as do most of the countries in Latin America, the negative impact on trade in the region would have been severe.¹³

Rules like those proposed by the FCC in May 2014 have had the potential to hinder trade with Europe as well,

United Kingdom, and Norway, among others, have enshrined meaningful net neutrality protections through legislation or regulation,¹⁶ and France and Germany are currently considering similar legislation.¹⁷

As it turned out, the FCC chose to follow President Obama's exhortations and adopt in its 2015 Open Internet Order a framework for regulating the Internet in the United States that is strongly protective of net neutrality in several respects. First, the FCC defined the scope of its new Rules as applying to "both fixed and mobile broadband Internet access service."¹⁸ Second, the FCC enacted three bright-line rules that go to the heart of net neutrality protections: no blocking;¹⁹ no throttling;²⁰ and no paid prioritization.²¹ Finally, the FCC devised a way to reach other types of conduct that may

not come under the bright-line rules by establishing its “no unreasonable interference/disadvantage standard.”²² Under this rule, ISPs cannot unreasonably interfere with or disadvantage either end users’ ability to use and access broadband service or Internet content or edge providers’ ability to make such content available to end users.²³

So is the United States now in full compliance with the above-cited provisions of the GATS and BATS? Not quite, due to two gaps in coverage created by the 2015 Order. First, the FCC determined that it would not apply a bright line rule to flatly prohibit sponsored data or “zero rating” plans but would instead evaluate these on a case-by-case basis under the “no unreasonable interference/disadvantage standard.”²⁴ Zero rating usually refers to the practice of Internet companies paying certain telecommunications to offer “free” access for their mobile network customers to the sponsoring companies’ online services, which is realized by exempting traffic to the companies’ sites from a subscriber’s data caps or allowing customers without a data plan access to those sites.²⁵ Since zero rating is a deviation from net neutrality — as sponsored data is given

for the reasons noted above. Second, the FCC similarly ruled that none of the bright-line rules or standards relating to broadband Internet access service would apply to “Internet traffic exchange arrangements,” also known as “interconnection.”²⁶ Interconnection refers to the interface of networks with other networks in the exchange of Internet traffic.²⁷ The FCC decided that, “for the time being”, extending robust net neutrality protections to such exchange arrangements “was not warranted.”²⁸ Instead, interconnection disputes will be reviewed on a case-by-case basis for practices that might be construed as unreasonable or unjust²⁹ — a broad and vague standard.³⁰ As a result, the door remains open for discriminatory agreements such as those involving paid prioritization to occur within interconnection arrangements, for example, between ISPs and backbone content delivery networks (CDNs).³¹

Any dissonance in net neutrality rules between the United States and major trading partners in Latin America and Europe could set the stage for possible disputes down the road. Under WTO rules, “[a] dispute arises when one country adopts a trade policy measure or takes some action that one or more fellow-WTO members considers to be

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priority over non-sponsored data — the FCC’s eventual approval of any zero rating plans could prove problematic

breaking the WTO agreements, or to be a failure to live up to obligations.”³² Indeed, the United States has engaged the

WTO Dispute Settlement Body (DSB) on behalf of its own interconnection interests. In 2000, the United States made several claims against Mexico for violations of Mexico's Schedule of Commitments, which includes the BATS Reference Paper.³³ In 2004, a WTO panel concluded that Mexico had violated its GATS commitments by failing "to ensure interconnection at cost-oriented rates," failing to "prevent anti-competitive practices by firms that are major telecoms suppliers," and failing "to ensure reasonable and non-discriminatory access to and use of telecommunications networks."³⁴ In response to the WTO panel's findings, Mexico has now complied with the panel report to the satisfaction of both the WTO DSB and the United States.³⁵

In sum, several factors under the GATS and the BATS weighed against the May 2014 Proposed Rules and in favor of enforcing strong net neutrality rules in compliance with U.S. obligations, which the United States largely, but not entirely, succeeded in doing through the adoption of the 2015 Open Internet Order. The United States has not been shy in utilizing the WTO Dispute Settlement Body to further its own telecommunications interests. Accordingly, the United States could hardly claim surprise if and when other member States follow suit to contest the new FCC rules because the 2015 Order seems to authorize zero rating plans under certain circumstances, while expressly excluding interconnection from the scope of its net neutrality protections. These gaps in the 2015 Order's net neutrality protections may eventually lead to inconsistencies with WTO nondiscrimination obligations

due to foreign IP-based services and required by the aforementioned trade agreements.³⁶

International Human Rights Consequences if the FCC Failed to Adopt Strong Net Neutrality Rules.

If the FCC had enacted the May 2014 Proposed Rules, or others like them, that action would have also violated the United States' international human rights obligations to promote and protect freedom of expression in a non-discriminatory manner. Allowing broadband providers to accord differentiated or discriminatory treatment to Internet traffic would have impermissibly impinged on the rights of all persons to equally seek, receive, and impart information, ideas, and opinions in the media of their choice.³⁷ As noted in the prior section, the FCC avoided this pitfall by adopting several bright-line rules in its 2015 Open Internet Order to protect net neutrality in broadband access service. It failed, however, to extend these protections to interconnection arrangements, leaving the door open to potential abuse. It likewise failed to ban zero rating, a *per se* exception to net neutrality. Thus, the United States is arguably still vulnerable in the human rights arena as well.

The United States is bound to respect and protect freedom of expression in a non-discriminatory manner, *inter alia*, under the United Nations' ICCPR and the American Declaration of the Rights and Duties of Man (ADHR or American Declaration).³⁸ Both the ICCPR and ADHR enshrine freedom of expression and non-discrimination as fundamental rights that States must promote and protect.³⁹ Freedom of

expression is the right to seek, receive, and impart information, ideas, and opinions "through any media and regardless of frontiers."⁴⁰ It is well settled that this right is protected equally online as it is offline.⁴¹ Accordingly, "the treatment of Internet data and traffic [cannot be] based on the device, content, author, origin and/or destination of the content, service or application."⁴² States "should take all necessary steps to foster the independence of [the Internet] and to ensure access of individuals thereto."⁴³

Paid prioritization and other discriminatory arrangements may act as impermissible restrictions on freedom of expression by making access to certain kinds of content or networks

Although a State may under certain circumstances place some restrictions on freedom of expression, it may do so only if it meets certain criteria. Any proposed restrictions must (a) be "provided by law";⁴⁵ (b) for a legitimate aim such as national security, public order, or public health and morals;⁴⁶ and (c) must be proportional, necessary, and "directly related to the specific need on which they are predicated."⁴⁷ Increasing corporate profits by providing a competitive advantage to well-resourced service providers or networks is not a legitimate rationale recognized by international law for (relatively) restricting users' freedom of expression. This suggests that both sponsored data plans as well as paid

...paid prioritization at the interconnection level may run afoul of the ICCPR's and the American Declaration's freedom of expression and non-discrimination rules.

more or less difficult depending on whether an individual or company has economic leverage to access those preferential arrangements. Only the wealthiest companies and organizations are generally able to afford to pay for prioritization or preferential treatment to make their information and content more readily accessible to users.⁴⁴ The ability to access information — another important component of freedom of expression — may also be curtailed for those persons or entities that cannot or choose not to pay the premiums associated with prioritization or enhanced access to networks or information.

prioritization at the interconnection level may run afoul of the ICCPR's and the American Declaration's freedom of expression and non-discrimination rules.

Any failure to fulfill its human rights obligations under international law could expose the United States to denunciations by affected individuals, NGOs, and perhaps other governments, as in the trade arena. On the one hand, grievances can be aired at hearings before the Inter-American Commission of Human Rights, the body that monitors compliance by OAS member States with regional human rights agreements like the American

Declaration. On the other, advocates can denounce U.S. failures to protect freedom of expression at hearings before the United Nations Human Rights Committee, the UN authority that monitors State compliance with the ICCPR. As a State Party to that treaty, the United States is subject to a periodic review of its compliance with that treaty by the Human Rights Committee, an independent body composed of 18 international experts.⁴⁸ Both the Inter-American Commission and the UN Human Rights Committee publish their final determinations of States' compliance with the respective treaty obligations monitored.

The FCC's Regulation of Broadband Providers as Common Carriers Subject to Non-discrimination Obligations Under U.S. Law.

The FCC's March 2015 Rules mark an important step toward correcting the mistake the FCC made in 2002 when it declined to classify broadband providers as "telecommunications services" subject to common carriage obligations under the Telecommunications Act of 1996. In reclassifying broadband providers as common carriers, the FCC harmonizes the treatment of Internet forums for expression with the United States' historic treatment of other forums for communication under the long-recognized common carriage doctrine.

The common carriage doctrine imposes obligations on privately-owned speech and mass communication conduits to facilitate the expression of others and prohibits these conduits from exercising the discretion to determine which communications to facilitate and

which to censor. Since the beginning of the modern communications era in the 1930s, the FCC has imposed obligations on providers of interstate communications services (like telephone and telegraph companies) to facilitate the transmission of all legal content. The United States Postal Service has also been regulated as a common carrier that is required to facilitate the transmission of all legal content and is prohibited from discriminating against such content.⁴⁹ As Ithiel de Sola Pool explains:

[T]he law of common carriage protects ordinary citizens in their right to communicate. The rules against discrimination are designed to ensure access to the means of communication.... [T]his element of civil liberty is central to the law of [common carriage].⁵⁰

The common carriage status of communications providers benefits members of the public by granting them access to communications conduits under a nondiscrimination principle. As Jerome Barron observed, individuals who rely on common carriers to facilitate their communications "benefit from the democratic egalitarianism that characterizes the nondiscriminatory access principle associated with common carrier law."⁵¹

Congress overhauled the regulation of telecommunications providers in the Communications Act of 1934,⁵² which charged the newly-created FCC with regulatory authority over telecommunications providers (telegraph and telephone companies), regardless of whether they enjoyed monopoly power, and imposed common carriage reg-

ulations on such providers.⁵³ Under the 1934 Act, common carriers were charged with the obligation to serve as nondiscriminatory conduits for all (legal) content originated by others.⁵⁴

Throughout the mid-twentieth century, common carriage and nondiscrimination obligations were applied to traditional conduits of communication like telephone companies. In the early 1970s, the FCC began to consider whether and to what extent to impose common carriage obligations on computer-assisted processes and services. In a series of "Computer Inquiries," the FCC essentially created two categories of computer-assisted communications services — basic services and enhanced services. "Basic" (later, "telecommunications") services, like telephone and facsimile services, were those that offered straightforward transmission services, and those offering such services were regulated as common carriers and made subject to nondiscrimination requirements.⁵⁵ "Enhanced" (later, "information services") were those in which computer processing applications were implemented to act on a subscriber's information, and providers of such services were exempt from common carriage and nondiscrimination requirements.

In its passage of the Telecommunications Act of 1996, Congress revisited the categorization of services subject to common carriage regulation that was established under the Computer Inquiries. Under the 1996 Act, "telecommunications" services were made subject to common carriage regulation (replacing the category of "basic services"), while "information services" were exempted from common carriage regu-

lation (replacing the formerly exempt category of "enhanced services").⁵⁶ The Act defined a "telecommunication service" as "the offering of telecommunications for a fee directly to the public...regardless of the facilities used."⁵⁷ The Act maintained significant common carrier obligations on providers of "telecommunications services," while leaving "information services" providers subject to far less regulation. While the Act creates a presumption that telecommunications carriers will be treated as common carriers, it authorized the FCC to forbear from enforcing any provision of the Act if the FCC determines that such enforcement is unnecessary to guard against discrimination, to ensure just and reasonable services, to safeguard consumers, or to serve the public interest.⁵⁸ Title II of the Communications Act sets forth a complex regulatory regime imposed upon common carriers, but the essential duty imposed upon common carriers is the duty not to discriminate in the offering of their services, and in particular, not to discriminate against certain types of content in serving as conduits for the transmission of such content.

In its 2002 "Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities"⁵⁹ (hereinafter "Declaratory Ruling"), the FCC mistakenly concluded that cable modem service was an "information service" with "no separate offering of 'telecommunications service,'"⁶⁰ the latter of which would have rendered such services subject to common carriage obligations. The Commission ruled that the provision of cable broadband service did not contain a separate telecommunications service because the transmis-

sion of the data is “part and parcel” of that service and is integral to its capabilities.⁶¹ As an “information service” with “no separate offering of telecommunications service,” cable operators’ provision of broadband Internet access was exempted from the common carrier regulations of Title II of the Communications Act.⁶²

This flawed ruling was significant in that it reversed course on the history of the Commission’s regulation of telecommunications services. Throughout the 1970s and 1980s, the FCC formulated and implemented a workable distinction between the underlying common carrier network, on the one hand, and the services and information made available over that network, on the other. The 2002 Declaratory Ruling collapsed this crucial distinction and for the first time permitted communications conduits to discriminate against the content they were charged with transmitting over their networks.

The FCC’s fundamental misstep in removing common carriage and nondiscrimination obligations from broadband providers (later approved by

v. Brand X Internet Services et al.) was its determination that cable operators providing broadband Internet access were not — in whole or in part — offering “telecommunications services” and were therefore not subject to regulation as common carriers.⁶³ The FCC erred in refusing to recognize that broadband providers primarily offer “telecommunications services” to the public and serve as conduits for the transmission of the public’s information even if they also offer some additional “information services.” Because it failed to recognize the telecommunications service function offered by broadband providers, the FCC erroneously removed common carriage and nondiscrimination obligations from broadband providers and reversed nearly a century’s worth of history embodying “democratic egalitarianism that characterizes the nondiscriminatory access principle associated with common carrier law.”⁶⁴

In regulating broadband providers, Congress and the FCC should be guided by the principle underlying modern communications law that

Congress and the FCC should be guided by the principle underlying modern communications law that **liberal democracies require a well-informed citizenry**, which in turn requires that citizens enjoy the freedom to communicate and to access communications conduits on a nondiscriminatory basis.

the Supreme Court in National Cable & Telecommunications Association et al.

liberal democracies require a well-informed citizenry, which in turn

requires that citizens enjoy the freedom to communicate and to access communications conduits on a nondiscriminatory basis. The same principles that justify regulating telephone and telegraph operators and the postal service as common carriers subject to nondiscrimination requirements – in order to “protect ordinary citizens in their right to communicate” – are equally valid when applied to broadband providers and Internet communications.⁶⁵

The May 2014 Proposed Rules, which would have allowed broadband providers to discriminate against whatever content or applications they choose for whatever reasons they choose, were inconsistent with the historical democratic egalitarian principle of according individuals protection in their freedom to communicate. Fortunately, the March 2015 Rules correct this mistake and require broadband providers to assume, at minimum, the nondiscrimination obligations that historically have been imposed upon common carriers – the duty to facilitate and transmit in a nondiscriminatory manner any and all legal content.

Conclusion. In March 2015 the FCC adopted strong net neutrality rules prohibiting broadband service providers from according differentiated treat-

ment to Internet traffic.⁶⁶ We trust that, as part of its analysis and justification, the FCC considered the international consequences of its actions, along with the domestic ones, to enact rules that prohibit the differential treatment of Internet traffic based on the economic status of the content creator or the end-user.

The FCC correctly achieved this goal and avoided much, but not all, exposure to international challenge before the WTO and international human rights bodies by reclassifying broadband providers as common carriers subject to nondiscrimination obligations under U.S. law. The dual issues of zero rating and interconnection as potential threats to strong net neutrality remain largely unaddressed in the 2015 Order, leaving the door open to possible future disputes. Nevertheless, what is certain is that by adopting the new Rules, the FCC took a substantial step towards ensuring meaningful compliance with the United States’ international trade and human rights obligations with respect to nondiscrimination and freedom of expression.

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NOTES

¹ White House, "Net Neutrality: President Obama's Plan for a Free and Open Internet," Internet, <http://www.whitehouse.gov/net-neutrality> (date accessed: 14 November 2014).

² On March 12, 2015, the FCC released its latest Open Internet Order detailing new, strong net neutrality rules. *See Rules Protecting and Promoting the Open Internet*, 80 Fed. Reg. 19,738 (Apr. 13, 2015) (to be codified at 47 C.F.R. pts. 1, 8, 20), available at <http://www.gpo.gov/fdsys/pkg/FR-2015-04-13/pdf/2015-07841.pdf> [hereinafter 2015 Open Internet Order]. *See also* Jeff Somer, *What the Net Neutrality Rules Say*, N.Y. TIMES (Mar. 12, 2015), http://www.nytimes.com/interactive/2015/03/12/technology/net-neutrality-rules-explained.html?_r=0 (discussing how the 2015 rules exceeded expectations by prohibiting blocking, throttling, and paid prioritization for both mobile and fixed broadband Internet access); *The Importance of Internet Neutrality to Protecting Human Rights Online*, CTR. FOR DEM. & TECH. (Oct. 1, 2013), at 4–9, <https://cdt.org/files/pdfs/internet-neutrality-human-rights.pdf> (detailing how net neutrality implicates human rights obligations regarding international principles on freedom of expression and nondiscrimination).

³ Office of the U.S. Trade Representative, *2014 Trade Policy Agenda and 2013 Annual Report* (Washington, D.C., 2014), annex III, available at http://www.ustr.gov/sites/default/files/Annex%20III_1.pdf. The BATS Reference Paper, which the United States included in its schedule of commitments, sets forth the regulatory framework for telecommunications. United States Schedule of Commitments, *Supplement 2*, GATS/SC/90/Suppl.2 (Apr. 11, 1997). Schedules of commitment are legally binding on WTO member States. World Trade Organization, "Telecommunications Services," Internet, http://www.wto.org/english/tratop_e/serv_e/telecom_e/telecom_e.htm (date accessed: 14 November 2014).

⁴ World Trade Organization, *Telecommunications Services Reference Paper, Negotiating Group on Basic Telecommunications* (24 April 1996), ¶ 2.1-2(a) [hereinafter Reference Paper].

⁵ Jennifer A. Manner with Alejandro Hernandez, "An Overlooked Basis of Jurisdiction for Net Neutrality: The World Trade Organization Agreement on Basic Telecommunications Services," *CommLaw Conspectus* 22 (2013–2014): 73.

⁶ *Ibid.* at 68.

⁷ *Ibid.* at 60, 70.

⁸ Reference Paper, *supra* note 4, at ¶ 2.2(a)–(b).

⁹ "A person engaged in the provision of fixed broadband Internet access service, insofar as such person is so engaged, shall not engage in commercially unreasonable practices." Federal Communications Commission, *Promoting and Protecting an Open Internet*, GN Docket No. 14-28 (2014) app. A § 8.7(2014), available at <http://www.fcc.gov/document>

protecting-and-promoting-open-internet-nprm [hereinafter Proposed Rules]. The FCC indicated that it would determine what constitutes a commercially unreasonable practice on a case-by-case basis, relying on a "totality of the circumstances" test. *Ibid.* ¶ 116. The D.C. Circuit indicated that the "commercial reasonableness" standard provides sufficient flexibility for providers to negotiate deals—including pay-for-priority deals -- on individualized terms. *Celco Partnership v FCC*, 700 F.3d 534 (D.C. Cir. 2012) (upholding data roaming order). Thus, the proposed No Commercially Unreasonable Practices Rule governing broadband providers would have allowed broadband providers to engage in individualized negotiations with edge providers through which broadband providers would be able to prioritize certain content and disfavor other content, creating "fast lanes" for prioritized content and "slow lanes" for all other content.

¹⁰ While the FCC's May 2014 Proposed Rules would have in principle applied equally to all service providers domestic and foreign, a decision to give priority to services or content provided by one set of suppliers who can pay for this privilege, over others who cannot, would have discriminated in effect against the latter. Such differentiated treatment of Internet traffic would have a disparate and negative impact on those foreign service providers who are unwilling or unable to pay the "fast lane" premiums, especially those from the developing world. For a discussion of the overlap between interconnection and network neutrality issues, see Marvin Ammori, "Interconnection Disputes Are Network Neutrality Issues (of Netflix, Comcast, and the FCC)," CircleID (7 April 2014), http://www.circleid.com/posts/20140407_interconnection_disputes_are_network_neutrality_issues.

¹¹ The United States is by far the most litigious member of the Dispute Settlement Body and has been the complainant in 107 disputes and respondent in 121. World Trade Organization, "WTO Disputes By Country/Territory," http://www.wto.org/english/tratop_e/dispu_e/dispu_by_country_e.htm (date accessed: 20 November 2014). See also Veijo Heiskanen, "The Relation of International and Municipal Law," *Finnish Y.B. Int'l L.* 1 (1990): 154–57; John J. Barcelo, "The Status of WTO Rules in U.S. Law," Cornell L. Faculty Publ'n, Paper (2006): 36.

¹² Thomas Sparrow, "Behind the Scenes of Latin America's 'Internet Brain,'" Internet (30 January 2013), <http://www.bbc.com/news/technology-21178983>.

¹³ Professor Alberto Cerdá, "Net Neutrality Around the World Panel," (George Washington University Conference on Net Neutrality and Global Internet Freedom, 23 October 2014), <http://vimeo.com/user9108723/review/113398905/dfb1d2334>

(min. 35 – 39).

¹⁴ Foo Yun Chee, "EU Parliament Votes to End Roaming, Protect 'Net Neutrality,'" Internet (3 April 2014), <http://uk.reuters.com/article/2014/04/03/us-eu-telecommunications-parliament-idUKBREA320S520140403>.

¹⁵ Olivia Solon, "Victory for Net Neutrality in European Parliament," Internet (3 April 2014), <http://www.wired.co.uk/news/archive/2014-04/03/eu-net-neutrality-victory>.

¹⁶ Reagan MacDonald & Giusy Cannella, *Net Neutrality: Ending Network Discrimination in Europe, in The Value of Network Neutrality for the Internet of Tomorrow*, Luca Beli and Primavera De Filippi eds., (2014), 47.

¹⁷ *Ibid.*; Christopher T. Marsden, *Net Neutrality: Past Policy, Present Proposals, Future Regulation? in The Value of Network Neutrality for the Internet of Tomorrow*, Luca Beli and Primavera De Filippi eds., (2014), 83–84. But see "Merkel challenges net neutrality by urging fast lanes for 'special services,'" Internet, <http://rt.com/news/211635-merkel-against-net-neutrality/> (date accessed: 25 January 2015).

¹⁸ 2015 Open Internet Order, *supra* note 1, at par. 25.

¹⁹ *Ibid.* at par. 112. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not block lawful content, applications, services, or nonharmful devices, subject to reasonable network management."

²⁰ *Ibid.* at par. 119. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not impair or degrade unlawful Internet traffic on the basis of Internet content, application, or service, or use of a non-harmful device, subject to reasonable network management."

²¹ *Ibid.* at par. 125. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not engage in paid prioritization. [...] Paid prioritization refers to the management of a broadband network provider's network to directly or indirectly favor some traffic over other traffic, including through use of techniques such as traffic shaping, prioritization, resource reservation, or other forms of preferential traffic management, either (a) in exchange for consideration (monetary or otherwise from a third party), or (b) to benefit an affiliated entity."

²² *Ibid.* at par. 136. "Any person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not unreasonably interfere with or unreasonably disadvantage (i) end users' ability to select, access, and use broadband Internet access service or the lawful Internet content, applications, services, or devices of their choice, or (ii) edge providers' ability to make lawful content, applications, services, or devices available to end users. Reasonable network management shall not be

considered a violation of this rule."

²³ *Ibid.*

²⁴ *Ibid.* at par. 152

²⁵ Center for Democracy and Technology, No. 208 *Net Neutrality, Zero-Rating & Development: What's the Data?*, INTERNET GOVERNANCE FORUM, http://www.intgovforum.org/cms/wks2014/index.php/proposal/view_public/208, (hereinafter "CDT report").

²⁶ 2015 Open Internet Order, *supra* note 1, at par. 194.

²⁷ *Ibid.*

²⁸ *Ibid.* at par. 195.

²⁹ *Ibid.* at pars. 202–205.

³⁰ Jeremy Gillula and Kit Walsh, *The FCC is Keeping an Eye on Interconnection, But More Clarity is Needed*, ELECTRONIC FRONTIER FOUNDATION (May 5, 2015), <https://www.eff.org/deeplinks/2015/04/fcc-keeping-eye-interconnection-more-clarity-needed>.

³¹ *Ibid.*

³² "WTO Dispute Resolution Gateway," Internet, http://www.wto.org/english/thewto_e/whatis_e/tif_e/displ_e.htm (date accessed: 14 November 2014).

³³ World Trade Organization, "Mexico – Measures Affecting Telecommunications Services," Internet, http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds204_e.htm (date accessed: 14 November 2014).

³⁴ *Ibid.*

³⁵ *Ibid.*

³⁶ Article XIV of the GATS allows for several general exceptions that acknowledge the interests of Member States in protecting public health, public order and safety, public morals, etc. GATS: General Agreement on Trade in Services, art. XIV, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1B, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 284 (1999), 1869 U.N.T.S. 183. See also Thomas Cottier et al., *Article XIV GATS: General Exceptions*, in *Max Planck Commentaries on World Trade Law, WTO – Trade in Services*, Rudiger Wolfrum et al. eds., (2008) (describing the WTO legal framework for GATS general exceptions clause); Appellate Body Report, *United States – Gambling*, ¶ 291, WT/DS285/AB/R (Apr. 27, 2005) (holding that WTO case law on GATT exceptions is relevant for the interpretation of Art. XIV of GATS). It is important to note that these exceptions are substantively the same as those provided for by ICCPR Art. 19(3), discussed below. Although the US has relied on these GATS exceptions in past cases brought against it under the DBS, it would be hard-pressed to do so here for the same reasons outlined in relation to the application of ICCPR Art. 19.

³⁷ See, e.g., Universal Declaration of Human

THE PRICE OF PAID PRIORITIZATION

Rights, art 19, G.A. res. 217A (III), U.N. Doc A/810 at 71 (1948), available at <http://www.un.org/en/documents/udhr/> [hereinafter UDHR]; International Covenant on Civil and Political Rights, art. 19, G.A. res. 2200A (XXI), 21 U.N. GAOR Supp. (No. 16) at 52, U.N. Doc. A/6316 (1966), 999 U.N.T.S. 171, entered into force Mar. 23, 1976, available at <http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx> [hereinafter ICCPR]; American Declaration of the Rights and Duties of Man, art. 4, O.A.S. Res. XXX, adopted by the Ninth International Conference of American States (1948), available at <https://www.cidh.oas.org/Basicos/English/Basic2.American%20Declaration.htm> [hereinafter ADHR].

38 Having ratified the ICCPR, the United States is a party to that treaty. See Human Rights Council, *Compilation Prepared by the Office of the High Commissioner for Human Rights: United States of America*, Aug. 12, 2010, A/HRC/WG.6/9/USA/2, available at http://lib.ohchr.org/HRBodies/UPR/Documents/session9/US/A_HRC_WG_6_9_USA_2_United%20States%20of%20America_eng.pdf. The ADHR is binding on all Member States of the Organization of American States by virtue of their membership in that Organization and ratification of the OAS Charter.

Organization of American States, "Charter Signatories and Ratifications," Internet, http://www.oas.org/dil/treaties_A-41_Charter_of_the_Organization_of_American_States_sign.htm. See also Dawn Carla Nunziato, "The U.S. Federal Communications Commission's Proposed Rulemaking in the Matter of Protecting and Promoting the Open Internet," (15 May 2014), 3-4, available at <http://www.osce.org/fom/119819?download=true> (describing the "commitment by OSCE Participating States to freedom of expression ... as protected by international instruments").

39 ICCPR, arts. 2, 19, 26; ADHR, arts. 2, 4.

40 UDHR, art. 19; ICCPR Art. 19; ADHR, art 4.

41 Human Rights Council Res. 20/8, *The Promotion, Protection and Enjoyment of Human Rights on the Internet*, 20th Sess., June 29, 2013, A/HRC/20/L.13, ¶ 1 (stating that "the same rights that people have offline must also be protected online, in particular freedom of expression, which is applicable regardless of frontiers and through any media of one's choice"), available at <http://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session20/Pages/ResDecStat.aspx>.

42 Joint Declaration on Freedom of Expression and the Internet, (1 June 2011), para 5(a), available at <http://www.oas.org/en/iachr/expression/showarticle.asp?artID=848>.

43 Human Rights Committee, *General Comment No. 34: Article 19: Freedoms of Opinion and Expression*, ¶ 15, CCPR/C/GC/34 (Sept. 12, 2011), available at <http://www2.ohchr.org/english/bodies/hrc/docs/gc34.pdf>.

44 See Yancy Strickler, "FCC's 'Fast Lane'

Internet Plan Threatens Free Exchange of Ideas," Internet (4 July 2014), http://www.washingtonpost.com/opinions/kickstarter-ceo-fccs-fast-lane-internet-plan-threatens-free-exchange-of-ideas/2014/07/04/a52ffd2a-fcbc-11e3-932c-0a55b81f48ce_story.html.

45 ICCPR, art 19(3).

46 Ibid., art. 19(3)(a)-(b). As noted already, these exceptions are substantially similar to those provided for in the GATS Article XIV, discussed *supra*.

47 Human Rights Committee, *supra* note 29, at ¶ 22; see also ICCPR, art. 19(3).

48 Human Rights Committee, Internet, <http://www.ohchr.org/EN/HRBodies/CCPR/Pages/CCPRLIndex.aspx> (date accessed: 23 January 2015).

49 See, e.g., Ithiel de Sola Pool, *Technologies and Freedom* (Belknap Press, 1983) 71-107.

50 Ibid. at 106.

51 Jerome A. Barron, "The Telco, The Common Carrier Model, and The First Amendment – The 'Dial-A-Porn' Precedent," Rutgers Computer & Tech. L.J. 19 (1993): 371.

52 47 C. §151 (1934)

53 See *Am. Tel. & Tel. Co. v U.S.*, 299 U.S. 232 (1936). Under the Communications Act of 1934, common carriage obligations were imposed upon companies that were (1) engaged in interstate communication, (2) by wire, (3) by any entity engaged as a common carrier for hire. The Act's definition of common carrier looked to "whether the carrier holds itself out indiscriminately to a class of persons for service," regardless of whether the entity enjoyed monopoly power.

54 *Sable Communications, Inc. v FCC*, 492 U.S. 115 (1989).

55 Second Computer Inquiry, Final Decision, 77 FCC2d 384, para. 96, 47 Rad. Reg. 2d (P & F) 669 (1980) [hereinafter Computer II Final Decision]; Basic service is the offering of "a pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer supplied information." *Ibid.* at 419-20. See also text accompanying notes 5-7.[I think this is the first time you mention the Computer Inquiries]

56 Policy and Rules Concerning the Interstate, Interexchange Marketplace, *Report and Order*, 16 FCCR.7418, para. 2 n.6 Comm. Reg. (P & F) 641 (2001) ("The Commission has concluded that Congress sought to maintain the basic/enhanced distinction in its definition of 'telecommunications services' and 'information services,' and that 'enhanced services' and 'information services' should be interpreted to extend to the same functions.").

57 Communications Act of 1934, Section 3(44), as amended and codified at 47 U.S.C.A. Section 153(44) (West 1991).

58 See *National Cable & Telecommunications Association et al. v Brand X Internet Services et al.*, 545 U.S. 967, 975-76.

59 17 FCCR. 4798 (2002).

60 *Ibid.*

61 *Ibid.*

62 *Ibid.*

63 See Dawn C. Nunziato, *Virtual Freedom: Net Neutrality and Free Speech in the Internet Age*, (2009), 115-133.

64 Jerome A. Barron, "The Telco, The Common Carrier Model, and The First Amendment – The "Dial-A-Porn" Precedent," Rutgers Computer & Tech. L.J.19 (1993): 371.

65 de Sola Pool, *supra* note 38, at 106.

66 2015 Open Internet Order, *supra* note 2.

2.4.22 Vijay Dahiya

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer: No, TSPs must not be allowed to have differential pricing. Telecommunication as a concept puts telephone and internet at the same level by calling them mediums to connect, share and gain information.

When I talk to someone on the phone, I am charged for the duration of the call and not in connection to the person I am talking to. Like, I am not asked and should not be asked that I pay less to talk to my mother over phone and pay more to talk to a stranger. Imagine such a situation which would be disastrous as I would end up talking more to someone where I can talk free even if it is not essential to talk. And I would avoid talking to someone where I am charged for the telephone call. This overall will hamper the communication process in the whole society rather than promoting it.

Now putting the same principle on internet as a medium and looking it from the actual consumer's perspective, he may be tempted initially to see and browse only that content which is free and keeps on seeing only that. However similar content but giving a different view on the same topic may not be accessed by him because that is chargeable. And thus the overall process of communication in a society will be hampered.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer : This requires an almost impossible task because content provider is not just website of a big company but an individual writing a blog is also a content provider. In the world where around 3.5 billion are using internet, there are around 1 billion who are providing content in small or big form. It is like a group of 4 people where 3 are listening and 1 is talking; and not a conference of 1000 people listening and 1 people lecturing. So number of content providers is almost as big as users/consumers. Now a few hundred TSPs rather than simply charging the consumer and letting the whole net open for providing content; brings a platform provider in between. This will lead to non discrimination both on the end of content provider (first registering himself) and consumer. Transparency will surely not be there as I as a content provider may be asked to agree to the terms and conditions of the platform provider (which I otherwise may not have agreed) or even be asked to pay (in the later stage) to be heard and seen by the actual user.

TSPs can be allowed to provide differential pricing for data usage by segregating themselves on the basis of duration of pack, speed of the pack, total free usage limit etc. rather than differing prices on the basis of content.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes,

please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer : With growing smart phone and computer usage, the market in terms of people using internet is also growing. Hence, the TSPs anyways have the huge market option of increasing their consumer base. Now, if the TSPs or giant like Facebook are really serious in connecting the underprivileged/less-paying capacity consumers and help them by providing free access and thus knowledge here are the options:-

- (i) Every TSP irrespective of their tariff which is currently based on speed, duration, data limit must provide access to government website free of charge. They can come up with a model where a person pays only 10 Rs. per month and can access **only** government websites. A rural man will be more than happy to get his bank account opened, receive his NREGA payment, receive his subsidy, gets his Aadhar card changed, register his marriage, issue his passport etc. all for free or mere 10 Rs. One, the government website as a content provider is neutral and same for all. Two, such real free internet access will not be discriminatory to any other content provider because government as one stakeholder/content provider is unique and will help people connect in the real sense.
- (ii) If still a website like Facebook thinks that in terms of giving out knowledge, information etc. it is better than a government website then it should provide itself free to every TSP rather than collaborating with one TSP or one platform provider or becoming a platform provider itself.
- (iii) Adding the two above, I may opt for any TSP finalizing my discussion on speed, duration etc. and receive some information free of cost irrespective of which TSP's services I am taking.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer : Consultation and execution must be with the objective of maintaining principles of transparency and fair competition. I as a consumer can judge the speed of an internet and thus can decide on my TSP accordingly. Transparency will vanish if differential pricing is on the basis of content as I as a consumer can compare speed or data usage limit but can never compare among millions of content providers. **The simple chain of TSP as service provider and end user as paying customer must not be stretched by inserting platform providers as the new salesmen and content providers as the wholesale buyers who first have to satisfying the whims and fancies of TSP and platform user before reaching to the actual consumer.**

2.4.23 Anil Nag

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December 30th, 2015

Consultation Paper No. 8 / 2015:
Consultation Paper on Differential Pricing for Data Services

Dear Sir,

1. My response to subject consultation is as follows. I do so as an individual and a consumer of telecom services.

General

2. This consultation is similar to an earlier one on Net Neutrality. I reiterate my earlier response that any overt or covert attempt to stifle Net Neutrality is same as stifling individual's right to choice. Differential Pricing or Preferential pricing of data services will do just that, hence, unacceptable. TSPs are welcome to design their data plans based on Data Volume and Validity and leave the usage to us without any ifs and buts.
3. ***The good Samaritans who wish to offer free this or that may instead offer free data every day and leave the choice to the user. Let them not be the judge for what is good or bad for us. Hence, I also take this opportunity to register my opposition to Free Basics by Facebook .*** It is a lollipop to entrap and then loot through variety of data plans which every user of free basics will have to subscribe to access links provided by it.

Consultation Points

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

4. No. There should not be any differential or preferential pricing by TSPs. Let them not pretend to be Good Samaritans. Let them remain good businesses and stick to providing data plans by volume and validity. No more, no less. We will choose our own websites, applications or platforms. ***We don't want any guardians on net, be it TSP or anyone else.***

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

5. All of these are already happening without differential pricing. Hence, there is no need for any extra measures. TRAI need only to ensure that differential pricing or preferential pricing is not allowed as it is inherently discriminatory, non-transparent, unaffordable, anti competition, anti innovation and barrier to market entry. There cannot be any measures against what is inherent to any proposition like differential pricing.

6. Hence, TRAI should not permit differential pricing in data services.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

7. The only transparent method to provide free internet access is *free data volume per day as a policy and not through discretion*.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

8. Applications / Platforms / TSPs should not only be discouraged but prevented from offering services like Free Basics / Zero ratings. **Differential or Preferential pricing should be emphatic NO.**

Conclusion

9. The gigantic promotional effort to push certain free services in the garb of great public good is on display virtually on daily basis. There are many who have been taken in by this propaganda. TRAI has an obligation to protect not only the public at large but a principle called Net Neutrality which are in danger of being enslaved by powerful enterprises. I have no doubt that TRAI will fulfill this obligation without fear or favour.

With many thanks, kind regards and best wishes for a very happy new year,

Yours sincerely,

Wg Cdr Anil Nag
30th December 2015

2.4.24 V Sridhar Rohit Prasad

Response to
TRAI Consultation Paper On

Differential Pricing for Data Services

Contributed by

Dr. Rohit Prasad, Professor, MDI, Gurgaon (rohit@mdi.ac.in)
Dr. V. Sridhar, Professor, IIIT-Bangalore (vsridhar@iiitb.ac.in)

30 December 2015

Summary:

The issue of the pricing frameworks permissible with respect to an *end user* can only be discussed in conjunction with the pricing policies that are permissible between *TSPs and Over The Top (OTT)* players so as to assess the overall impact.

With this understanding we base our response to this consultation paper on our earlier response with reference to the consultation paper on “Regulatory Framework for Over-the-top (OTT) services”. Our response to the net neutrality consultation, drafted along with Prof Manjunath and Prof TK Srikant included the following recommendations:

“All bits should be provided with at least a minimum guaranteed speed as per the NTP. Apart from the above minimum speed, we propose that a *relative ceiling price* (price/bit consumed at the existing minimum required broadband speed) for data usage charges shall be fixed by TRAI and changed in tune with technology evolution and competition levels (as is being done with Mobile Termination Charges and SMS charges).”

If there is a high level of pricing freedom that the TSP has with respect to one side (i.e. end users) of the market but not the other (i.e. OTTs), then the exercise of market power is likely to be detrimental. Therefore pricing freedom should exist with respect to both sides but with important caveats which are detailed below.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Response:

The TSP can recover its investment in the network and manages congestion by charging the OTT or the end user or both.

The TSPs should be allowed to have differential pricing along the following dimensions:

1. Time dependent pricing (all bits priced the same; however varies across time)
2. Location dependent pricing (all bits priced the same; however varies across location)
3. Application dependent pricing (bits of different applications IN DIFFERENT CLASSES OF SERVICE are priced differently). The different classes shall be enumerated by the Regulator or self-declared by the OTTs (e.g. synchronized narrowband application such voice/ messaging, synchronized broadband application such video).

Options (1) and (2) above do not violate Net Neutrality (NN) principles and hence should be allowed.

However (3) depends on another dimension: priority accorded to the bits as well. We illustrate below this special cases of (3), with priority and without differential priority. If in (3), in

addition to differential pricing, differential priority of bits is done, then it is a complete violation of NN and hence should NOT be allowed.

Case 1: Same priority; differential pricing

If all bits are with the same priority, but they are priced differently is a case that satisfies NN with respect to priority; however it does not satisfy with respect to price. Zero rating is an indicative of this where the bits are priced at zero for the consumer that fall under this plan while they are not given either higher/ lower priority compared to others. However, zero rating is a form of an extreme pricing. If Zero rating is allowed, then for a price of zero, often a downward sloping demand curve will lead to heavy (theoretically infinite) demand for the category of service provided under this scheme.

A TSP acts as a two-sided platform that connects users on one side and Over The Top (OTTs) on the other side. An OTT can pay fully for the content including bandwidth so that the user is fully subsidized. Hence the marginal cost of providing these bits to end consumers (i.e. data usage charges) is being paid by the OTT firms (and hence subsidized to the end users) in the zero-rating scheme. If due to zero rating, the demand indeed increases to a very large value, the subsidy amount to be given by the associated OTT firms to TSP should also be high. **Hence the argument is that only large firms and collusive deals between OTT firms and TSPs will survive.**

This can potentially **crowd out** other services due to constraints on bandwidth and **theoretically block**. However, OTT paying for the bandwidth cost of the user is an indicative of a close cartel being formed between OTTs and TSPs; this collusion has the possibility of crowding out the other OTTs, especially start-ups who cannot subsidize the TSP for bandwidth consumed by the users.

Hence we propose that all bits should be provided with at least a minimum guaranteed speed as per the National Telecom Policy. This should prevent even zero-rated content from crowding out the other content. In any case access to non-zero-rated apps should not be blocked.

Apart from the above minimum speed, we propose that a relative ceiling price (price/bit consumed at the existing minimum required broadband speed) for data usage charges shall be fixed by TRAI and changed in tune with technology evolution and competition levels (as is being done with Mobile Termination Charges and SMS charges). This is required to prevent crowding out of non-zero rating but essential apps due to differential pricing.

Also it shall be noted that we recommend no price differentials across the same class of service.

One of the practical problems with regulating price discrimination is the asymmetric information between the service provider and regulator, especially on cost of providing service. In such cases rather than setting price caps, the regulator can set relative price caps between different classes of service. For example, relative price setting can be done with traditional voice service price as the cost of voice service is well understood and known. Further, knowledge of the relative cost structure across services is subject to less uncertainty compared to knowledge about absolute costs.

Case 2: Same price; differential priority

This is a case when TSP charges the same for each bit; however prioritizes certain OTT content. This case involves TSP implementing technologies such as advanced cache management, Deep Packet Inspection amongst others. From the consumer point of view, it provides better Quality of Experience (QoE) without additional price. Hence can possibly increase consumer surplus. This may also involve close cooperation and agreement between select OTTs and TSPs. This also might decrease the QoE of other OTT services that are not in the scheme.

However, such prioritization shall be based on class of service (e.g. synchronized narrowband application such as voice/ messaging, synchronized broadband application such as video); it shall not vary across source/ app within the same class of service. This of course requires that the regulator define the classes and the allowable management principle. The traffic classes should be minimal and the applicable management minimal and verifiable. The definitions of the classes should not be left to the TSPs.

To provide a minimal QoE for essential applications that are not part of this scheme, we propose that TSPs should adhere to providing minimum guaranteed speed as per our National Telecom Policy for every bit that is accessed by the consumers. Hence we propose this minimum speed for all bits (e.g. 512 Kbps and increased later on as mandated) shall be provided as per NTP 2012 (2 Mbps currently; and 100 Mbps thereafter as per clause 1.5 of NTP 2012).

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Response:

Part of the answer to Question (1) addresses the priority issue and minimum speed of access required for access to any bit on the Internet.

Further, the pricing mechanism and methodology should be completely transparent. The pricing schemes should be not only be published; the users should be informed whenever there is a change. User acceptance is needed for enforcing policy based pricing or prioritization schemes as applicable.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response:

If free access to Internet is considered, then it shall be considered as a public good (non-excludable and non-rival).

The regulator shall specify which of the apps/ web sites/ content qualify as public good. Cost of providing access to these services shall be borne by the Government as payment to the TSP or direct transfer to the end user.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Since the objectives of regulation must also include universal access to the internet, the ideal would be to have a neutral network in which the TSP does not distinguish between the source of the bits and all bits belong to same class of traffic (i.e. synchronous voice, synchronous video, asynchronous media/ file downloads) are subject to the same traffic management rules independent of the source. A lesser ideal would be take the following approach is be suggested.

1. There should be no distinction made for OTTs transmitting the same kind of data, e.g. VoIP, audio streaming, video streaming, and video download.
2. If there is a conflict of interest, then there should be an attempt to create a level playing field between the service provided by the ISP and the OTT which is in competition with that service. The pricing in this area can be under forbearance by the regulator.
3. A significant portion of the Internet must be reserved as the 'classical internet' where OTTs are not charged at all, and a minimum quality of service is assured in a 'best effort paradigm'.

2.4.25 Amit Kashyap

To: Telecom Regulatory Authority of India (TRAI)

Subject: Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. Differential pricing programs – in particular, zero rating programs like Free Basics – are an essential tool for bringing more unconnected people online across India and should not be banned.

Free Basics provides free access to essential Internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all people, developers and mobile operators.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Below are specific responses to the questions posed by the TRAI in the Consultation Paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

It is not clear that the Free Basics program should be considered as differential pricing, but even if it is, Free Basics should be allowed under any regulatory framework adopted by TRAI.

Free Basics is an essential tool for bringing more people online and expanding connectivity across India. Moreover, the structure of Free Basics is pro-consumer and pro-competition:

- Free Basics is non-exclusive. It is available to all operators on the same terms and conditions.
- Free Basics is an open and non-discriminatory platform. Any content owner can participate as long as it meets the same technical criteria, which are openly published.
- Free Basics is free to both users and content owners. No one is charged for accessing the content on Free Basics. No content owner is charged for participating in the platform.
- Free Basics is transparent. All of the technical standards are published and available online.
- Facebook does not pay carriers to exempt its content from usage limits.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

TRAI should consider whether a program helps to expand connectivity and whether the program is free to both users and content providers, non-exclusive for operators, open to all content providers under objective standards, and transparent about its terms and practices. Free Basics meets all of these criteria.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.

There are various models that could be used to provide free Internet access to consumers. However, Free Basics is the kind of program that should be allowed under any regulatory framework. Free Basics brings more people online faster and provides newly connected users with an onramp to the full Internet. Facebook has shown that when a carrier launches Free Basics, new users are brought onto the carrier's mobile network at an average rate that is 50% faster than before the launch of Free Basics. Free Basics also provides an effective onramp for users to quickly begin accessing the broader Internet. On average, in countries where Free Basics has launched, more than 50% of users who come online through Free Basics choose to pay for data and access the full Internet within 30 days.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TRAI's public consultation on these issues is rightly guided by the goal of connecting the unconnected across India. Despite significant progress, 80% of India's population – 1 billion people – still are not connected. TRAI must therefore ensure that any regulatory intervention does not end up depriving people of the opportunity to come online. Instead, TRAI needs to create a regulatory environment where access-expanding programs can flourish.

2.4.26 M S Abhinandan

Comments on Consultation Paper on Differential Pricing for Data Services

Submitter: M S Abhinandan

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Comment: No, TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms. TRAI is right in underlining its responsibility to ensure orderly growth of telecom industry. The success of “freemium” model leads to first disruption and then monopoly. The failure of the model leads to disruption with destruction of value. Either way the approach is detrimental to the growth of the telecom industry. The associated uncertainty which is a result of profit centered corporate strategies adversely effect in the overall business environment by surfacing “bubbles” and unhealthy business precedents. The bloodbath in the Indian airline industry is an example of irrational pricing which has pushed back the development of the industry by a few years and deprived the citizens of airline service for that many years.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Comments: The differential pricing complies with principles enumerated above in letter but not in spirit. This calls for conceiving economic instruments to discourage deceptive practices.

1. The projected losses due to differential pricing should be presented and approved in the EGM before implementation. This should be irrespective of business considerations of business confidentiality. The losses in the current year as a result of differential pricing should be quantified and the same should be reflected in the balance sheet. In case of the losses being borne by a different/second entity the same should be considered as income for the TSP and taxed accordingly.
2. The dominant TSPs with greater resources at their command through differential make substantial gains by acquiring new customers at a price less than the “cost of customer acquisition”. These notional gains need to be quantified and should be treated as profit and taxed accordingly.

3. In the event of second entity being a multi-national company the transfer pricing norms should be used to calculate the cost of customer acquisition as notional gains.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/ business models?

Comment: The corporate entities with espousing the cause increasing internet penetration shall become partners in Universal Services Obligation Fund (USOF). Differential pricing is a tool which impairs without curtailing the freedom of choice of citizens hence the regulator, to protect consumer interest should be overseeing the management and deployment of private resources for public service that impinges upon the freedom of choice of the citizens. The present vision, objective and functions of USOF is geared towards ensuring “rural Indians to achieve their fullest potential and participate productively in the development of the nation by virtue of being effectively connected through a reliable and ubiquitous telecommunications network, access to which is within their reach and within their means.”

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Comment: Consider quantifying economic gains achieved by differential pricing for appropriate revenue figures and tax treatment. Consider mandating TSPs to share all the figures and customer data related to free services.

2.4.27 T B Barot

Please read full and don't judge only by overview.

I support "Net Neutrality" and "Internet for All" **both**.

Two main points:

Point No. 1: “Either Free or Net Neutral” But “No Price Discrimination”

Companies must be allowed to provide ONLY two options:

1. **Totally Free content** through separate browser application
2. **100 % pure Net neutral internet** (as being offered today)

No discrimination in pricing can be accepted, as slowly this can grow later in friendly and enemy websites / content.

(The ISP can block intra-country VoIP application, to save their profit. But can't charge differently for them) (See Point No. 2 for other option)

(Means VoIP through phone network data should be blocked but VoIP through broadband data plans should be allowed.)

(Also they should be allowed to throttle speed to accommodate all users, for predictable usage & for economic pricing plans.)

Explanation:

Totally Free content through separate browser application

1. India can exploit, operators & e-commerce companies' interest, towards providing essential internet to many people.

Suggestions:

1. Network operators / Third parties in ties with operators can be allowed to launch a separate "Browser Application" Named as "XYZ Free Internet."

(There may be more than one players ready for this, allow them also)

2. That browser can only browse 20 websites.
 - 10 – They can choose. (Obviously they will choose e-commerce sites as they will get paid for it.) And
 - 10 – Suggested by TRAI. (E.g. Wikipedia, One Email id., Google, Google catche, etc)
3. **Basically, They have to allow TRAI suggested websites in Free, and what they will get in return is: The right to offer some websites free.**

They can also show localized ads upon opening that browser.
Also they can pre-compress the data just like OPERA does.
4. **Separate browser (with only 20 websites) is compulsory** as it will create psychological difference in customers' minds. Only the people wanting to purchase goods or to see some information in FREE will open that. Also, "Free Internet" word can be made compulsory in naming browser.

Point No. 2: What to do for VoIP calls?

Solution: Allow network operators to delay the VoIP response (Not block but Delay) So that "Real Time" conversation over VoIP can be avoided and thus regular network will have upper hand in calls.

Description:

1. Suppose within five years, all network operators provide high speed internet. Everybody in urban area will have this high speed internet. But rural areas don't have so.
2. Now, one person wants to call to other, will use VoIP instead of regular network.
(This will be prominent in Urban Areas)
So, the numbers of calls using regular network will drop drastically (Because urban areas use VoIP more).
And therefore, to compensate revenue loss, the companies will have to increase tariff of regular network calls.
Loser: Rural citizen. For calls
3. Also, companies will increase data tariff to compensate revenue loss.
Loser: People who use internet for information, education & business purposes. For data.
4. **Is blocking VoIP Possible at all?**
 - i. Operators can block VoIP applications. ---- OK.

- Then VoIP will get available on browsers.
- ii. Operators can block VoIP offering websites from browser.-----OK Then people will use proxies to bypass this block.
Operators will once again come to TRAI for blocking all these.
 - iii. Daily thousands of proxies appear & disappear.
Ultimately, this will become the game similar to "School's Computer Lab". Blocking, cracking, Filtering etc...
 - iv. **It will Not be beneficial for open internet access, if the traffic will start getting filtered.** vi. **By mistake, operators may end up in blocking some website which may be useful for someone.**

Suggestions:

- 1. Blocking of VoIP will be difficult and may erupt resistance from public.
- 2. Messaging applications must be kept completely out of this case.
Because today, messaging has become prominent in small business chains. People are sending their quotations, sample photos on messaging apps.
It is just working as a handy mail for the people.
So looking at its economical advantage and also they are very secondary resource for companies who never could offer good messaging. So, messaging apps should be kept free.
- 3. **They can be allowed to DELAY websites response (for 5 seconds to max 15 seconds) for those websites, to which operator suspect they are directly or indirectly allowing VoIP.**
- 4. Even though VoIP in browser may be difficult to be stopped (Given no filtering), operators should be allowed to delay suspected VoIP supporting WebPages max by 15 seconds. So that they don't come to TRAI with this complaint again & again. Market will decide the fate of who delays how much.

Thank you,

T B Barot

2.4.28 Shashank Mehra

Net Optimality

as opposed to Neutrality.

By Shashank Mehra

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**The Institute
of Austrian
Economics**

1. The Net Neutrality Cult

With apologies to everyone who is offended by me referring to Net Neutrality supporters as a cult, it has become important to address this elephant in the room and give a background on the origins of Net Neutrality debate. My aim is not to call all supporters of net neutrality in academia as part of a cult. After all, Net Neutrality is an important topic, one that requires knowledge in computer networks, economics and law. However with the recent developments in certain governmental policies and the way Net Neutrality, as an egalitarian concept, has gained public attention, approval and demand without proper understanding of the economic ramifications by the public, I am forced to call the rise of this public movement as a cult. Members of this cult label anyone who does not toe the line on neutrality as a "shill" for ISPs. The fact that both Airtel and Facebook had to market their obviously "un-neutral" schemes as being completely in accordance to Net Neutrality is a testimony to this fact.¹

Net Neutrality originated in a very "un-cultish" manner in a wonderful paper by a law professor Tim Wu in 2003². The paper itself is very balanced and considers opponent viewpoints and their counter-points (many of which will be addressed in further chapters) but by no means does it consider the debate on "Net Neutrality" as "settled". Instead the reasons for Net Neutrality as a goal is based upon competition and a "level playing field".

On the one hand, this is an academic topic that deserves attention from network engineers, economists and law experts. On the other hand, public by and large treats this debate as "settled" and "Net Neutrality" as an unquestionable goal; A principle that must not be violated no matter what³. With the exception of Vint Cerf, most of the senior engineers responsible for developing the packet switched internetworking of today oppose "Neutrality" legislation. Dave Farber and Robert Kahn are very vocal about rash regulations that may impede network engineers capability to optimize their networks⁴. Professor David D. Clark, another pioneer involved in early stages of Internet development, has been reported saying "The network is not neutral and never has been", dismissing as "happy little bunny rabbit dreams" the assumptions of net neutrality supporters that there once was a "Garden of Eden" for the Internet⁵. We can only speculate how Jon Postel would react to the debate on Net Neutrality,

¹ Airtel tried to unsuccessfully differentiate between "service neutrality" and "network neutrality", when violating the former obviously violates the latter. Facebook tried to assure that both "net neutrality" and "Internet.org" can co-exist, when "net neutrality" obviously outlaws any other special usage plan.

² WU, TIM. "network neutrality, broadband discrimination - Journal on ..." 2010.

<http://www.jthl.org/content/articles/V2I1/JTHLv2I1_Wu.PDF>

³ Krämer, J. "Net neutrality: A progress report - (IISM) Information ..." 2015.

<<http://www.im.uni-karlsruhe.de/upload/publications/336c39b3-7a62-4159-bb1a-483f39dd5b24.pdf>>

This paper which provides the current (2012) status of the debate concludes that "*much of the public debate, and even some parts of the academic debate, were driven by emotionality, rather than facts*".

As such, this can be said about the public debate in India too.

⁴ "Father of internet warns against Net Neutrality • The Register." 2007. 18 Dec. 2015

<http://www.theregister.co.uk/2007/01/18/kahn_net_neutrality_warning/>

⁵ "Net Neutrality: A Further Take on the Debate - Heartland ..." 2015. 18 Dec. 2015

<https://www.heartland.org/sites/all/modules/custom/heartland_migration/files/pdfs/26497.pdf>

but given his history with government⁶ it is unlikely he would have supported achieving “net neutrality” by means of government regulations. Postel once said “The Internet Should Not Be Managed By Any Government, National Or Multinational.”

This paper shall not suffer from such convictions towards Net Neutrality. Net Neutrality is not the ultimate goal of all economic activity in the telecom sector; serving the needs of the consumer is. The telecom sector exists because of the consumer not satisfy some design conditions. While consumers individually may show rational preferences on the market, public rhetoric and egalitarian concepts usually influence them. Such influence makes individual consumers demand certain policies as a part of a herd, which may adversely affect the industry. In other words, a consumer may know what is best for himself but he may not know what is best for other consumers individually⁷. TRAI must not fall for the large number of replies on any side of the debate and instead consider the adverse economic effects of their policies, even if they are demanded by a mob. Because when the policies backfire, the mob doesn't care that they were wrong.

2. Economic Concepts

2.1 Economics of Service Providers

If you have a look at your local grocery store, you will find that it stocks a variety of brands for variety of goods. For toothpaste itself, you will find at least three brands in the store. But the store, by no means, stocks all the brands of toothpaste in existence. It doesn't even stock all brands that it can buy. It can be argued that the grocery store owner, as far as his locality is concerned, is a private party that has the power to pick winners and losers on the market. If the grocery store owner stocks brand A and not brand B, people in his neighbourhood would tend to buy brand A rather than shop at a store that is in another neighbourhood.

To new and upcoming brands, it might certainly seem unfair that established brands enjoy a lot of trust with the grocery store owners. Even established brands might feel frustrated that they are not able to reach marginal users who prefer their products, but not enough to shop at a farther grocery store. From a very narrow view, it seems as if the grocery store owners have an unparalleled ability to influence the market for everyday goods. Yet, there is mostly no cry of foul play or discrimination in the market as far as grocery stores are concerned. Even though discrimination is something that the grocery store owner does everyday. Every month he chooses which brands to stock and how much to stock. From a narrow point of view, his dictatorial powers seem to have no check.

A similar sentiment on large scale misunderstanding of how Internet works is expressed by Network Engineers here: http://www.wired.com/2014/06/net_neutrality_missing/

⁶ Postel attempted to divide the control of Internet Naming between government and non-governmental entities. But was reportedly pressured into undoing this change. Sadly this resulted in US government taking more control over Naming. Considering that most censorship today is fueled by DNS monopoly of ICANN, it should inspire us to fight back: <https://www.opennicproject.org/>

More: <http://www.wired.com/2012/10/joe-postel/>

⁷ Chapter 5, "THE MYTH OF THE RATIONAL VOTER." 2012. 18 Dec. 2015
<<http://www.libertarianismo.org/livros/tmotrvbc.pdf>>

From a wider perspective, it is important to notice that the grocery store owner does not take these decisions in a vacuum; nor do these decisions seem entirely random. His act of picking and choosing “winners” and “losers” is not based on his personal liking of that product or his personal prejudice against others. Amongst the list of priorities, making profit from the store sale is his primary motive. He may be occasionally guided by prejudices and emotions but for such decisions he pays by losing revenue and customers to other stores. In a competitive environment, the grocery store owner has to constantly respond to consumer demand; even changing consumer demand. While it is true that there will be marginal users who would continue to buy his product rather than switch to another grocery store which might be further away, it is also true that there will be marginal users who would make the switch. From a wider perspective, it doesn’t appear that the store owner has dictatorial powers. Instead his actions, although taken as a sovereign over his store, are clearly being dictated by the consumer. Even though he has complete authority over his store, his choice of brands to stock seems to reflect the consumer choice as much as possible. The more closer is his stock to consumer demand, the more profit he makes. Every bad decision would cost him “sunk goods” and every good decision would reward him with increased sales and occasionally new customers. All of these actions of the grocery store owner are taken by him based on his month end calculations.

The direction of all economic affairs is in the market society a task of the entrepreneurs. Theirs is the control of production. They are at the helm and steer the ship. A superficial observer would believe that they are supreme. But they are not. They are bound to obey unconditionally the captain’s orders. The captain is the consumer. Neither the entrepreneurs nor the farmers nor the capitalists determine what has to be produced. The consumers do that. If a businessman does not strictly obey the orders of the public as they are conveyed to him by the structure of market prices, he suffers losses, he goes bankrupt, and is thus removed from his eminent position at the helm. Other men who did better in satisfying the demand of the consumers replace him.
-Ludwig von Mises⁸

It is not uncommon to find a disgruntled customer who cribs that his favorite store doesn't stock his favorite brand or product. As it happens, the store owner has to maximize his profits, which means not only maximum sale to consumers, but also maximum margin on products. Since cost price of a good reflects the efficiency of the producer in producing that good, a lower margin is indicative of inefficiencies in manufacturing of that particular product by that producer brand. This way, through voluntary interaction between producers, consumers and store owners different economic forces tend towards a balance; even though they never reach it. Changing consumer demand and changing manufacturing technologies makes it imperative that the store owner be able to quickly respond to these economic forces. Even though he may never reach optimality or equilibrium, he must be given the freedom to do so. The store owner is perhaps the only one most capable of making this decision because it is his money and his profits that are riding on it. He is not playing a

⁸ The Sovereignty of the Consumers, Human Action, Ludwig von Mises<<https://mises.org/library/human-action-0/html/pp/747>>

gamble and he is not blindly picking brands to stock. His decision is quite entrepreneurial and requires entrepreneurial knowledge which can only be generated by individuals observing prevailing conditions and who are ready to invest and compete⁹.

If a central authority was given the task to relieve all the store owners of this duty, and to set the stock amount and prices for them it would be nearly impossible for the final distribution of goods in the stores to reflect consumer demand. This problem that a central authority would face has been called knowledge problem¹⁰ by F. A. Hayek and calculation problem¹¹ by Ludwig von Mises. A central authority would lack the local and entrepreneurial knowledge required to make these decisions. Without a competitive environment, the profit/loss mechanism will not play the role as described above and the store owner (and the central authority) would have no means to do effective month end calculations. Such calculations would not be able to tell him which products are in demand and most economic to manufacture.

Faced with such a mammoth task to do industry wide calculations, the government could enforce a sort of “neutrality” in the name of creating a “level playing field”. Confused free market supporters will rally to this cause being frustrated by government miscalculations everywhere. At least this way they see new and upcoming producers being given a chance to work in the market rather than government giving out licenses to producers for retail. Regardless of the pros and cons of this approach, this cannot be upheld as an “ideal” or a “cannon law”. Very few new producers are able to fare in the competitive market. Very few of them are able to disrupt the established order to better satisfy the consumers. Most new businesses fail. It would seem highly uneconomical to keep buying goods that are not in demand for resale to consumers who don’t want to buy it. Compare this to the free market in grocery stores, where the store owner has to constantly look out for changing demands and new products by offering free samples (or letting them be offered by the salesman on his premises) and promotions. If his competitor reacts to the changing market conditions before him, it could mean less profits and occasionally less future customers.

The aim of the grocery store example is not to set it up as an analogy but rather as an example in economic way of thinking. Perfect analogies to the Internet are very hard to come across. The closest I can think of is the phone network (and even there Closed User Group and Toll Free Numbers violate phone network neutrality). The example is given here to demonstrate that there is always a broader perspective to look at the market rather than an isolated view. Grocery store example is obviously not a perfect analogy for the Internet, even though you can call the grocery stores as end-point routers for everyday goods. A grocery store is limited by its size and its ability to change goods already in stock. This way it is much different from the Internet where such limitations either do not exist or they are not very restricting. If a grocery store could directly relay individual user demand to the producer and stock on per user basis, it would. Online appliance stores already do this. They are far more neutral in their approach. This is the reason that the Internet is far more neutral when it

⁹ Kirzner, Israel M., Competition and Entrepreneurship

¹⁰ Hayek, "The Use of Knowledge in Society" <<https://mises.org/library/use-knowledge-society>>

¹¹ Mises, "Economic Calculation in the Socialist Commonwealth"

<<https://mises.org/library/economic-calculation-socialist-commonwealth>>

comes to most users. Whatever perceived neutrality we have today is because of consumer demand not because of government regulations. But by no means should we blindly consider this neutrality as the end goal. Because consumer demand constantly keeps changing and more and more “non-technical” “simple” users are starting to use it. As this happens more consumer patterns will start to emerge in the market and more economic incentives will exist for ISPs to adapt to them, even non-neutrally.

2.2 A level playing field?

“There is all the difference in the world between treating people equally and attempting to make them equal.”— Friedrich Hayek

Another concept that is polluting the debate on Net Neutrality is the concept of a “level playing field” fueled by the neoclassical concept of “perfect competition”.

Conventional economic wisdom calls for the government to create a “level playing field” for competitors to properly compete with each other and provide what consumers demand. However, there are many assumptions in this demand. Central to this demand is the faulty understanding of “competition”.

The general idea of competition that people have is closer to a race track where competitors are waiting for government to signal a “go” after which the competitors will run towards the end line and the first to get there will get to provide the goods to the consumer. Or like a gamboling table, where the house (government) sets a “level playing field” for the competitors to compete. These ideas of competition, are different from an economist’s idea of competition. In these game competitions, the situation is deliberately made complicated by human intervention, for fun. The risk in the game of gambling is not “nature generated” but “man generated”. The risks in market are “nature generated”. Not only do producers do not know with certainty what the consumers want, which is the reason products fail in the market, they also do not know with certainty the best means to provide that to the consumers. The knowledge needed to estimate what the consumers desire and how to produce it, has been called “entrepreneurial knowledge” by Israel Kirzner¹². Such knowledge is produced because entrepreneurs are both attentive and risk takers. So rather than opportunities being given out by government in a level playing field (also called equality of opportunity), opportunities are produced by attentive individuals who take risks to grab them.

Not only is this idea of “level playing field” based on a false model of the market, this idea is harmful to its functioning. If producer A is in a better position to satisfy demands of a consumer than producer B, it would not make economical sense to deliberately bring producer A down to the position of producer B. While satisfying the ideological demand for “equality of opportunity” this would do a disservice to the consumer, because now he gets an inferior product. Deliberately creating a competitive environment defeats the purpose of a competitive market. The goal of competition is not to show which producer is better than the other in a “level playing field” but rather to overcome natural risky barriers to get consumers what they want.

¹² Kirzner, Israel M., Competition and Entrepreneurship

In practice however, this policy is far more damaging. Government has the worst track record of being “neutral” and providing a “level playing field”. More often than not, it selectively implements this policy in favour of politically well-connected businesses.

3. Net Optimality as opposed to Net Neutrality

3.1 False Assumption of Net Neutrality

As already mentioned in section 1, Tim Wu introduced the concept of Net Neutrality in his paper “Network Neutrality, Broadband Discrimination”. While the paper itself attempts to address arguments he anticipated (or faced) against net neutrality, the paper starts from an incorrect assumption. In the section “The Case of Net Neutrality” he writes:

The argument for network neutrality must be understood as a concrete expression of a system of belief about innovation, one that has gained significant popularity over last two decades. The belief system goes by many names. Here we can refer to it generally as the evolutionary model. Speaking very generally, adherents view the innovation process as a survival-of-the-fittest competition among developers of new technologies. They are suspicious of models of development that might vest control in any initial prospect-holder, private or public, who is expected to direct the optimal path of innovation, minimizing the excesses of innovative competition. The suspicion arises from the belief that the most promising path of development is difficult to predict in advance, and the argument that any single prospect holder will suffer from cognitive biases (such as a predisposition to continue with current ways of doing business) that make it unlikely to come to the right decisions, despite best intentions.

Well, despite best intentions, this argument defeats Net Neutrality. I share the belief with net neutrality supporters that “the most promising path of development is difficult to predict in advance”. This is the reason why Internet Service Proving must be considered an entrepreneurial activity as much as Application development is considered as one. That applications compete to provide best service to the end users is apparent. But that infrastructure providers compete too, to provide best environment for development of these applications is ignored by the paper. Once entrepreneurial nature of ISPs is recognized, the arguments in favour of government control over ISPs to enforce “neutrality” completely breaks down¹³.

¹³ "Beyond Network Neutrality - Harvard Journal of Law ..." 2005.

<http://jolt.law.harvard.edu/articles/pdf/v19/19HarvJL_Tech001.pdf> Christopher S. Yoo makes similar arguments calling out this false assumption of Net Neutrality advocates.

Van Schewick(2007) is perhaps the only Net Neutrality advocate that acknowledges this assumption but questions the potential of ISPs to innovate compared to large number of independent application developers. However it would be a fallacy to compare number of innovators. Rare as they may be infrastructure innovations usually have had a large scale effect. Series of such innovations gave us the Internet as we know today, making Application/Service level innovation possible. The potential of an

It would be incorrect to assume that a “neutral” environment is the most optimal environment to provide applications most demanded by the end users in the most optimal manner. If ISPs were completely blind and had no entrepreneurial ability then I would have joined Tim Wu in demanding Net Neutrality. For instance, if in our country Internet was run by a monopoly of government ISP, whose entrepreneurial ability is highly suspect, the best option would be to let government be this neutral “level playing field” because a monopoly is devoid of being influenced by profit/loss mechanism of the market and any specific choice it would make would not be susceptible to market correction. While entrepreneurs pay in terms of losses on making infrastructure that does not fit in with market demand, the government subsidises its bad decision with tax money.

However, private ISPs are not blind brain dead organizations lacking any entrepreneurial knowledge, whose only job is to build Internet infrastructure blindly as instructed by the supreme network designers working in some government organization/university. Instead, ISPs employ network designers and engineers so that they can best develop the network with the entrepreneurial knowledge they possess which can be live tested in the market. The assumptions of net neutrality advocates not only do disservice to ISPs but also to the network engineers working in these ISPs. They undermine the ability of these network engineers to adapt to market demand in a competent manner.

Given that private ISPs are entrepreneurial organizations, net neutrality advocates do further disservice by considering any deviation from “neutral” model of the Internet as something nefarious driven by short-sightedness and to be stamped out rather than considering the possibility that ISPs might just be attempting to respond to (changing) consumer demand with the entrepreneurial knowledge they posses (not the governmental agencies nor net neutrality advocates). Second half of Wu’s paper, where he analyses deviations from Net Neutrality in US market, is ripe with such circular logic. There is no economic reason to believe that even under the perfect version of competition that Wu expects from American markets, that optimal network solutions will be “neutral”. So when free competition does not result in “neutrality” Wu makes a case for regulations. Net Neutrality advocates assume neutrality to be the end goal rather than consumer satisfaction. Their hypocrisy lies in the fact that they consider application developers competing for more and more consumer money as something to be celebrated but not ISPs competing for more and more consumer money; that it is plain evil. If application developers need to increase their profits to expand their business, so do ISPs. The fact that ISPs run our infrastructure despite being discriminated against is quite an argument in favour of the market. I would almost feel sorry for them if it were not the fact that most ISPs today function behind protectionist policies of the government.

A common example that is usually cited is the case of “Quality of Service (QoS)”. QoS is a major issue on the Internet especially for VoIP services¹⁴. Network configurations are usually

innovation on the market is highly unpredictable and it is no place for an economist to make such assumption.

¹⁴ Krämera, J. "Net neutrality: A progress report - (IISM) Information ..." 2015.

<<http://www.im.uni-karlsruhe.de/upload/publications/336c39b3-7a62-4159-bb1a-483f39dd5b24.pdf>>

employed in private networks to improve quality of VoIP calls. Yet, any such improvements are obviously against the principles of net neutrality as the routing strategy tends to favour such traffic to decrease jitter and latency. Given the demand for 3G calling services rising, it would be obvious to anyone who understands markets, that ISPs are bound to react to this to provide special connections optimized for VoIP; and charge more for it. Yet, any attempt towards differential pricing to incentivize QoS has been heavily criticized by net neutrality advocates as a way for ISPs to simply make more money off of consumers. If it isn't the most obvious thing that can ever be said: All businesses want to make money off of consumers. But in a market economy the only way they can do so is to serve the consumers themselves; to provide them with what they want to pay for.

To be fair, Tim Wu's paper does mention alternate models of competition that undermine Net Neutrality, but no arguments are presented against those models. The case for Net Neutrality is simply self-generating because of concerns of many of its adherents; and as such is driven by more emotionality rather than logic or facts.

3.2 Net Optimality

Consider any LAN or private network. It is quite common for network engineers to tamper with routing mechanisms, create "fast lanes" etc to optimize traffic in the network and to minimize congestion. With no governmental order being imposed, private networks do not necessarily follow "net neutrality" although they remain fairly "neutral". However why must this concept be restricted to private network? Why can't the Internet work towards optimization?

Even if one believes that "No one owns the Internet" and therefore should not be allowed to "tamper with it", he cannot assume that "neutrality" equals "optimality". Especially when it comes to being optimal enough to provide your customers what they want as fast as you can. Content Delivery Networks (CDNs) in a very strict sense violate the net neutrality principle. Even if it is debatable that CDNs are still neutral and simply hosted closer to your ISP, it certainly violates the spirit of Net Neutrality¹⁵. The reason why sites like Google open near instantly is because they have their servers deep within the ISPs. Large corporations like Google and Facebook can obviously afford these services and have a performance advantage over any new competitors. However, as large consumer demand would indicate, no one wants Google to be as slow as your blog page. In the eyes of majority of the consumers, these bits are not created equal; despite these same consumers chanting slogans of "All bits are created equal". Can you really blame the ISPs for responding to consumer demand?

On the other hand, the slogan "No one owns the Internet" is highly misunderstood. Internet should be better understood as a concept - the idea of interconnected heterogeneous networks. The birth of Internet was with this idea when the researchers worked on creating

There have been quite a few successful developments in improving QoS some of which are already deployed. IPv6 will further cement the ability to discriminate using Deep-Packet Inspection. Calling into question the assumption that Net was neutral from its inception and an important reason for its success.

¹⁵ Wu, T. "Keeping the Internet Neutral? - Digital Repository @ Maurer ..." 2007.

<<http://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1485&context=fclj>>

protocols for incompatible networks to communicate with one another. Internet is not owned because ideas cannot be owned; not because the network themselves cannot be owned. Obviously networks are legally owned by both private and public parties. “Internet” of course is a unitary concept. While there can be many interconnected networks, there is only one Internet. It is better to understand Internet as an interconnected networks of private networks; where even the interconnections are done privately; which has an open invitation to connect to for a fee. The importance of looking at it this way is to break free of this mirage that Internet exists magically with people who just happen to co-operate into creating it. Internet, most definitely, was built upon private trade and competition. It is humanity’s first experimentation in Anarchism in modern times¹⁶. Therefore the economic incentives that lead to its development must not be ignored. Those advocating for Internet to be treated as “public utility” or as a “right” will ultimately bring it down to the level of water supply or electricity supply (in Indian context).

The idea of private networks providing Internet might scare a lot of people, but it is a true fact. But the fact that ISPs are still providing what consumers are demanding should give the scaremongers some pause. From the Hayekian perspective (as discussed in section 2) it might seem like individual network owners have complete control over their network and are the ultimate dictators, however from a larger perspective one can see Internet still forming to produce this ephemeral network of networks. No individual network owner has any idea how the entire Internet is routed. They economically optimize their own networks to compete with others. But in taking part in this activity, from a larger perspective, a spontaneous order emerges. Not a permanent or static one, but an order that constantly tries to adapt to changing demand and constantly tries to reach optimality; even though it never can reach it. Net Optimality is not a permanent concept. Network Engineers cannot sit in a room and design the blueprints for the entire Internet, which is permanently optimal. Not only is the consumer demand always changing, the engineers involved in central design would lack local knowledge needed for these optimizations. They must work on their own network to best provide the service economically and in doing so they end up coordinating to form the Internet. Internet is not only a worldwide experiment in Anarchism, it is the first worldwide experiment in Hayekian Anarchism; because it was spontaneous rather than centrally designed to be anarchistic. Net Neutrality is an idea that is attempting to be the “central design” when it clearly isn’t.

4. Ethical Property Rights and Spectrum Policy

Robert Kahn is particularly concerned that “net neutrality” legislation could impede network engineers’ ability to improve latency and jitter issues. Hayekian understanding of the Internet, as discussed in Section 3, really puts this concern in the center stage. Market is about experimentation and consequent learning. Competitors must have the freedom to experiment as long as they are not interfering with each other, to determine what the consumers want. Conclusions about what consumers want cannot be made from an ivory

¹⁶ “The Internet is the first thing that humanity has built that humanity doesn’t understand, the largest experiment in anarchy that we have ever had.” - Eric Schmidt, executive chairman of Alphabet Inc (formerly named Google)

tower of a central planner or a regulator. To presume that a “neutral net” would be in the best interest of the consumers could be disastrous for policy making.

Related to the idea of experimentation is the idea of externalities. Where a company A directly interferes in the operations of company B, it starts to compete in a way which is against the principles of the market. Such actions, as discussed in Section 2.2, actually make real life risks worse. The companies are no longer taking on “nature created risks” but man-made risks created by each other. For proper functioning of markets there is a need for proper arbitration and subsequent definitions of property rights/demarcations.

Net neutrality is particularly an issue in United States, but that issue is disguised over another important issue. United States, over subsequent years, has lost the competitive market that resulted in rapid increase in its Internet infrastructure. Over the years regulations, much like Net Neutrality regulations, all of which were done for egalitarian reasons, have cartelized the ISP market. The new FCC rules for a “neutral net” increase the cost of compliance making it harder for new and upcoming ISPs to follow them. Frankly, net neutrality rules are hardly the worst of the lot. Furthermore, with differential pricing, new ISPs could get a boost from profits helping them compete with more established ones. Equal rules for all become a joke when both the rich and poor man are equally barred from sleeping under the flyover. ISPs are currently rallying against Net Neutrality regulations because it is against their short term interests, but in the long run new ISPs will have to equally follow those regulations with lesser resources at their disposal.

For a functioning market, property rights must be given importance. Ethics in property rights must be geared towards facilitating experimentation to let entrepreneurs discover what consumers want. However, when such goals are lost to create “unfree” conditions in market, especially through regulatory process they must be identified and rectified. While Indian markets, post-1991 liberalization, have become quite competitive, there are still some protectionist policies masquerading as egalitarian ones.

In the telecom sector, the foremost policy that prevents competition and is a barrier entry is the Indian Government’s policy of spectrum allocation and all the attached licenses that go with it.

It is usually assumed that sale of spectrum by the government is the most efficient means to allocate it. However it is worth looking at the history of this idea and how it came to be. For markets generate first, then come the regulations. How market operated before spectrum regulations (and with existing laws) could be the key to understanding what allocations of spectrum allows organizations to compete to provide best services to the consumers.

Broadcast radio seems to have arisen spontaneously in 1921, when the first broadcast stations in New York and Pittsburgh went on the air, reaching thousands of hobbyists with crystal radios. The popularity of broadcast radio spread very quickly, and its commercial possibilities were realized almost immediately. However, the problem of interference was recognized early. If two (or more) broadcasters in the same city chose to transmit on the same (or

very close) frequency, then each interfered with the other's signals and radio listeners were treated to cacophony. This was good for no one, and in the early years, a de facto property right standard of "priority in use" arose; quite simply, the first user "owned" the frequency, and subsequent users had to broadcast elsewhere. This property right was supported by the Department of Commerce and by 1926 was recognized by several courts.

In 1926, Herbert Hoover, Secretary of the Commerce Department, ordered that the Department stop supporting priority in use claims following two unfavorable court decisions. The result was rather chaotic; in major radio markets, interference became the norm as new firms attempted to poach on the frequencies of popular radio stations. In the resulting outcry, Congress passed the Radio Act of 1927, which established the Federal Radio Agency (FRA) with the responsibility of stewardship of the spectrum and the sole right to determine what various frequencies could be used for and who could use them. In the ensuing years, virtually every country in the world emulated the US by establishing a national agency solely in charge of allocating spectrum to uses and assigning it to users. In the US, the Communications Act of 1934 created the Federal Communications Commission (FCC), vesting in it the FRA's spectrum allocation authority.

Since its inception, the FCC has interpreted its authority as the nation's spectrum manager rather broadly ... The standard procedure (until quite recently) was that an individual or firm wishing to utilize spectrum for a specific purpose license for a particular frequency in a particular location applied to the FCC for a license that covered only that purpose, frequency and place. After public notice, anyone else could also apply for the same frequency and location; should there be more than one applicant, a comparative hearing was held to determine which applicant was "more suitable" to discharge the public interest obligations of license-holding ... The award of the license did not grant the licensee any property rights in the spectrum beyond that of the license. The licensee could not use it for any purpose other than that specified in the license.

The results of this process are not difficult to predict. Holders of spectrum are unwilling to give it up, even when they are unable to make use of it. For example, the FCC's experience in the 1950s with UHF television assigned 330 Mhz of spectrum to this use. The experience was not successful, and this band is extremely underutilized. However, license holders are unable to use the spectrum for any other purpose (such as wireless telephony) and are unwilling to give it back. Thus, this prime spectrum provides little value to consumers, while other uses (such as wireless telephony) claim to be in a "spectrum drought." ... Despite the recent moves toward more market-based

spectrum allocation, the dominant mode of managing the spectrum is administrative fiat.¹⁷

As we can see that from its earliest inception, spectrum was being allocated through a way similar to how land is allocated in a market based society. Individuals and organizations put the given resource to use and thereby gain property rights to utilize that resource towards the purpose of commerce. In case of disputes over usage, these disputes are resolved through arbitration which in United States used Common Law principle of "first use" or "homesteading". United States immediately saw a boom in radio market from 1921-26. The government agency involvement in this process was not because of some chaotic condition caused by everyone trying to block everyone's spectrum but because of unfavorable court rulings for the government.

Although only a small percentage of spectrum has been finally opened to the market by means of auction, large chunk of spectrum still remains under government allocation through "administrative fiat". All of which is under utilized and allocated to outdated technologies. Furthermore, as far as market based approach is concerned, auction is not the most honest means to allocate spectrum. In case of land it would make no sense to first exclude all the population from potential property and then have it auctioned off. Initial exclusion, because it is not based in property rights, would be unjust. Auction would add to the injustice by government extracting more rents from the population. As such, all spectrum fees from an economic point of view, must be viewed as extra taxes on the population - a tax that is not rooted in need but in apparent pragmatism that can be questioned historically. License fees required to use spectrum in your locality, as long as it is not interfering with others, must be viewed in similar perspective. Take the case of a popular¹⁸ radio station in Bihar being shut down¹⁹ by authorities because of lack of proper licenses. The station wasn't interfering on anyone's broadcast, yet it had to be shut down because of the policies. If the aim of governmental agencies is consumer welfare, the spectrum policies it has are directly against such aim, and frankly based on quite outdated ideas of central planning and control.

I realize that not all spectrum policies are in TRAI's control. I also realize that market forces have been held back for so long that a sudden removal of restrictions could cause a little chaos and market shock. I also understand that gradualism is more pragmatic in slowly letting the spectrum go back into the market process. However Freedom and Property Rights in Spectrum is a discussion topic whose time has come, if it wasn't already a topic in 1927. Moreover, "substantial strides have been made in radio technology, including wideband radio (such as spread spectrum and ultra wideband (UWB)), "agile" radio (one of several applications of software defined radio (SDR)) and mesh networks (including ad hoc networks

¹⁷ Faulhaber, Gerald R, and David J Farber. "Spectrum management: Property rights, markets, and the commons." *Rethinking rights and regulations: institutional responses to new communication technologies* (2003): 193-226.

¹⁸ "Hundreds want Bihar man's radio station revived ..." 21 Dec. 2015
<<http://suchetadalal.com/?id=cb41196e-3c00-be0b-492e8bbb857c&base=sections&f&t=Hundreds+want+Bihar+man's+radio+station+revived>>

¹⁹ "INDIA: Bihar radio man's station shut down - International ..." 2015. 21 Dec. 2015
<<http://web.international.ucla.edu/institute/article/41572>>

and other forms of peer-to-peer infrastructure architectures)".²⁰ These technologies help mitigate spectrum clashes allowing more spectrum sharing and lessen the need for arbitration. It is therefore questionable how really shocking "freedom in spectrum" would be. At the very least, this calls for more research into Spectrum Policy and a research into the means through which more spectrum can be allocated in the market, and how more barriers to entry (more specifically the licenses) into ISP market can be removed.

5. Direct Answers to the Questions of TRAI

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer 1: In short the answer is Yes.

As has been noted by many scholars cited in this paper, a strict definition of net neutrality would actually be a regression for the Internet. It would bring into question the legality of Content Delivery Networks (CDNs), network level improvements in QoS including the IPv6. So certainly Net Neutrality cannot be held on a pedestal assuming that "Net Neutrality" equals "Consumer welfare". Such an argument would need to be specifically made.

In the debate between Tim Wu and Christopher Yoo²¹, Wu was forced to concede that there are some good discriminations (like combating network congestion) which can be made (while maintaining that bad discriminations can also be made, making a case for Net Neutrality). However, what are good discriminations and what are bad discriminations is not an exact concept. And as long as no fraud is taking place, free contract between ISPs and consumers will tend to weed out the bad ones; with consumers opting for the good ones. After all, good and bad needs to be defined on the basis of what consumers want. As I argue in Section 2.1, a grocer may appear to be a controller of public opinion on popular household brands but from a wider perspective he is not taking those decisions in a vacuum. He has to look out for his profits in a competitive environment. If he does not stock what is in demand he loses customers. Same is true for telecom services. If a "Zero" plan by a telecom provider A doesn't have a popular service and another telecom provider B does, then consumers will tend to get services of provider B prompting A to reassess his offerings. With national number mobility, moving has now become even easier; and easier it has become for a provider to lose consumers.

Net Neutrality supporters believe that such "Zero" schemes are indication of something nefarious and fraudulent. However, this is based on an assumption that "Net Neutrality" is something to be held on a pedestal and any violation is an act against the consumer. This paper argues that it is not necessarily true. ISPs in a competitive environment have to

²⁰ Faulhaber, Gerald R, and David J Farber. "Spectrum management: Property rights, markets, and the commons." *Rethinking rights and regulations: institutional responses to new communication technologies* (2003): 193-226.

²¹ Wu, Tim, and Christopher S Yoo. "Keeping the internet neutral?: Tim Wu and Christopher Yoo debate." (2007).

constantly appeal to marginal consumers - which include consumers who do not wish to (or can't pay for) a complete Internet pack. There is no reason to believe that a violation of net neutrality principles cannot be a demand from consumers in the market. Especially when an analysis of free market forces in the Internet indicate that what is optimal for consumers need not be neutral (Section 3.2).

As is discussed in section 3.1, the promoters of Net Neutrality assume that ISPs themselves are not entrepreneurial organizations and that any innovation in Tech Industry comes from Application and Service providers. However, innovation need not be technical innovation. It might even be financial innovation. Looking at "Zero" services from a non-dogmatic point of view, it is an innovation on how to reach marginal users. India has an internet penetration of 15% and it has risen exponentially. ISPs should be considered a rapidly growing market as much as "IT Startups". My opponents would allege that ISPs are actually making huge profits and that they are under no threat to allow price discrimination/Zero services. They are right. How much profits the ISPs make is not relevant to this debate. All the high profits indicate is that Internet is really spreading and users are willing to pay that much to use it. High profits have really incentivized Internet penetration in the last decade and it will continue to do so. Even if at a slower rate if Zero services are banned. However it must be noted that in the Wu/Yoo debate, Wu (champion Net Neutrality supporter) concedes almost all points to Yoo but points out that he expects no innovation from ISP and infrastructure industry. But that statement may be relevant for the United States with Internet penetration of 82.4% rising with a linear rate. We (India) need to go a long way and we are moving exponentially faster. Rash regulations could inhibit not only technical innovation but also financial innovation. The differences between US (from where this debate has been imported) and India must be recognized.

Net Neutrality supporters invoke the names of Tim Berners-Lee and Vint Cerf as Internet Pioneers who promote net neutrality. However, with exception of these two, I could find no Internet pioneer who asks for rash net neutrality regulations. Some of the other pioneers who have expressed opinions against this concept regarding it as a simple slogan are: Dave Farber, Robert Kahn and David D. Clark. Also this debate not only has a technical side to it, but also economic side. There doesn't seem to be consensus amongst economists on "Net Neutrality" but by and large their prescription is that ex ante regulations are not needed if current regulations of Anti-Trust and Fraud can handle "bad discrimination"²². Many economists have suggested that governments follow a "wait and watch" routine. In either case, TRAI should not consider the debate as "settled" just because an Internet pioneer's name is mentioned.

I would like to also point out some mis-information being spread by certain Net Neutrality supporters that "Zero" plans is against consumer choice. And that Net Neutrality position is pro-choice. Any honest look at the situation would show that the reverse is true. When Airtel Zero was introduced, no one was forced to switch from their regular Internet packs to Airtel Zero. Earlier the consumers had several options to buy, after the introduction of Zero plan, they had several options plus one plan to choose from. It is important to point out that no one

²² Krämer, Jan, Lukas Wiewiorra, and Christof Weinhardt. "Net neutrality: A progress report." *Telecommunications Policy* 37.9 (2013): 794-813.

is suggesting that Internet plans be taken off the table and replaced with Zero plans. Instead an extra option was provided. If anything, Net Neutrality supporters arguments sound like they do not trust the consumers to make rational economic choice in their own interest. Their arguments are more concerned with "Startups" and how they may lose consumers. But if a consumer is happier with Zero services, I don't see how it is any of their business. What they don't realize is that using Zero service may be monetarily free but it is not "free"; it comes at a cost of not having "full Internet access". If a consumer makes that conscious decision, it is his choice in his interest. The goal of the market place is not to get Startups their consumers, but rather to get consumers their goods. If a startup is efficient in providing those goods, the consumers will come. This disguising of pro-Startup movement as pro-consumer movement relies on scaremongering; with suggestions being made that Internet is being snatched away from consumers and replaced with differential pricing; rather than an extra option being available.

Net Neutrality supporters will also point out that if such schemes are allowed they will foster billing practices which are opaque. But that is no argument because Zero services do not entail opaque billing. It is not part of its definition. There is no reason to assume the same. But there is also no reason to assume the reverse. Yes, businesses sometimes try to break the principles of the market to gain short-term profits (and long term losses). But for such practices we have laws against fraud, false advertising, antitrust, contract violation etc.

There is also a question of vertically integrated services that Net Neutrality supporters raise. Certainly, without rules, if I own the ISP and if I own the service I can use my ISP to offer my service for free. However it must not be forgotten that if my service is poor and I am providing that as a part of my Zero plan, I am driving consumers away. Marginal users fed up of my service will either buy full Internet pack or switch to another ISP. If I can make profits by making my service free, I can make losses as an ISP by making it part of my Zero plan. We cannot make an assumption that success of the service is purely due to vertical integration. Certainly vertical integration helped. But I would like to remind what I explained in section 2.2. The goal of the market is not to determine who performs best on a 'level playing field'. Such level playing fields don't exist. Richer companies will have access to fast servers, CDNs and they will be able to get better employees than their competitors. Google has computing power today that is not easily matched by many. Instead the goal of the market is to satisfy the demands of the consumer. If someone is better placed strategically then the consumer will get a better product. Those promoting a 'level playing field' are often not ready to take seriously the conclusions of this assumption. For instance, Blackberry CEO suggested that in the name of net neutrality Apple must be forced to make its Iphone-only apps (like iMessage) for Blackberry as well. He was laughed at by the media²³ for his misunderstanding of "Net Neutrality". However, his arguments are based on the same 'level playing field' principle. And there are scholarly articles that take concepts like 'carrier neutrality' and 'service neutrality' very seriously. How far are we willing to go?

At the very least, I think that rash regulations should not be passed. The immediate ban recommended by Net Neutrality supporters until further resolution is being rash. As an end

²³ "BlackBerry's CEO thinks net neutrality means Apple should ..." 2015. 23 Dec. 2015
<<http://www.theverge.com/2015/1/22/7870363/blackberry-ceo-open-letter-net-neutrality>>

consumer, I don't see any problems with someone else getting certain services sponsored for him. As long as I keep getting full access to the Internet according to my plan, I have no problems with what other plans may exist. If Net Neutrality supporters are worried about losing access to regular Internet packs, they could have demanded regulations requiring that regular Internet packs not get affected. Instead they demand that 'Zero' services be taken off the table. As a consumer I feel my options are being restricted with proposed Net Neutrality regulations. I am being told what plan I can and cannot take; what plan I can and cannot be trusted with. If I take the option of restricted sponsored Internet, Startup companies and other consumers need to respect that. After all I am the one consuming those services, and I may choose not to.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer 2:

- (a) Differential pricing by its very nature and phrase is a discriminatory practice. So is hiring person A and not person B. So is buying from bakery A and not B. A truck company agreeing to ferry goods of producer A and not B is discriminatory too. And, yes, a Grocer choosing to put a brand A in his shop and not B is being discriminatory too. But I believe law distinguishes between these kinds of discriminations which are essential for market functioning and discriminations based on color, religion, sex etc. Market functions fine in all those areas. I am certainly no lawyer and this area could be blurry with current legal setup. But it is no argument for Net Neutrality.
- (b) Transparency is a topic independent of Net Neutrality. You can have net neutrality and still be opaque in what you are offering your consumers. Transparency needs to be stressed in honest contracts between producers and consumers. And any dishonesty and opacity must be punished as fraud, as it should be regardless of Net Neutrality rules.
- (c) Zero plans are a financial innovation and an entrepreneurial step. It is a result of ISPs trying to compete with each other to increase their market share. This will not only allow marginal users to gain access to certain services but also open flow of capital from Application/Services sector to ISP sector²⁴. While we have a wide variety of Applications and Services coming up, we must not forget that Internet penetration needs to increase too; and that needs capital. Consumers need not be the only ones who foot the bill.
- (d) As for competition, refer Section 2.
- (e) Allowing Zero plans should not affect Market entry. You can enter the market and still reach your customers through the Internet. Barriers to market entry are those investments without which you can't function in the market. The term would include natural barriers to entry like capital investment or artificial barriers to entry like license fees. But you can enter the market and not be part of a Zero scheme. There is no reason to believe that these zero schemes will be opted in by so many people that it

²⁴ My previous writing on this topic: "Net Neutrality: Where we disagree"
<http://www.indianlibertarians.org/net-neutrality-where-we-disagree/>

becomes a barrier. Certainly, the overwhelming response received by TRAI from consumers afraid of losing access to complete Internet, even if a result of scaremongering, is indicative of the demand for “full” Internet. Sure competition might be affected, but that point has been addressed.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer 3: This question unfortunately misses the point. Certainly there are many other businesses models which may be neutral and yet sponsor Internet for end users. Some of them mentioned by Net Neutrality supporters are “equal rated” plans and low cap free Internet plans. But it is important to remember that regardless of the claims by “Internet.org” and other organizations, these services are not for “charity”. Charity is not sustainable in the long run; you run out of funding or you have to rely on tax money. Many of these schemes suggested by the Net Neutrality supporters would require tax funding to work. The answers blindly submitted by scared Internet users using the site “savetheinternet.in” openly calls for government investment in infrastructure. It is worth reminding that there was a reason why we moved away from “Government run ISP only” policy for the Internet in India and why TRAI, in its own words, has moved towards a ‘forbearance’ regime. On a side note about “savetheinternet.in”, how dishonest do you have to be to smuggle in a demand for “national fiber optic network” run by Government in a ‘net neutrality’ mass petition which your site users are scared into signing; and then to criticize similarly dishonest mass petitioning by Facebook’s “Free Basics” campaign. To sustainably reach marginal users who can’t or won’t pay for full Internet access, the business model needs to be profitable. If the business models proposed by Net Neutrality advocates were profitable, they would be adopted by ISPs.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer 4: Given that most concerns about differential pricing are blown out of proportion, I see no other immediate issue.

On a long term scale however, I do see the need to address the Spectrum question as raised in Section 4. Modern technologies like mesh networks can only be utilized if there is freedom in the use of Spectrum. Such technologies would foster community based or local ISP based networks, fostering competition and putting to rest the core issue in the Net Neutrality debate. I do have issues with Net Neutrality however I do recognize that in the face of a monopoly or an oligopoly, Net Neutrality seems to become the “band aid cure”. But even then I would maintain that bringing down artificial barriers to entry would be the proper solution to the problem. At the very least, TRAI should look for which of its policies are forming a regulatory cover that protects established ISPs from competition and then reform (if not remove) them.

I would also like to re-highlight the need for punishing false advertisements and hidden costs, in order to foster honest market transactions. However I still maintain that transparency is a topic independent of “Neutrality”. An ISP can be dishonest and still provide “Neutral Net”.

2.4.29 Vedagiri

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No. The Internet is already an open platform. Allowing the TSPs to offer differential pricing for data usage for specific websites, applications or platforms is

- **limiting functionality:** There are millions of publicly accessible websites. Erecting an artificial barrier that allows only a few while restricting most is like saying only bicycles are permitted on the Mumbai-Pune expressway.
- **irrational:** The TSP would have to put up infrastructure to prohibit access to other websites, the cost of which would be indirectly passed on to other paying consumers.
- **anti-competitive:** It surreptitiously diverts the consumer from other websites, applications and platforms by erecting a pay-wall barrier.
- **against net neutrality:** The Internet functions on the basis of free flow of packets. Prioritizing one set of websites, applications or platforms will interfere with the basic foundational principle of the Internet.
- **stifles innovation:** New startups and innovation would be killed even before they launch as the cartel of TSPs and their partners offering differential pricing can impose costs on any startup or innovation that they deem to be competition.
- **creating an uneven playing field:** Today, the Internet allows anyone to create a web presence for themselves. Differential pricing for content based access would distort the field and cut-off large swathes of the Internet from access.
- **predatory and misleading:** Due to the way the Internet works, it is very easy to create content that sits behind a paywall that a user might be charged for accessing accidentally (or even without their knowledge and consent) for eg: content from an advertising network site embedded in a “free” website. Consumer is not charged for the “free” website, but is charged for the embedded data from the advertising network site. Differential pricing methods would require a technology layer to prevent this basic consumer protection (which will become hidden costs passed on to other paying customers)

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

- **Non-discrimination:** There should be no restrictions on websites, applications or platforms accessed between different classes of subscribers
- **Transparency:** The TSPs must not throttle traffic for any subset of websites, applications or platforms
- **Affordability:** TSPs and their partners may be asked to use their Corporate Social Responsibility budgets towards providing universally affordable access to the entire Internet
- **Competition:** There cannot be any throttling of websites, applications or platforms between different classes of subscribers (other than what a consumer has signed up) based on the content accessed

- **Market entry:** There should not be any cartelization and fees for participating in a differential pricing access plan (for commercial or other establishments, individuals etc.,) for market entrants/participants.
- **Innovation:** The Internet is constantly evolving. Keeping the Internet open and without any artificial restrictions is the best possible way to promote the innovation economy.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, there are.

#	Name	Type	Description	Example	Benefits	Disadvantages
1	Universal Internet Access	Business model	Providing Internet Access as a utility	https://en.wikipedia.org/wiki/Municipal_wireless_network	<ul style="list-style-type: none"> • Universal access 	<ul style="list-style-type: none"> • Erosion of customer base
2	Mobile ad hoc network (MANET)	Technology	MANETs are a self-forming, self-healing, peer-to-peer mesh network	https://en.wikipedia.org/wiki/Mobile_ad_hoc_network	<ul style="list-style-type: none"> • Uses smartphone Wi-Fi and Bluetooth to build a dynamic overlay mesh network 	<ul style="list-style-type: none"> • Technology maturity and adoption
3	Subsidized Community Internet Access	Business model	Companies contribute from their Corporate Social Responsibility budgets to fund subsidized / free community Internet access		<ul style="list-style-type: none"> • Scalable over the long run 	<ul style="list-style-type: none"> • Competes with other development priorities and goals

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

No

2.4.30 Vishal Misra

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January 7, 2016

Subject: Response to the Consultation Paper on Differential Pricing for Data Services

RS Sharma,
Chairman, TRAI

Dear Sir,

Many thanks for seeking the input of various stakeholders on the issue of differential pricing for data services in India. Your consultation paper is extremely well written, concise and to the point. Please accept my compliments on that - when it came out my initial reaction was "hasn't this been asked before?" but after reading the paper I have completely changed my mind.

As a background, I am a Professor of Computer Science at Columbia University in New York, who has worked on the issue of Network Neutrality for the past 7-8 years. I have also dabbled in entrepreneurship, having co-founded an Internet business in the early days of the web (CricInfo, subsequently acquired by ESPN) and more recently started another company Infinio, which develops software in the area of datacenter storage, where the entire business - from demo to installation to sales is conducted over the Internet. So my views on the issue come from two perspectives - an academic researcher as well as an (Internet) entrepreneur. I have written extensively on the topic, and I have also given my opinions to other regulatory bodies, including the FCC and testified before the parliamentary sub-committee on Net Neutrality, chaired by Shri Anurag Thakur. The definition I have given for Net Neutrality has been adopted by the SaveTheInternet movement in India, amongst others and it is as follows:

Internet is a platform where (access) ISPs provide no competitive advantage to specific apps/services, either through pricing or Quality of Service.

This definition establishes that the concept of Net Neutrality is how you treat competition, and not how you treat packets. I have written about this definition in the following blog post if it interests you:

<http://peerunreviewed.blogspot.com/2015/12/what-is-definition-of-net-neutrality.html>

Once we go with this definition (which matches what you say in the consultation paper on the bottom of page 4), then it is clear that *discriminatory* differential pricing is anti-competitive and against Net Neutrality. With that in mind, I provide my answers to your specific questions below:

1. **Question 1:** Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?
Response: No, as that would be anti-competitive and against Net Neutrality.
2. **Question 2:** If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition

and market entry and innovation are addressed?

Response: The only way differential pricing can be allowed is if remains true to the principles of Net Neutrality, and not distort the market in favor of certain players whom the telcos might 'like' (as you point out on pages 5-6 of the consultation paper). We can have differential pricing for emergency services (make them free, like 911 calls in the US), or for government sites that provide essential (one might even say, basic) information but are provided by a player that is an *established non-profit* and does not compete with private enterprises. Any other form of differential pricing has market distorting effects and should be disallowed.

3. **Question 3:** Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Response: There are many such schemes, some of those you have outlined on page 7 and 8, in sections 19 and 20. Additionally, schemes suggested by the Mozilla foundation and Grameen phone initiative, where a free data pack is provided by the purchase of a phone is a model that can be pursued. A proposal by Nandan Nilekani and Viral Shah, on direct benefit transfer via data packs for citizens is another scheme that seems much more effective in increasing access rather than differential pricing by private enterprises (and it remains faithful to Net Neutrality). I am sure Nandan and Viral have submitted their own response to you detailing the mechanism and benefits of their proposed scheme.

4. **Question 4:** Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Response: In my analysis, the most subversive and anti-competitive effect of differential pricing comes with vertical integration. This is the situation where a telco might create a service, zero rate it, and gain an immense competitive advantage over similar (or even better, technically) offerings by non-telco competitors. Examples include zero-rating of telco provided VoIP calling, hurting Skype, Whatsapp etc. or zero-rating of services like Airtel Wynk, hurting services like Saavn or Gaana. Many telcos have announced plans of getting into the services business by introducing their own streaming or messaging products, and those need to be very carefully watched and regulated.

Once again, please accept my appreciation on the thoughtfulness of the consultation paper as well as the opportunity to send responses.

Best regards,

A handwritten signature in black ink, enclosed in two overlapping ovals. The signature reads "Vishal Misra".

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2.4.31 Yogesh

The Free Internet

TRAI has called for consultation papers on differential pricing scheme of data plans. i.e. the schemes provided by our mobile operators such as Airtel whereby some websites are either allowed to be accessed free of charge (Facebook) or providing cheaper plans to people who access only WhatsApp or Facebook. Below are my views on the same.

At a high level, providing cheaper access to some websites might seem advantageous to the consumer, since it can reduce the cost to consumer if the websites he/she uses falls under the category defined by the ISP. It does appear like a Win-Win scenario, but if we consider the broad ways by which this type of pricing can affect the consumer in the long term, we will realise that it has moral implications as well.

Why Free?

First of all, why do the companies such as Facebook allow their websites to be accessed for free? What do they gain from it? These companies claim it is to help the consumer, to help the poor access the internet (From a recent statement by Facebook). But how much of this is really true? Is this their real intention? or is it some ploy to keep people hooked to their system?

If, as they claim, the intention is to help people apply for jobs, to allow poor people to access the internet, why would they allow only certain websites (conflict of interest) they determine to be accessed for free? Who determines which websites are useful for the masses? Is Facebook really that important for the poor? If you or myself wanted people to have access to internet for free aren't we more likely to provide a bandwidth capped internet service (Say 50MB) which allows all the websites to be accessed? OR would we say i will give free internet but you can access only my website? what does that say about me?

As with everything, actions speak louder than words, their actions clearly betray their so called intentions.

Non-Competitive

So what do the companies gain by making certain service cheaper? By making certain websites cheaper for the consumer to access, they can

- Prevent competition from emerging
- Provide biased information to be readily available
- Allow rich companies to reach people easily

ISPs can act as the middle men to quash competition. For example before Facebook there was Orkut and MySpace, they are now history thanks to emergence of Facebook. Social networking websites depend on the presence of a certain critical population on their website to be viable. If all your friends are not on Facebook, you won't be. The companies have the advantage to keep people hooked to a system. By forcing this so called "free internet", they can prevent new and better alternatives from emerging. Because a new startup cannot afford to let people access their website for free and Facebook will not allow any potential competitors to join their gang.

Therefore, if we allow this system we are giving preference to certain companies over the others.

Nothing is free

Some of the people in support of giving access to some sites for free assume that the people doing this are philanthropic, that they are doing out of interest to help the poor. As already explained, if their motivation is philanthropic, this is not the way you provide internet access to the poor. There is conflict of interest between their business and their so called philanthropic acts.

Facebook claims they do not advertise on their free site so they have nothing to gain. This is a naive argument, they own the website, nothing stops them from adding advertisements later on. Moreover, as the famous saying goes **"If you are not the Customer, you are the Product"**, Social networking websites are known to mine user data and this data is their resources. Data and information are traded for a service, this is not a one way exchange as some people assume. None of these companies are here to help people, they are out there to make money, this is a basic premise which we have to keep in mind when we are dealing with situations like these.

Something is better than nothing?

Some people argue that letting people have access to some websites is better than none at all. I disagree with this statement, When designing a policy we need to take into account how it will affect life of the people in the long term.

People have a natural tendency to want to save money. In this age, a lot of people are addicted to social networking websites, by allowing free access, most of these people might end up restricting their usage to these free websites. Even now, for a lot of college students i know, internet is only Facebook and WhatsApp, they aren't even aware how to spend time on the internet without these sites. Then the information these people will learn will be solely from the social networking sites and the sites that will be controlled by select few.

By allowing internet/media in the select few hands, we are allowing people to be controlled by the elite few. This i feel is a threat to democracy! Social media can be a great tool to manipulate people and share propaganda. This will only make people easier to control, limiting their options.

Our newspaper & media is already in the hands of the

select few, our only hope is internet, Please let at least
internet be free. Let India be a good example for the rest
of the world.

2.4.32 Saurabh Biswas

Response to “Consultation Paper on Differential Pricing for Data Services” by the **Telecom Regulatory Authority of India**.

Ref: Consultation Paper No. 8/2015

Submitted by: Saurabh Biswas

PhD Student, School of Sustainability, Arizona State University, AZ (USA)

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

When evaluating differential pricing privileges to TSP's, the following points should be considered

- a. The strategy is a potent market entry vehicle for any TSP and may lead to dominance of the market due to its advantageous position. However, as the revenue model creates selective preference of certain websites over others, established web content owners (websites) shall benefit due to market position. This situation can potentially be challenged under the **The Monopolies and restrictive Trade practices Act, 1969** by aggrieved parties.
- b. It can safely be stated that the social groups impacted by such a service would be either first time users or relative novices on the functional aspects of internet. Their understanding about the intricacies of navigating webpages, data security, online scams etc. cannot be expected to be developed. Another fact is the prevalent modus operandi of websites/services that require sharing of multiple user detail eg. Location, e-mail or phone number, passwords etc. In this background, two major concerns arise:
 - i. The accumulation of user information by service provider or preferred websites and the potential use of this data with malafide intent. The vulnerability of the users become higher due to relatively low proficiency and understanding.
(Several thousands in the US fall prey to online lottery scams despite higher user maturity and exposure to the internet !!)
 - ii. In the absence of a definition of what constitutes basic and unbiased content, a sizeable population of the country is at risk of being exposed to content that will be selective and possibly designed to be ideologically monopolistic. This makes users vulnerable to being coached or conditioned in their socio-economic-political choices.
- c. Also, it is not explicit how the cost burden caused to the TSP due to offering of bandwidth at zero or low cost is being offset.

Thus, considering the above points, it is recommended that differential pricing of web-services by TSP's within the current regulatory & social scenario, may not be permitted.

The chief concern that arises from a scenario, if such a practice is permitted, is that there would be undeclared content piggybacking the stated service, which can potentially mislead consumers into sharing sensitive information or pay for unsolicited services. Thus, in effect, the service being offered is no more the *internet* or the *World Wide Web*, instead is a **bundled service** that should explicitly be called so and advertised as such.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

A differentially priced service can only be allowed under the current legal framework [**The Monopolies and restrictive Trade practices Act, 1969; Sec 32(b)(ii) &(iii)**] if the services are deemed necessary by the Central government AND the Central government is party to the terms of the agreement.

Interestingly, the scenario in which the Central government is a key stakeholder in the entire process of co-developing and implementing the access to internet is borne out by the findings of **The Alliance For Affordable Internet's 2014 Affordability Report**. It finds the top 10 countries progressing towards affordable access of internet has been powered largely by state funding solely or in large proportion. Reportedly, the same publication has been cited by certain content developers as justification for the current predicament of differential pricing.

Thus, for a service to be priced differentially, it is proposed here that the content to be offered by the service in question should be developed under the directives of the Central government or an agency authorized by it. The key characteristics of the content and mechanism to offer the same are outlined below:-

1. A. Content Characteristics (Don'ts):

- a. Non-predatory – Should not seek user information.
- b. Non-Personalized – Contemporary web services are highly personalized wherein user preferences are recorded and future offering tailors itself to suit user experience. This feature might be a desirable for an advanced user who can distinguish the pattern, but for a user with limited or no exposure, can seriously alter their worldview. Moreover, this feature inadvertently becomes a vehicle for unsolicited promotion of products or services.
- c. Non-promotion of commercial/vested interests – Direct or indirect promotion of commercial interests, conditioning user choices and aspirations in favor or against social-political ideology and economic choices to be avoided.

B. Content Characteristics (Do's):

The content offered should be designed with explicit goals instead of a blanket presumption that internet access in any form is a social good and helps in uplifting the underprivileged.

Hence, it is strongly recommended that a study be undertaken by competent agency of public standing that involves experts from fields of technology, social sciences and development studies along with adequate representation from civil society.

This study should be broadly able to result in the following –

- i. A framework for defining the ambit of basic web services for the Urban & Rural broadband user - Economic and Social development indicators may be used as testable benchmarks for a model framework of internet access, identifying the extent & limits of impact carried through. Substantial concurrency and relevance of content can be achieved by differentiating basic connectivity impacts on urban & rural users. It will also lend flexibility to content development and bandwidth usage in regions of high/low network density.
- j. Address role of service limiting factors- Data Upload, Device dependency (Smart Vs dumb phones paradigm) and socio-economic goals of a basic internet service.

The outcomes should be able to inform decisions on the content of a **Single Platform Service** to be offered at a differential price that is:

- a. Public owned
- b. Non-profit
- c. Carrier Agnostic

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Herein are listed two alternative mechanism that possibly address the question of compensation for the carrier. This should be perceived as a “Business Model” in the strictest sense of the phrase. However, it may be a starting point to develop one.

Mechanism A:- The Philanthropist or Corporate Social Responsibility (CSR) path.

- i. Uniform content to be made available to all service providers who voluntarily participate by allocating bandwidth at no or low cost for basic web access.

ii. The cost burden on account of committing bandwidth may be adjusted against the CSR commitment of the service provider under Section 135 and Schedule VII of the Companies Act as well as the provisions of the Companies (Corporate Social Responsibility Policy) Rules, 2014 (CRS Rules).

iii. Additionally, these firms may be granted preferential points proportionate to their commitment, as and when bidding for projects under the Digital India mission.

Mechanism B:- Revenue or Indirect benefit seeking path.

1. Partial recuperation of costs may be permitted in lieu of providing basic internet access at no cost by :
 - a. Service provider can advertise promote services/plans/offers of relevance *only* to its own realm of services offered. Promotions can happen within the earmarked bandwidth for basic internet access, thus not paying for additional bandwidth to operate equivalent services.
 - b. Service provider can charge external content accessed by user in the form of SMS or call tariff. This will require the web platform to be designed suitably, such that the user can only upload data, if & when desired, only through the above mentioned modes.
2. The regulator can earmark bandwidth exclusively to be used for basic internet access, which may be distributed to participating service providers at reduced prices, as deemed appropriate. This shall bridge the remaining cost gap incurred by the service provider.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Refer response to Q2.

2.4.33 Tathagata Satpathy MP

To,

Mr Ram Sewak Sharma,
Chairman,
Telecom Regulatory Authority of India,
New Delhi

Subject: Reiterating my stand to keep the Internet a Neutral space

Dear Mr Sharma,

I wish to reiterate my stand in favour of Net Neutrality. I had written a letter on 7 April 2015 to the previous chairman of Telecom Regulatory Authority of India (TRAI), Mr Rahul Khullar, and expressed how if differential pricing for data services is allowed, it would affect my functioning as a law maker. My Chief Minister Mr Naveen Patnaik also expressed support for a neutral internet on behalf of the Biju Janata Dal in a letter dated 16 April 2015. He pointed out succinctly how “the Internet is not the market-place, but the market is made inside the Internet.”

Millions of people, old and young, female and male, have also expressed their support towards a neutral web when the last consultation paper was put out. I request you to kindly go through all the previous submissions once again and not to discard those valuable insights from the public. Since the earlier paper was regarding over-the-top services, I understand the need to put out this new consultation paper as TRAI is trying to get a clearer view regarding differential pricing. However, the answers to all these questions past and present, concern the same internet and therefore unequivocally remain the same. My previous letter along with the earlier submissions still stand and need to be considered for this consultation paper as well. Simply put, we want the internet to be a free democratic space, devoid of any form of influence from corporate entities.

Tim Berners-Lee, known as the inventor of the internet, said the following when questioned about his stand on zero rating and internet.org: “In the particular case of somebody who's offering ... something which is branded internet, but it's not internet, then you just say no. No it isn't free, no it isn't in the public domain, there are other ways of reducing the price of internet connectivity and giving something ... only giving people data connectivity to part of the network deliberately, I think is a step backwards.”

You must not discount these words by the father of the internet. He is the one person who understands his own creation and therefore made it available to the world without any barricades. Presently, companies like Facebook and Reliance are going against these very basic ideals. They are trying to mislead the public and split the internet under the garb of ‘giving free access to the poor’. I would like to quote CM Mr.Patnaik here once again: “While the under-privileged deserve much more than what is available, nobody should decide what exactly are their requirements. But if you dictate what the poor should get, you take away their rights to choose what they think is best for them. You cannot force a person to use a certain mobile application because the telecom company believes that it should be doing so.” He further points out, “In the ongoing debate, it is noticed that there is wrong usage of the word ‘free’. The word ‘free’ should not be confused with the word ‘freedom’.”

I’m sure you must be aware about how one particular company, a foreign entity called Facebook, is trying to influence our public discourse. They are spending crores in advertisement money to mislead the public. Facebook has 1.2 billion worldwide active users on their website and they are pushing their idea of the internet aggressively. This is a blatant attempt to influence public policy in India and present us as a third-world-country that needs some sort of charity from a multi-billion dollar foreign company.

This company wants to start ‘Free Basics’ in India (earlier known as Internet.org) which would give selective access to certain websites and applications. We, as policy makers, should be careful not to allow this Pandora’s Box to be opened. Once we allow this, other companies that have influence will start slicing up the internet into pieces and offering them to selective consumers.

On that note, I must acknowledge the fact that TRAI has issued a notice to Reliance Communication ordering them to stop the Free Basics service. Proactive steps like these from you need to become an example for India. I hope you continue to take such strict actions and not veer away from the convictions of millions of Indians asking for a neutral Internet. Ultimately, only you can *Save the Internet*.

Please accept my and my Hon'ble CM Mr.Naveen Patnaik's previous letters as submissions for this new paper titled ‘Consultation Paper on Differential Pricing for Data Services’. I am also attaching a formal reply answering all of the questions you asked for this consultation paper. They have been drafted by young professionals who are fighting valiantly to keep the internet neutral.

Do not let greed triumph over genuine conviction for what is right. Do not ignore these voices, for they are India's future.

Regards,

Tathagata Satpathy
Member of Parliament,
Lok Sabha,
Dhenkanal, Orissa

To,

RS Sharma,

Chairman, TRAI

CC: Vinod Kotwal, Advisor (F&EA), TRAI

Dear Sir,

On the outset, I would request you **not to publish my email address on the TRAI website.**

I would like to thank the TRAI for introducing the Consultation Paper on Differential Pricing for Data Services. Differential pricing of data is a core Net Neutrality issue. I urge you to protect Net Neutrality, and not allow telecom operators to manipulate how consumers consume content on the Internet by instituting anti-neutrality practices. The principle of Net Neutrality is that ISPs and telecom operators do not give a competitive advantage to any website, app or platform.

I appreciate TRAI's effort in bringing out an objective and precise consultation paper, highlighting the need for making the Internet available to all - as well as taking into consideration the harms of discriminatory practices. On this I am enclosing specific responses to the queries as sought by the TRAI.

As recently as in April 2015 by using the SaveTheInternet.in platform, more than 12 lakh Indians sent specific responses to the queries raised by the TRAI. A reference to these earlier submissions is necessary given that specific answers to question numbers 14 and 15 in the Consultation Paper on Regulatory Framework for OTT Services were on price discrimination - and provide a valuable gauge of public opinion and expert advice. In order to gain from the previous consultation on OTT Services, I request the TRAI to consider answers from it for the present Consultation Paper on Differential Pricing for Data Services.

I support TRAI in the effort it has taken in this consultation paper, underlined by its determination to take initial steps on advancing net neutrality using its powers to regulate and oversee tariffs so as to protect consumers. Till a comprehensive network neutrality regulation is passed, such measures should be exercised urgently to prevent the repeated efforts to breach these principles by some players in the absence of binding rules. These attempts to some interest to rush ahead despite the ongoing study of these issues by the TRAI and the Government goes against the authority of our democracy.

I endorse the idea of providing "all of the Internet, to all of the people, all of the time", put forth by the World Wide Web Foundation established by Sir Tim Berners Lee and many other organisations which have been striving to expand connectivity to all without compromising network neutrality. It is my belief that the goals of access and network neutrality are incredibly important for India and the TRAI must further them both rather than falling prey to the falsehood - as sought to be portrayed by some commercial interests - that one is opposed to the other. Furthering meaningful Internet access for all Indians and net neutrality are too important to be put into an untrue binary exchange of this sort.

I would also like to suggest the need for greater clarity on TRAI's next steps on the larger net neutrality discussions that it originally advanced in its earlier Consultation on OTT Services but not advanced on since May of this year. A firm timetable and clearer consultation process will improve predictability and trust in TRAI as an institution seeking to further the public interest.

I hope the TRAI considers my answers to the present consultation in forming its opinion. In the interim I request that it:

- a. Exercises its power to enforce a moratorium on violations of network neutrality till the conclusion of the consultation process;
- b. Make clear that in this current consultation on data pricing discrimination it will consider the submissions made by over a million Indians to Question Nos. 14 and 15 in the earlier Consultation on OTT Services (April, 2015); and
- c. Announces an actionable time table for the conclusion of both consultation processes.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSP's should not be permitted to engage in differential pricing for data usage for accessing different websites, applications or platforms, for the following reasons:

a) A non-discriminatory Internet decentralizes the sources of innovation because everyone can create Internet services and applications without having to obtain permission from telecom companies or platforms. It allows collaborators to create open source and free tools to provide an alternative to proprietary tools, and improve on them. Differential pricing will damage the character of the internet. The internet has developed till date on the basis of the end to end principle, where there has been user choice to determine what content and platforms are accessed. This has allowed the internet to organically develop into an ecosystem where information is shared across platforms. The power to control information is the biggest weapon in a democracy. Plurality and diversity of both views and platforms are important, and for this, the Internet needs to be kept open and neutral.

Price discrimination will incentivise the use of certain service providers or types of services. This will be against the agonistic function of TSP's and impact the future growth of the internet, where only specialised services which are priced not as per a neutral meter of volume of data consumed. It will likely lead to walled garden and bouquet of services and reduce the diversity of Internet services to, "pay packs" where particular services are bundled together with no user choice or ability to freely access information.

b) It will lead to discriminatory practices that will impact consumer welfare. Consumer welfare at present best served by the transparent billing practices where consumers are billed similarly for access to any website or web service on the sole measure of data usage that is neutrally applied across platforms. Such choice should be left to consumers and not the TSPs. Once the the TSPs are left to decide even if through regulatory oversight the kind of services which can be subsidised and ones on which additional levies are placed it will lead to discrimination that will function against content which is sought by individual users as per their tastes. It will create strong incentives to only use services which are subsidised on the choice of TSPs and prevent consumer discovery of new services and platforms. It will impact the diversity of content and will be against the individual choices of many users, especially those in the minority. Further, given the dynamic nature of content on modern Web services - where audio, video and text is often found within the same service - billing practices will at best be opaque for consumers, leading to unforeseen charges.

c) It will negatively startups/entrepreneurs and the fulfillment of Digital India. Startups are fragile businesses, ever evolving and innovating, at great speed, if not at great scale. For Internet startups to operate efficiently, there needs to be predictability, stability and reliability of Internet access. Many Indian startups have already voiced their opposition to the differential pricing of data services, emphasizing that such practices upset the level playing field. Deepinder Goyal, Founder and CEO of Zomato has taken his Delhi based business to 23 countries, tweeting that he "Couldn't have built Zomato if we had a competitor on something like Airtel Zero".

The letter of more than 450 startups to the Hon'ble Prime Minister lists several reasons why such startups believe that differential pricing, including zero rated services will destroy the startup ecosystem. I echo their concerns from the letter which I quote below:

"We stand to lose if telecom operators are allowed to strike deals to favour some online services over their competitors. Under these deals, companies may pay the ISP to make their competitors' websites inaccessible, slower or more expensive to access than their own. These practices, if allowed, will exclude promising startups from the Internet and end our dream of seeing them flourish. The western companies that dominate the Indian internet ecosystem today will use their deep pockets to perpetuate their position. The few startups that can afford it will be forced to find growth in foreign markets before they can return to India with the funds to pay ISPs, while the rest shut shop."

Allowing differential pricing will transform the Internet economy into a mirror of the Mobile Value Added Services ecosystem, which allows telecom operators to convert an access business into an audience business.

Currently, telecom operators provide Internet access to the interconnected network that is the Internet, and consumers choose where they wish to go. Any form of unnatural advantage that is an outcome of a partnership between a telecom operator and an Internet company converts this into an audience business, with telecom operators allowing businesses access to their "audience". This means lack of permission-less innovation, and can lead to three harmful activities:

1. Predatory activities from telecom operators, as was evident in case of Mobile VAS, which restrict the ability of consumers to access these startups. On Facebook's FreeBasics, services that compete with telecom operator services are not allowed, and Facebook reserves the right to reject applicants to FreeBasics. Even today, VoIP, Video, file transfers and large images are not allowed on FreeBasics/Internet.org. The terms and conditions are determined by Facebook, and it reserves the right to change them as and when it desires. This is despite the fact that in the US, Facebook signed a brief saying that "The open architecture of the Internet creates an innovation-without-permission ecosystem. Consumers (and consumers alone) decide the winners and losers on the open Internet", that without Net Neutrality, "Consumers would lose the ability to choose freely among competitive services and sources of information. It would also significantly decrease the rewards edge providers could realize from innovating, further decreasing consumer choice."

2. Collusion between larger Internet companies and telecom operators, in order to reduce competition for the Internet companies, such as in case of FreeBasics. In countries such as Indonesia, research has shown that where free Facebook is made available, consumers end up confusing Facebook as the Internet itself. This impacts access to diversity and plurality of content, especially on a platform which controls what content users get to view in their newsfeed.

3. Zero Rating of vertically integrated services, which are owned by telecom operators. Bharti Airtel, when it launched its online music streaming service Wynk, it waived data charges for Airtel users, using its ownership of content and carriage. This effectively puts competitors like Saavn and Gaana at a competitive disadvantage. Imagine what this might do to competition in case of financial inclusion, if transactions using Airtel Money were made cheaper than those using some other payments bank.

d) There is no commercial need for permitting differential pricing given the large growth in revenues and profits of TSPs. TSPs are today seeing an unprecedented rise in growth in data revenue and profits disclosed in their annual reports and earnings calls. On the basis of this they are investing more in data networks even marketing themselves as high speed cellular data networks to the public. This is clearly a contradiction in the stands of TSPs which are at one end showing profitability and at the same time seeking to engage in practices which turn them from charging carriage fees from content providers. These are unhealthy practices without any commercial justification except to use their monopoly powers to engage in rent seeking behaviour. Private companies which are utilising public spectrum cannot do so to seek windfall profits which comes at the cost of public welfare.

e) Differential pricing practices such as Zero rating, whether paid or unpaid, creates a fundamental and permanent shift in the way the Internet works, by splitting it into free and paid. Services such as Airtel Zero will slice the Internet, and will lead to the launch of similar services from all telecom operators. There might be an Idea Zero, Vodafone Zero, Uninor Zero, Tata Docomo Zero. This means that each user will get a different experience of websites, and may never know the universe of knowledge outside of this collection of websites. That restricts consumer choice. Zero rating is "positive discrimination". Airtel Zero favors those services who pay them to be zero rated. Internet.org favors those services which are low bandwidth, and allow Facebook to access user data even if Facebook is not being used on Internet.org.

f) Usage of the open web declines: When consumers try and move out of a zero rated platform to the open web, they will rightly be informed that they are going to be charged for this. This is information is essential in order to prevent charges when the user may not want to be charged. However, adding a layer of confirmation usually leads to reduction in conversion rate, since accessing a link is often on an impulse, whereas choosing to pay to access a link is an additional decision. In case of FreeBasics/Internet.org, users would get an advisory asking them to buy a data pack. At this point, many users choose to not access the open web, and continue to use only Facebook and its partners, thereby giving them a competitive advantage.

Additionally, I would like to draw your attention to the 12 lakh submissions to the TRAI on its Consultation Paper on OTT Services to Question Nos. 14 and 15 which similarly called for prohibiting TSPs from having differential pricing for data usage for accessing different websites, applications or platforms.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for data usage should not be permitted in principle, given that they will allow TSPs to act as gatekeepers on how Indians experience the Internet. Principles of non-discrimination, transparency,

affordable internet access, competition and market cannot be furthered if differential pricing is permitted in any form.

- a) Differential pricing on a case to case basis will result in unclear non-discrimination standards, increasing the likelihood of litigation. Again, players which are smaller will not have any ability to negotiate and will be excluded. Differential pricing by its very nature and phrase is a discriminatory practice. Given the clear harms which come through and the considerable costs and delay in evaluating case-by-case behavior, discriminatory pricing for data should be prohibited through firm, clear, bright-line rules.
- b) Transparency in a system in which differential pricing is permitted will not serve the public purpose. Even if rate plans are published publicly or prior regulatory approval is demanded the harm is already caused as such plans will be devised by TSPs and not by individual users. Given that large TSPs often face limited competition in practice in specific geographical areas in India with respect to data services, transparency will not aid consumer choice. Quite simply just because a plan is published on the TRAI website will not ensure users can choose - especially if they actually do not actually have the ability to easily switch to other operators when it comes to data services and broadband. Beyond not assisting consumer choice in any meaningful manner, transparency will not aid in mitigating the harms caused to smaller content providers and startups that will be excluded from such plans. Please note that Reliance Communications and Facebook are yet to publish a complete list of services that form a part of FreeBasics (Internet.org).
- c) Zero rated services such as Internet.org/FreeBasics and Airtel Zero are a form of positive discrimination, making some sites free versus others, and ending up making some sites more expensive. Affordable internet access can be furthered in several ways which are consistent with net neutrality. Some TSPs and Facebook through its Internet.Org/FreeBasics zero rated offering has posed this in terms of a faustian bargain which completely ignores what some term "equal rated" services and other efforts that seek to expand Internet connectivity to all without compromising network neutrality. These alternatives are described in the answers to Question No. 3.

The submissions are in addition to the 12 lakh submissions to the TRAI on its Consultation Paper on OTT Services to Question Nos. 14 and 15 which similarly called for prohibiting TSPs from having differential pricing for data usage for accessing different websites, applications or platforms.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, several alternatives exist other than differentiated tariff plans or zero rated services that are practical to implement and will provide access to the Internet to millions of Indians who cannot afford it due to the costs of data.

- a) At the very outset it must be remembered that improving access is public priority - and not one only to be left to some global private corporations. Private corporations cannot guarantee the neutrality and impartiality in exercising such a core government function and will only cite interests of access for furthering their own commercial profits. This will come at the cost of accountability which is at the core of any government process. Many experts have highlighted that access can be improved by the government through, "equal rated" plans that are deployed by the Government. This may be through deployment of the USO fund and creation of a national fiber optic network.
- b) The World Wide Web foundation has suggested several alternatives for furthering access without compromising network neutrality which include a free allowance of mobile data for each citizen funded through an universal service fund. Further, TSPs can also offer 2G data services which are capped at 10/20 MB a month which would not violate any forms of network neutrality. Such measures would improve access and give millions of Indians access to the Internet, not some stripped down, wall garden in which content options are determined for them.
- c) Further models exist and have been highlighted by entities such as the Mozilla Corporation and others. These are in the forms of, "equal rated" plans and are even being deployed in some countries. Some examples of it include:

"Could the private sector organize itself to provide a baseline "equal rating" for some amount of data necessary for modern life at discounted or no charge? Such a program would integrate the "version 1" private solution of limited access with the citizen demands for the opportunity and full inclusion of the full Open Internet. Perhaps those companies paying for the equal rating might get a "brought to you by" attribution that could bring brand value and network effects. Orange and Mozilla are experimenting with this sort of model in multiple African and Middle Eastern markets, where users purchasing a \$40 (USD) Klif phone receive unlimited talk, text, and 500 MB a month for 6 months.

Another possible way of "equal-rating" content so it is free-of-charge to the user is a model where people watch ads in order to access other sites. Mozilla has been exploring this model in a partnership with Grameenphone (owned by Telenor) in Bangladesh, where users can receive 20MB of unrestricted data per day after watching a short ad in the phone's marketplace."

Some TSPs and Facebook have incorrectly framed a debate around access at the cost of network neutrality to further their commercial interests. As it is evident from the above models access does not come at the price of network neutrality.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

I hope the TRAI considers my answers to the present consultation in forming its opinion. These are my informed views, which have been articulated by policy experts furthering my belief in network neutrality. As stated before some TSPs and Facebook have rolled out services and extended them during the midst of the present consultations, backed by large marketing and advertising budgets. Facebook has even used its own platform to push Facebook users to market their lobbying response to the present consultation with ambiguous phrasing. Some users who are using this form have been misled into believing they are supporting net neutrality. This is different from a person independently going on a website, filling in their name and email address and sending a response. The key difference here is user choice. This is the same user choice which is absent in Free Basics or any other zero rated service.

TRAI must be advance on creating comprehensive net neutrality provisions in India, working with the Government in moving forward on the path here. In the interim, the aggressive push by several TSPs and Facebook in launching and expanding zero rated services is undermining the present consultation. I request that the TRAI look into this urgently and in the interim proposes the following measures.

1. Exercises its jurisdiction to issue a moratorium on violations of network neutrality till the conclusion of the consultation process;
2. Considers the submissions made to Question Nos. 14 and 15 in the Consultation on OTT Services (April, 2015) for the Consultation on Pricing Discrimination; and
3. Announces an actionable time table for the conclusion of both consultation processes.

NAVEEN PATNAIK
CHIEF MINISTER, ODISHA



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D. O. No. 7IM-134/2015-62/CM

BHUBANESWAR

Dated 16.04.2015

Dear Sir: ILL-11-ji,

Sub: An appeal to safeguard the basic principles of Net Neutrality.

I write this letter to you in connection with the consultation paper that has been recently opened by TRAI on the subject of Internet services and network neutrality. This subject has become one of great concern to all citizens of India.

The IT sector is today at the top of the State Government's agenda and Odisha has been in the forefront of the IT revolution in the country. It is a matter of pride that the growth rate of IT exports from the State is more than the national growth rate for the past many years. Bhubaneswar is the hub of IT growth with Special Economic Zones coming up at Info City and Info Valley while a green field electronics manufacturing cluster is also being set up. The State Government is also implementing a number of e-governance projects including 'Digital India'. The internet forms the crux of our upcoming projects in this sector and therefore, I am concerned about the basic principles of this medium.

I have been following the Net Neutrality debate since the past week closely. Many citizens have even written letters to you reiterating their stand about the matter. It is important to stress on the stand of State Govt. and our party Biju Janata Dal regarding the issue and TRAI should also treat this issue with the nuanced attention that it deserves. The growth of the internet is going to affect each and every one of us especially the young and dynamic population of this country.

It must be pointed out that this is not an issue of just the elite as it is being made out to be. It will affect even the poor because so many services are delivered over the internet today. The Government is trying to extend its services to the people through this medium because it will be effective and inexpensive. Therefore, I do not agree with the thought that this is a compartment meant for the elite only. Present usage of the net seems to encompass everyone, rich or poor, particularly the younger people.

In the ongoing debate, it is noticed that there is wrong usage of the word 'free'. The word 'free' should not be confused with the word 'freedom'. While presently the youth of this country is paying a very high cost for an inefficient net connection, I do not see any justification in limiting the ability of new start-up companies to reach the net user. Nor do I feel that there should be compulsions on the users by Internet Service Providers (ISPs) to use particular Apps for reasons best known to them. Let us remember that the Internet is not the market-place but the market is made inside the internet.

While the under-privileged deserve much more than what is available, nobody should decide what exactly are their requirements. But if you dictate what the poor should get, you take away their rights to choose what they think is best for them. You cannot force a person to use a certain mobile application because the telecom company believes that it should be doing so.

We, therefore, would be wary of any future where equal and non-discriminatory access to the growth engine of the Internet would be altered – and which is why I strongly believe that the principle of net neutrality must be protected. Digital India requires that we help ensure that the innovation and entrepreneurship made possible by a dynamic Internet is further encouraged and not allowed to be influenced by discriminatory practices.

We must ensure that access to the Internet for an Indian citizen anywhere in our nation means un-throttled equal access to the full spectrum of the open World Wide Web in practice. This is especially important since the Internet is key to the unparalleled ability to exercise the right to access knowledge and free expression which are

- 3 -

empowering our younger generations to drive India to the forefront of the 21st Century.

In order to achieve this, TRAI, in collaboration with the Department of Telecommunication, needs to urgently come out with measures to protect network neutrality. In addition, TRAI needs to ensure that it does not favour regressive measures such as licensing online services. My Government and party representatives have repeatedly stood in favour of the position that India requires progressive IT laws. Measures to be taken should recognize that legitimate and limited regulation should not turn into over-regulation. Other measures which cater to the aspirations of young Indians to create a modern and internet enabled society must be assisted. This will only be possible by an open internet that can reach out to the poorest of the poor and help change their lives.

With regards,

Yours sincerely,


(NAVEEN PATNAIK)

SHRI RAHUL KHULLAR,
Chairman,
Telecom Regulatory Authority of India,
New Delhi.

MEMBER OF PARLIAMENT
(LOK SABHA)



#2, Firoze Shah Road, Delhi

To,

Mr. Rahul Khullar,
Chairman,
Telecom Regulatory Authority of India,
New Delhi

Date: 07/04/2015

Subject: Dissent letter regarding TRAI's move to allow violation of Net Neutrality

Dear Sir,

I write to you as an everyday internet user. I use messaging apps to keep in contact with my staff, I use cloud services to prepare documents, I use internet video calling to get in touch with experts who are far removed from my location and, most importantly, I use email & internet based messaging apps to take public opinion from my constituents. Internet forms an integral part of how I do my work, therefore I see this move by TRAI as a threat to my functioning as a representative.

Along with this letter, I am attaching a document which contains all the answers to the questions you have put up for consultation. I must tell you that I have not prepared these responses. They have been prepared by an online community called Reddit India, where thousands of young men and women who feel deeply about the issue burnt the midnight oil to give TRAI a fitting reply. They worked on this document over and over. I watched, in real-time, people editing and amending this document to raise it to a point of perfection.

You have asked suggestions about charging separately for 'Over-The-Top' services. I see this as a detrimental move that is putting conditions on the access of internet. We are standing at a juncture where other developed countries are speaking about having internet access as a basic human right. Even the United Nations said back in 2011 that restricting access to the internet counts as human rights violation. Our Prime Minister speaks about a 'Digital India' and smart cities, an India that is looking towards the future and encouraging young people to be creative on the online space. The government even elicits public opinion on complex laws & acts over the internet. If this decision by TRAI goes through, it will not only go directly against the Prime Minister's dream but also against the desires of those which wish to make India a modern nation.

I can compare the internet with electricity. If you start charging people separately for electricity that is used for heating, cooling, entertainment etc, there will be a massive outrage about that.

A handwritten signature in blue ink, appearing to read "Rahul Khullar".

The internet is essentially the same. It is a free medium and telecom companies operate pipelines that provide access. People are paying to access the internet and the data transfer, not because they want to use specific services which the phone companies provide.

When Tim Burners-Lee invented the World Wide Web, he could have easily turned it into his personal fiefdom and would have been a billionaire. But he had the foresight to see that this network will change the face of how humans will communicate with each other. He gave it to the people as a collective, so that no single person can dictate how the network operates. This is an essential element of why the internet is what it is today. This freedom allowed developers and engineers to get creative. Today, we carry the world's wealth of human knowledge in our pockets. TRAI cannot control the internet by charging separately for services that are created by the very people who believe in the idea of free access to information and knowledge.

India is currently a country with the second largest base of internet users in the world, right after China. In your consultation paper, you have pointed out that 83% of these users access the internet through phones. The growth of mobile internet users in the last one year alone has been staggering. In this scenario, any person who looks at these figures would say that we have a vibrant and growing online business market.

Startup online shopping companies which were formed merely 2-3 years ago are today valued in billions. Telecom companies are seeing an opportunity to make more money by regulating the internet, by signing deals with these startups and giving their OTT apps free access. This move will essentially kill any new startups that don't have enough resources to get permission from TRAI or tie-up with big telecom companies. While the present government is busy promoting 'Make in India' and encourage startups, TRAI is allowing big companies to form monopolies over the mobile web.

This is why Net Neutrality is important for each and every one of us. It's not an 'elitist' problem, as many are arguing. It is going to affect even the poorest who now have cheap phones with internet enabled on them. As phones get cheaper and phone networks spread further, the number of internet users in India is going to shoot up. We might soon have the largest internet user base in the world. We are a growing country and we should have proper laws in place, not to regulate, but to encourage the use of internet.

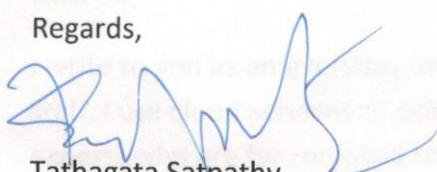
The Information Technology Act that we have currently is outdated. It deals with Digital Signatures and Database Management which are outdated concepts. India Post recently discontinued Money Orders (MO) because today everyone can transfer money using their smartphones and data connection. We have a digital currency market called Bitcoin, which is also on a rise. In these changing times, it is of utmost importance for us to keep our laws updated. As law makers, we need to understand the very nature of the internet before we even



try to regulate it. There needs to be a complete overhaul of the information technology and communication laws, after proper consultations with all the stakeholders and committees. The advent of social media, its impact and growth, possibilities of improving online markets, privacy laws and encryption, the whole gamut of issues need to be addressed.

Therefore, I oppose this move by TRAI which is infringing on Net Neutrality and I hope that you see sense in the arguments that internet users around the country are making. The internet is no more a 'network that connects computers'. It is now a social network that will help bridge social, economic and regional divides. *That India is badly suffering from*.

Regards,



Tathagata Satpathy,

Member of Parliament,

Dhenkanal, Orissa

Along with this email, I am attaching a document which contains all the answers to the Questions you have put up in the consultation. I must tell you that I have not prepared these

Copy: Hon'ble Minister of Communications & IT, Mr. Ravi Shankar Prasad

Hon'ble Chairman, Standing Committee on IT, Mr. Anurag Singh Thakur

All Hon'ble Members of Parliament, Lok Sabha & Rajya Sabha

2.4.34 Kunaal Prasad

Response to TRAI consultation paper 8/2105 (9th December, 2015)

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Para 9 the TRAI consultation paper 8/2105 (hereinafter referred to as “the paper”) states the following:

“The Authority monitors the tariff for various services offered in the country through the reporting mechanism put in place. While scrutinizing the tariff proposals, TRAI checks their consistency with various regulatory principles/guidelines, which include the following:

- *Non-Discriminatory*
- *Transparency*
- *Not Anti-competitive*
- *Non-Predatory*
- *Non-Ambiguous*
- *Not Misleading”*

A recently added feature (hereinafter referred to as “the feature”) in Facebook’s (a popular social media platform) mobile app automatically launches and starts playing videos in users’ newsfeeds. The basic problem with the feature is that it is compulsory unless otherwise selected. When people became aware, it was blamed for devouring their mobile phone users’ data and driving up their cellphone bills.

In my humble opinion, the feature is a sham to force users to spend more data than necessary, without giving them a choice to begin with or taking advantage of internet illiteracy of common people of India, thereby being in violation of all regulatory guidelines mentioned above which we will discuss one by one.

1. Non-Discriminatory

The new compulsory feature is discriminatory in nature as it auto-plays only those videos that are uploaded on Facebook. This means that videos getting uploaded elsewhere (namely competitor websites) will never get nearly as many views. The worst part, all this is happening without the consent of the unwitting user. The user has to go to the setting to disable the feature and many user without realizing the increase of data usages or because of net illiteracy to do this leave this matter unattended unaware of the fact they are paying extra. If Facebook or other website has to introduce the feature like this then they should have put this feature in disabled form and it should have been user's choice to start the feature but ironically it's happening otherwise.

2. Transparency

Telecom Regulators are supposed to be prompt on non-transparent practices. With the feature going on for a few months without people realizing that their data is being eaten up, the only beneficiaries are Facebook and the promoters of the videos and the network operators. Why not put up a disclaimer which is bold and highlighted stating that if you would like all videos to be available to you at a scroll, all you do is click this button. In this case, it's the other way around.

3. Anti-competitive

Competition laws take into account any practices that are pertain to abuse of dominant position. Using a platform like internet bandwidth (which is as public as air) to bully your agenda just because you can is blatantly anti-competitive in nature. The fact that Facebook has so many users and so much popularity among advertisers that no one dared object. Not one mainstream media house or regulator in India has raised their voice on this issue yet. Is there an unholy nexus that we do not know about?

4. Non-Predatory

So we hear that Auto-play videos are eating up 60% more data on some networks. We also hear that Facebook has experienced a sudden surge in revenue since the initiation of the feature. Why you wouldn't if you generate 8 Billion views a day. So quid pro quo theory begs to ask a question – WHO REALLY BENEFITS? Does this also suggest an unholy nexus between the telecom operators, regulators, advertisers and Facebook? Since nothing in life comes for free, we wonder what mutually beneficial arrangements have been made between the above stated parties so that schemes like the feature may continue and flourish. And WHO LOSES OUT? We all know the answer to that is the end user. If it has to left on assumption and connecting dots we can easily come to a conclusion that by doing this Facebook and other social media applications have benefited the network operators apart from the applications itself. In return of this extra benefit by this applications to network operators they have returned favor to Facebook and similar website by including them in the so called “Free Basic Internet” package. As these network operator are making the application free to use to non-data user they are in one way or other are also increasing the number of user on the said or benefited website and these website capitalize the increase

of number of user by relation it to LTV (life time value) of the user and hence increasing their valuation or gaining on stock exchange indirectly.

5. Non-Ambiguous

The feature is as ambiguous as they come. Here is a scenario - the data was seen by me, its costs incurred by me and I wasn't even consulted before all that happened. Is that not an ambiguity which a regulatory authority missed?

6. Non-Misleading

Some of us took longer than others to figure out that the feature is eating up our data quicker as well as increasing our mobile bills. It is pertinent to note that all this is happening without our consent. A large percentage of our population use only the most basic and essential features in phones. Considering the social opportunities offered by them, Facebook is certainly one of them. A large percentage of this population Thus let the feature eat into their data package and increase their mobile bills bills. If Facebook starting the feature without permission was patently misleading then telecom authorities not do anything about was not a regulator not being diligent to horrific proportions.

Given that in countries like Australia, the telecom authorities are obligated to inform the public via warnings or disclaimers if their data is being consumed, the TRAI was a far cry away obligations during the successful activation and continuation of the feature. Further it will continue misleading the general public till it comes with a disclaimer

To top that, Facebook doesn't stop here. Facebook has decided (as Parens Patriae of its users) that its users can spare a few megabytes here and there to boost engagement or appease advertisers. The company announced in August that it was introducing "bandwidth targeting," which would

change the advertisement shown to a user based on the speed of their wireless data connection in "high-growth countries" such as India. Through this system, people with faster data connections might be shown a video while people with slower connections might just see a banner advertisement. The user doesn't have any say in the matter. Facebook has decided that it and its advertisers have a right to use a consumer's wireless data connection as it sees fit, and it doesn't much care what its users think about that.

Now if that is not a violation of net neutrality, then we can't really tell what is. TRAI needs to seriously consider its stand with respect to the general public. It will be interesting to see their response to this comment. It will further be interesting to see if this comment is kept in public domain or not. Till then, we would like to thank TRAI for allowing Facebook to fill its pockets with currency that our masses still does not properly understand – DATA. Thank you TRAI for allowing Facebook to rob us – unwittingly. If actually any of these parties are serious about the free internet and connecting the unconnected then they should simply invest in the infrastructure development of the country and giving funds to the Government which could use these fund impartially for the development of infrastructure so that the neutral internet should reach everyone not by stealing money from people by taking undue advantage of their innocence in terms of data and technology and funding their nexus with this money and try to take credit of being the provider of internet to the last person of our "Poor underdeveloped" or say "developing" INDIA.

2.4.35 Suresh K Jariwala

2.1.2016.

Dr. Suresh K. Jariwala, M.Ch
A 4, Rani Seethai Achi Housing Complex
Annamalai Nagar
Chidambaram 608002.
Tamil Nadu, India.

Sub: Why I oppose Trai proposal of differential pricing to access data on internet and Free Basics.

I oppose TRAI proposal of differential pricing for data access on internet and Free Basics of Facebook. My explanation follows:

1. Suppose a poor man from Dharavi, Mumbai and Mr. Mukesh Ambani, the richest man of India go to a super market for shopping. Both buy a Glucose biscuit packet costing Rs. 10=00. Will the man from Dharavi pay Rs. 5=00 and Mr. Ambani Rs. 5000=00 for the same biscuit packet? No. Both will pay the same amount!
2. Suppose a poor man from Dharavi and Mr. Anil Ambani of Reliance Communications go to a super market for shopping. Both want to buy biscuits. Can the manager of the super market deny man from Dharavi to sell any brand of biscuit except Rs 10=00 Glucose biscuit and allow Mr. Ambani to buy any brand? No, as long as both are willing to pay. What about affordability? The solution does not lie in giving biscuit free to the man from Dharavi. You increase competition and production of biscuits so that price comes down to affordable level. That is the basic principle of capitalism. Better goods at cheaper price as competition and production increases. That Is what exactly happened in India`s mobile technology.
3. Is anything available free in this world? Everything cost. Directly or indirectly. Somebody is paying for this free. Look at the massive advertisement campaign launched by Facebook at huge cost for Free Basics. Who will pay? At what cost? India will pay at the cost of loss of independence of free internet. Every citizen of India should be able to access internet freely without any restriction or censorship. Nobody has right to decide for me even if it is given free to me. The same applies to other countries of the world.

4. If a parrot is caged in a golden cage and given feed every day, will the parrot be happy? After few months, the parrot will forget to fly even if released from the cage! Free Basics of Facebook is like that golden cage. India and her citizens will lose independence and control first over internet and then slowly in other fields. India will be slave to multinationals like Facebook. Helping poor is only a mask to fool gullible people. That is why Facebook changed the original name Internet.org to Free Basics!
5. Government of India (GOI) should make Aadhar card universal and link it to a bank account. Almost one billion Aadhar cards are issued so far. Let GOI provide nominal amount to every citizen of India to access internet directly into their bank account. Multinational companies like Google, Twitter, Pfizer, Facebook, Maruti, Tata and others can donate money directly to GOI without any precondition. Absolutely no restriction or condition on donation. Let the account of this money be monitored in open on internet for anybody to check. That will prevent misuse. Citizens of India should have full freedom to use internet of their choice. GOI also should not put any restriction or condition for use of internet. With technology advancement it is possible.

GOI should also encourage competition and mass scale production of computers, chips, laptops and mobiles in India. Make in India would get a strong boost. The same fund could be utilized for this. The same applies to 4G internet. The cost of instrument and internet would come down drastically. The cost to GOI to supply free internet will also come down. With universal access to internet, Digital India would be a reality.

The model could be replicated in other countries of the world. The world would be much better place to live in, a digital world. This idea belongs to Mr. Nandan Nilekani and Mr. Viral Shah and I whole heartedly support it.

I would enlarge this vision and think of Citizen of Planet Earth, without restriction and boundaries of different countries like India and USA. He or she will travel from one pole of earth to other without any restriction and goes to Mars as citizen of planet Earth, and not citizen of India. And in future from one galaxy to another. This vision is possible only when every human being on Earth has access to free internet.

6. India is doing her best to gain her rightful place on the world stage and succeeding slowly in the attempts. What is helping India in this? Access to

free internet and open democracy. Did you listen to Mr. Obama's election speech for Presidency? How many times did he utter the word Bangalore? Why did America levy such a high visa fees on techies from India? Why did the President of USA, Mr. Obama invite Mr. Narendra Modi to America, a man who was denied visa for years together? The invitation was to the Prime Minister of India and not to Mr. Narendra Modi. Because India is emerging and leading in the world. This is only possible with the help of access to free internet and innovation. Once you surrender this freedom to multinationals like Facebook under the guise of Free Basics and helping poor, India will lose the edge. Innovation and creativity will die. India's fate and future will be decided by multinationals like Facebook and not Indians.

7. Any country or human being who forgets the past will pay in the future. People have short memory. Do we remember the East India Company? What happened under the guise of doing business and peaceful existence? India lost her independence and became slave of Britain for years! The history is repeating itself. British people used different means to capture India. Facebook is using massive advertisement campaign (weapon of present time) and Free Basics at huge cost for what? To help poor? No. The altruist motive on show is a mask. The ultimate motive of any multinational is to capture market and make people slave to their products. Free Basics is one such product. Other multinationals will soon join the race once Facebook is permitted. The path will lead to India's downfall.
8. Internet is the ultimate tool of any country in future. A country's development, progress and economic status will be decided by internet- how much it is free and independent. You impose restriction /conditions on use of internet and you are blocking your own progress. Do you want freedom or slavery? I want freedom. I support free internet. I support net neutrality. I wholeheartedly support the campaign of "save the internet". I say no to Free Basics of Facebook. I say no to differential pricing to access data on internet.

Dr. Suresh K. Jariwala, MCh
Chidambaram 608002.
Tamil Nadu
Email: sjariwalak@yahoo.co.in

2.4.36 Rajeev Chandrasekhar MP



RAJEEV CHANDRASEKHAR
MEMBER OF PARLIAMENT
RAJYA SABHA

Member of Standing Committee on Defence

Member of Consultative Committee on Defence

Member of Central Advisory Committee for the National Cadet Corps

Co-Chairman, Vigilance & Monitoring Committee, Bangalore Urban District

Vice Chairman, National Military Memorial Management Trust, Bangalore

*JA(S)
Kotwal
30/12*

30th December, 2015

Dear Ms. Kotwal,

Sub. : Submission on TRAI Consultation Paper on "Differential Pricing for Data Services"
dated 09 December, 2015

Greetings of the season.

Please find attached my submission on the TRAI Consultation Paper on "*Differential Pricing for Data Services*", which was released on 09 December, 2015. This submission may be considered by the TRAI whilst formulating its regulations on Net Neutrality and/or any Discussion Paper produced as an outcome of this consultation.

The following points are for the TRAI's perusal:

1. The cabelization of the Internet by TSPs is a clear and present danger. It is the most important objective for Net Neutrality to tackle, because, as is visible in the TV and media sector, this power once created is impossible to reverse or regulate.
2. The regulation of Net Neutrality today will decide the future structure of Internet which is increasingly a valuable commercial market place with many opposing commercial interests attempting to increase their control/influence on it.

*6197
30/12/15*



I would also like to make the following suggestions to improve the consultation process adopted by the TRAI:

- a) This consultation seems to focus only on wireless access providers to the Internet and leaves out the issue of Fixed Internet access providers. Fixed Internet Access Providers are important stakeholders who will be impacted by Differential Pricing, and the issue should ideally also have been examined in the light of their role in the Indian internet landscape.
- b) TRAI's response to Net Neutrality will shape the discourse around regulation and consumer rights in the future into a more mature and reasoned one – moving away from the current shrill debate that is characterized by suspicion and lack of trust about most players, amongst consumers. This could be addressed by TRAI seeking disclosures of commercial interest in all submissions during such consultations. Undisclosed commercial interests tend to be used to distort consultations such as this.

Indian consumers await the TRAI's conclusions on this important and vital issue which relates to them, and I would advise you to arrive at these at the earliest, after giving due consideration to my submissions.

Sincerely,

RAJEEV CHANDRASEKHAR

Ms. Vinod Kotwal
Advisor (F&EA)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawaharlal Nehru Marg
New Delhi 110 002

Responses to TRAI Consultation Paper
dated 09 December, 2015
on "Differential Pricing for Data Services"

30 December, 2015

RAJEEV CHANDRASEKHAR
Member of Parliament

A. PREAMBLE:

My Views on Net Neutrality and Differential Pricing:

In recent months, there has been considerable deliberation and debate on the issue of Net Neutrality - driven largely by Internet consumer groups and activists. The debate on Net Neutrality is amongst the other important issues relating to consumer rights - emerging from a growing demand for consumer rights - a need for a Magna Carta for the Internet and Telecom space that includes issues of call quality, Internet access and speed standards, free and fair competition, privacy, freedom of expression etc.

The TRAI must take cognizance of this and be responsive to the issue of Consumer rights, if necessary, sometimes co-operating with regulators like Competition Commission, which has the domain capability on sophisticated economic issues like competition and market dominance/abuse.

The Net Neutrality debate is a critical one - as the Internet fast transforms from a global network of networks and medium of connectivity to a valuable and commercial market place while maintaining its connectivity objectives. As I have said many times before - Regulating the Internet and the technology space needs to be innovative and creative - balancing the rights of consumers versus the need to ensure regulation does not stifle the innovation and creativity that is the hallmark of the Internet.

There have been some attempts to characterize Net Neutrality as a complex issue, a utopian ideal of sorts. This, however, is inaccurate. I believe Net Neutrality, on the contrary, is a very simple issue to understand, define and regulate, and do so without harming the core character of a free internet and an innovative internet.

Key Principles to defining and regulating Net Neutrality that needs TRAI's consideration:

- 1. Net Neutrality is one of a basket of Consumer rights issues. Regulation must be simple and targeted.**

Net Neutrality is one of the many issues that are core to consumer rights to a free, fair and open Internet. Regulation of the Internet must be sophisticated and separate the various issues that need regulation, and not lump everything into one regulatory approach. The need to work together in conjunction with other regulators like CCI is also important to ensure all consumer rights issues are fairly and transparently regulated for.

- 2. Net Neutrality is not the same as Competition regulation**

Net Neutrality must be regulated independently from Competition regulation for Market power, distortions in Market place etc. Consumer concerns of Facebook Free Basics, Google's search neutrality or any pure web entity relating to market power or competition issues on the web must and can be exercised through competition regulation.

Competition law squarely and completely applies to all web entities and must be enforced wherever applicable on entities that violate the basic principles of free and fair competition.

- 3. Telecom Service Providers (TSPs) are not the Internet. They provide the access to Internet and could become powerful gatekeepers to the Internet and so require regulation.**

TSPs are limited in their numbers by spectrum and licenses and predictably need more robust regulation than websites or web applications. Further, the conduct of TSPs on other consumer-related issues like call drops etc. is evidence for Regulatory intervention

and regulation. The relation between TSPs and the Internet is that of access providers, and lack of regulation of this role can easily allow the TSPs to become a gatekeeper to the Internet. Since competition is still limited and will always be finite, the threat of TSPs becoming gatekeepers is real. The threat of TSPs entering into Financial contracts with certain websites to provide preferential access/Speed is real distortion and discrimination and most important for Net Neutrality regulation to address.

4. **The objective of Net Neutrality regulation must be to prevent cabelization of the Internet, i.e., no gatekeeping by TSPs, while Competition regulation must address market power and dominance issues of websites/apps.**

The most important way to ensure Net Neutrality is that Access providers of the Internet (TSPs) do not exercise any control on the consumers' right to surf the net without pricing or network influences.

There is substantive evidence in India of the market power of cable operators, and of the misuse, pricing abuse and distortions that helpless consumers have to suffer when access providers start controlling and influencing access to content. This Gatekeeping power of the access providers is unique because of the finite number of access providers in competition, and creates permanent distortions which even regulation can't manage today. This, in turn, creates a situation where rampant price gouging and/or poor quality is inflicted upon consumers, leaving them hapless except for upgrading to more expensive options. Cabelization of the Internet causes vertical integration which would lead to TSPs owning parts of the net and impacting consumer choice and competition in the long term by making web-only entities unviable and unable to compete. There is ample evidence of that in the Indian Television and Media sector where vertically integrated entities have distorted choice and innovation, and have created market power concentration.

Core to regulating Net Neutrality is the preservation of fair, open, innovative and equal character of the internet – i.e. an internet that is bereft of any form of gatekeeping by TSPs.

The issue of distortions to the free and open nature of the Internet being impacted by website entities (not TSPs nor those with interests in TSPs) like Facebook & Google, must be regulated by Competition regulation. Competition Law in India is effective and has been tested successfully in various sectors.

The need to regulate TSPs or broadband access providers has been recognized as key to Net Neutrality even by US Regulator FCC. In February 2015, the FCC passed the Open Internet Rules which upholds free expression and innovation on the Internet and allows consumers to go where they want and when they want. It allows the regulator to ensure transparency in the operation of broadband services, and also establishes a legal framework positioning the regulator to address issues like content prioritization. The FCC Order explicitly states that:

“...Broadband providers may not favor some lawful Internet traffic over other lawful traffic in exchange for consideration of any kind—in other words, no “fast lanes.” This rule also bans ISPs from prioritizing content and services of their affiliates...”

5. TRAI’s Regulation for Net Neutrality should not just cover wireless TSPs, but also cable and other broadband/fixed Internet service providers

The consultation paper issued by TRAI is silent on and seems to exclude the Fixed Internet Service Providers.

B. RESPONSES TO QUESTIONS IN TRAI CONSULTATION PAPER ON DIFFERENTIAL PRICING FOR DATA SERVICES

This current Consultation makes more specific enquiries pertaining to the issue of "Differential Pricing for Data Services" – a key principle of Net Neutrality.

Question 1: Should TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

This question has to be responded to with care, and TRAI must note the two very different scenarios emerging from this broad question – as both scenarios represent very different regulatory responses.

In one scenario - referred to as promotion/price-off/Government-mandated sites scenario - TSPs could be free to zero-rate or offer discounted access to websites as part of promotion or improving affordability or mandated by Government for public service. But this cannot be on the basis of financial arrangements or Interests between websites/apps and TSPs, i.e., No financial benefit must accrue to TSPs by providing cheaper tariffs to access some parts of the net. TSPs must also have no financial interest (including direct or indirect equity/ownership) in the sites that are being offered price-offs or any form of evidence or action of subsidy.

Tariffs for data in this scenario would be either zero-rated or below the cost of production of a data packet and no financial benefit can accrue to TSP or website due to this price-off/zero rating. Any competition and predatory pricing implications of such tariffs should be examined by Competition Commission before being permitted by TRAI. This is the fundamental principle to allowing price-offs/promotion-led tariff differentiation.

In a second scenario where the differential pricing could be to increase data rates for certain apps or part of the net - that is to be prohibited. This is an inverse form of Predatory pricing. Further, for purposes of clarity, TSPs cannot be allowed to increase tariffs to access some parts of the web or apps. This is a deliberate effort to make access more expensive to some parts of

the Internet, thereby pricing out the app/site from the consumer. This will amount to gatekeeping and abuse of power by TSPs to discriminate against certain apps. This will eventually lead to islands on the internet that TSPs will make artificially too expensive for the consumer. This will limit choice and is adverse to consumer interest. This will lead to cabelization of the Internet.

This is a very different scenario from the one envisaged above which is a price-off/discounted access, because there is no financial benefit accruing to any party in that scenario.

In summary:

Scenario 1: Price-off, discounted tariffs/Zero ratings should be permissible subject to No Financial compensation or interest from or in the website/app that is being discounted AND prior examination of it by CCI for any market abuse issues. Only if regulation can ensure this should price-offs be permitted.

Scenario 2: Tariff differentiation should be prohibited.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Discriminatory Pricing for data usage can only be permitted, if it fulfills the following criterion as described in Scenario 1 in response to Question 1.

In that promotion/price-off/Government-mandated scenario, TSPs could be free to zero-rate or offer discounted access to websites as part of promotion or improving affordability. But this cannot be on the basis of financial arrangements or Interests between websites/apps and TSPs, i.e., No financial benefit must accrue to TSPs by providing cheaper tariffs to access some parts of the net. TSPs must also have no financial interest (including direct or indirect equity/ownership) in the sites that are being offered price-offs or any form of evidence or action of subsidy.

Tariffs for data in this scenario would be either zero-rated or below the cost of production of a data packet and no financial benefit can accrue to TSP or website due to this price-off/zero rating. Any competition and predatory pricing implications of such tariffs should be examined by Competition Commission before being permitted by TRAI. This is the fundamental principle to allowing price-offs/promotion-led tariff differentiation.

In summary - Price-off, discounted tariffs/Zero ratings should be permissible subject to No Financial compensation or interest from or in the website/app that is being discounted AND prior examination of it by CCI for any market abuse issues. Only if regulation can ensure this should price-offs be permitted.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Regulation must encourage all forms of increasing access. There are several other ideas that are being discussed and Regulations must permit/encourage all such models - of course, subject to caveats and conditions mentioned in my response to Question 2 above.

1. **Using USO and Equal Rated Plans:** Experts have highlighted that access can be improved by the government through "equal rated" plans that are deployed by the Government. The unused Universal Service Obligation funds could be tapped for this purpose.

Corporations such as Mozilla are experimenting with this sort of model in multiple African and Middle Eastern markets, where users purchasing a US\$40 Klif phone receive unlimited talk, text and 500 MB a month for 6 months.

Another possible way of "equal-rating" content so it is free-of-charge to the user is a model where people watch ads in order to access other sites. Mozilla has been exploring this model in a partnership with Grameenphone (owned by Telenor) in Bangladesh, where users can receive 20MB of unrestricted data per day after watching a short ad in the phone's marketplace.

2. **Offering of low speed internet plans with Caps:** Further, TSPs can also offer 2G data services which are capped at 10/20 MB a month which could obviate the need for price-offs and differential pricing. Such measures could improve access and give millions of Indians access to the Internet.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The cabelization of the Internet by TSPs is a clear and present danger. It is the most important objective for Net Neutrality to tackle, because, as is visible in the TV and media sector, this power once created is impossible to reverse or regulate.

The regulation of Net Neutrality today will decide the future structure of Internet which is increasingly a valuable commercial market place with many opposing commercial interests attempting to increase their control/influence on it.

For India and its vision of Digital India - the structure of the Internet must be one:

- i) Where TSPs do not and cannot exercise any power of gatekeeping to the net/web for commercial interests.
- ii) Where Competition on the web is free and fair through effective intervention and examination by, and joint regulation with Competition Commission and TRAI.

The Internet needs simple regulations that are based on fundamental consumer rights, innovation and connectivity. The TRAI has, for many years, been less than responsive to consumer needs, and this is an opportunity for TRAI to demonstrate both its regulatory maturity to regulate on issues like Net Neutrality, Competition and Market power without stifling creativity and innovation, as well as regulate for Internet consumers' rights and greater access to the unconnected. While these may seem objectives difficult to align, good regulation can ensure this. Effective co-regulation on issues of competition and market dominance along with CCI is also an area that must be institutionalized.

C. SUGGESTIONS TO IMPROVE CONSULTATIONS

This consultation seems to focus only on wireless access providers to the Internet and leaves out the issue of Fixed Internet access providers.

TRAI's response to Net Neutrality will also shape the discourse around regulation and consumer rights in the future into a more mature and reasoned one – moving away from the current shrill debate that is characterized by suspicion and lack of trust about most players amongst consumers.

TRAI must seek disclosures of commercial interest in all submissions during such consultations, especially from NGOs and activist groups.

2.4.37 Varun Sharma

To,
Chairman, TRAI
Mahanagar Doorsanchar Bhawan,
New Delhi-110001

Dear Sir,

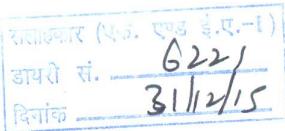
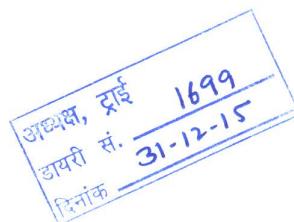
With due respect I beg to state that the problem of the Internet is severe. We have to save it. In order to save it, we must keep some measures for not having any discriminatory policy which leads to people's dilemma. Obviously Internet is a source of expression and knowledge but we must see that the company's don't use it as monetizing basis for just providing access to some sites for free and others paid. Already ISP's are charging for their bandwidth. Yes it can be that Aircel has been providing internet for free for some months but after that it is paid. Internet is not controlled by anyone. Internet is for all. There should be live and let live policy.

Free Basics is another concept developed by Facebook, but it is only relevant in Reliance Connection. So it is not that successful as it could be. Gmail, google and others are very popular. Why can't it co-exist with each other. It can. And also people have both gmail and facebook what about them. It is not a wise step.

I request you to kindly think and then take any action.

With Regards,

Varun Sharma
C-3/3137, Vasant Kunj, New Delhi-110070
email: vs281979@hotmail.com
Mobile: 9910703375, 7289966286



2.4.38 Sriram

Cost of Zero

[Edit](#)

April 16, 2015 at 5:46pm

The Internet:

The 21st century has welcomed a high tech revolution from the dawn of the silicon valley during the late 20th century - most of us were born at a time when Computer's were made ubiquitous out of the Silicon Valley startups only to carry on the baton further into what can be referred as the Internet Revolution. Subtly put what followed the Industrial Revolution of the yesteryears is something that created a lot of business sense to the venture capitalists that founded corporations in the United States of America by capitalizing on the idea called the world wide web (www) or what we all consider as The INTERNET. I want to dive a little bit into the history of what propelled the idea of the world wide web - mind you Internet was nascent at the time when I studied Computer Networks at my Engineering School. But interestingly the very first video I happened to watch and like on youtube was about the making of the Internet:

<https://www.youtube.com/watch?v=9hIQjrMHTv4&index=19&list=FL5YZc8YcS0KKgX3ITwAdICg>

Indeed a game changer to our societies, especially for those who think out of their mind to create a concept and make it a reality. This was the technology that gave the buzz word "hi-tech" some sort of a kick starter. Sharing Time was a concept that attained fruition back in 1960's when Computers were programmed for multi tasking computations. The transmission of information was so human during that time when Computer networks overtook humans in the field of information delivery. The scientific, military and commercial approaches to this concept lead to the invention called the INTERNET using Computer Networks. This closely guarded Network Controlled Protocol later evolved to as Transmission Controlled Protocol (TCP) which became the all pervasive Internet Protocol (IP). What existed as transmission network within university campuses transformed globally through underground optic fibre and over ground satellite transmission hardware connections which forms the present day Internet TCP/IP hardware framework. The adoption of the infamous DSL modem hardware and then to wired broadband network, right around the time when I began to work for a high tech company:) is history. It was also a time when wireless internet was possible with the successful adoption of wi-fi enabled laptops that even today is helping me to draft this note in spite of a decade being ovarr already.

Cost of FREE:

This virtual world of Internet - was the time when the buzz word "Netizen" started going circles as if people were belonging to a whole new global village - all made possible through standard pricing slabs offered to us by - Telephone Internet Service Providers (ISP). It was a fairy tale kind of a feeling whereby one had the information he/she requires at the click of a button on your laptop. Today it is possible to send e-mails, make Voice over IP phone calls, do online banking transactions, watch-upload-and share video streams, video chats, and even post reviews about the quality of those services and all of that has made us to believe in the freedom which we now take them for granted. Unlike any other revolution the world has witnessed, the Internet (or) the World Wide Web triggered a massive opportunity to provide and consume information by and to the people in an English speaking world. To top it all such services came for FREE - such as the likes of the Google Search, Yahoo Search, Hotmail, Yahoo Mail, etc to name the famous few. This was available to Netizens as a FREE service as long as one had an Internet Connection through the local ISP. The ISP's in India at the start of the 21st century were offered by both public and private listed Telephone companies. It was possible to access any website(URL) after paying a monthly fee to the respective ISP. An ecosystem was in the making with a lot of American Internet Service Companies namely Google, Yahoo, Youtube, Skype etc started to offer Internet services such as



Sriram Vaid

Notes by Sriram Vaid

All Notes

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On-demand Technology

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Mapping the User Journey step by step for an on-demand technology platform.

1. E mails
2. Search for Information
3. VoIP / Video Chats
4. Online Video Streaming
5. GPS Maps with location services and coordinates

The commercialization of the Internet lead to the dot com bubble which eventually gave rise to some popular and FREE Internet Services like Hotmail, Yahoo Search, Yahoo Mail, Google Search, Gmail, Youtube, Skype, Vimeo, Netflix, Social Networking Sites like Facebook, Twitter etc. The Cost of FREE business model worked fantastic through tiered advertising revenues generated for these Internet Companies. It is undoubtedly the most innovative business model of the 21st century.

But how would one expect an Internet Service Company to earn profit and sustain just by giving away such service as FREE - In other words, what is the cost of FREE ? To the ordinary Netizen, the cost of paying his/her ISP to get access to Internet is the total cost that puts a burden to his/her wallet. Thats not quite true. While such services were provided to the Netizens, the Internet companies derived a lot of insight about the various details such as IP address from which the person is emailing, location address while accessing a map location, date and time stamps of the video transcripts that remain preserved in the archives of the privacy protected data center servers of that corporation. While it is true that all such information is encrypted it still remains to be in the archives of that private company and is accessible anytime upon request from the US Government, the ICANN - acronym for the Internet Corporation for Assigned Names and Numbers (www.icann.org) was created on 18 September 1998 - head quartered in Los Angeles, California as a Non Profit Organization for charitable and public purposes. The ICANN remained under the direct influence of the US Department of Commerce until 2009. It can inferred that the ICANN operates strictly under the MoU that exists between the US government and this non profit body. The Internet is a market now and offered a potential business opportunity to those players who sought of it as the last man standing on earth. To this date there exists a widespread criticism to this governing body as it is the only one controlling the policies of the 21st century Internet from the US. Top Level Domains(TLD's) are determined by ICANN. The domain name .com (dot com) remains to be the Top Level Domain(TLD) in the Domain Name System of the Internet. Why? Because it is derived from the word "commercial" indicating that its original intended purpose was to promote commercial interests using the Internet. It was first implemented in 1985 and remained under the administration of US Department of Defense. But today it is operated by Verisign, More details can be found at:

<http://en.wikipedia.org/wiki/.com>

It is not very transparent to me how similar is the loading speed/latencies of TLD's that is different from a .com such as .org, .edu, .gov, .in and the likes ??? A clear case of DNS monopoly exists - and a typical argument to defend such monopoly would be to claim that by not having such a thing it would only lead to a fragmented Internet. Isn't the Internet already fragmented by capital rich global Internet corporations?

How could then one regard the World Wide Web often referred as the Internet to be operating on the principles of equality and neutrality? This is just one edge of our double edged sword.

Cost of ZERO:

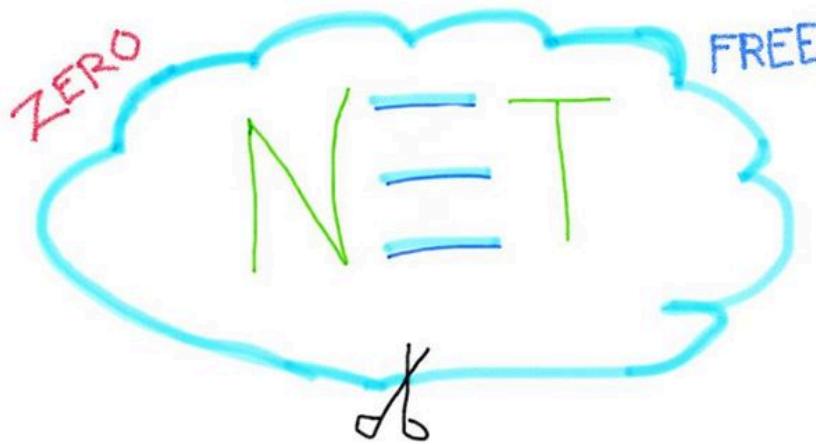
Equality is the state of being equal in status, rights and opportunities. But Neutrality is the state of not supporting or helping either side in a conflict [or] disagreement etc which could be possible only in the absence of decided views or opinions or expressions.

From the context of the Internet which is widely perceived by Netizens as the place to feel free and expressive, it can be argued while Net Equality still remains a wishful thinking based on the reasons mentioned above, Net Neutrality should be a given choice by default. That said, the adoption of smartphone based apps as a medium to make profits becomes the latest commercial trend set up by the ecosystem of Semiconductor Hardware Manufacturer,

Mobile Service Provider/Mobile Network Operator(MSP) and the Independent Software Vendor(ISV) [or] the APP Developer community. Now the ISP's become MSP's - WiFi Laptops/Ultrabooks become 3G/4G Smartphones - Software Applications become Mobile Apps:) The inclusiveness of this new mobile broadband ecosystem creates the data plan tariff race amongst different Mobile Service Providers (MSP's) - the list includes various Telecom companies. Clearly this pricing is done to offset the total cost of their investment/ownership in auctioning mobile spectrum bandwidth and so it becomes pertinent to note the difference in the understanding of an ISP business revenue model versus MSP business revenue model. Earlier during the inception of dot com bubble, ISP's grabbed the opportunity to offer access to Internet as a service by charging fixed monthly rentals and usage rates. This was helpful to them as it not only promoted their telephone businesses but also encouraged consumers to adapt to the Internet ecosystem. However with the successful penetration of wireless mobile broadband technologies (3G and 4G) along with the introduction of smartphone hardware and apps, the Mobile Service Provider is willing to go with Zero Rating - Why? Thats where the money is...

The reason (not rhetoric) behind Zero Rating is underpinned with the assumption that customers will have to rely only on mobile networks to access the Internet which is quite true in various developing countries - But this is not true in India as the access to Internet is a dual pronged approach either by using WiFi wireless broadband connections using ISP's or/and by using Mobile wireless broadband connections using 3G and 4G bandwidth services. This is the current scenario..Fragmentation/Balkanization of the Internet as it is referred is also technically feasible with the Zero Rating feature which clearly would only help money rich giving rise to a privileged class once again. Thus dividing the Internet on the basis of a closed, proprietary yet privileged would only result in Netizens becoming captives of a Corporate Lobby in the end - whether you call it FREE or ZERO.

Hence the Cost of ZERO makes a Case for Net Neutrality in India while the Cost of FREE makes a Case for Net Equality for the rest of the world.



Whose Net is it anyways?

Comment

Share

2.4.39 Ravi V Prasad

advisorfea1@trai.gov.in

Ms. Vinod Kotwal
Advisor (F&EA)
TRAI.

e-mail: advisorfea1@trai.gov.in

TRAI Consultation Paper No. 8 / 2015 on Differential Pricing for Data Services, dated 09 December 2015

Response by IPRG - ICT Policy & Research Group

<http://www.iprg.co>
Email: ictprg@gmail.com

TRAI Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 1:

Yes, differential pricing for data usage for accessing different websites, applications or

platforms should be permitted. Differential data pricing and /or Zero Rating schemes have numerous benefits for consumers, telecom operators, and content providers.

Differential Data Pricing and Zero Rating schemes permit optimization of scarce resources and greater consumer choice, especially for consumers at the “Bottom of the Pyramid”. Zero Rating schemes are especially beneficial in “Connecting the Unconnected”, and getting non-users to try out the internet without incurring costs or getting bound in long-term contracts.

There are numerous Differential Pricing / Zero Rating Schemes in operation in the world, with approximately 45% of telecom operators / internet service providers worldwide offering one or more Zero Rated schemes. Several African operators have been offering such schemes since 2010. In the U.S., T-Mobile offers its data plan subscribers zero-rated access to more than 25 online music services, including iHeartRadio, Pandora and Spotify.

Most European countries do not prohibit Differential Pricing or Zero Rating Schemes; the only exceptions being Netherlands, Finland, and Slovenia. The European Union voted on this issue in October 2015, and resolved not to prohibit Zero Rating schemes. USA does not prohibit Zero Rating schemes, but examines them on a case-by-case basis.

There is a lot of misconception among the public about Zero Rating schemes. In economic theory parlance, these are not Zero Sum Games, but instead, are complex games in Multi-Player Optimization in Dual Markets or in Multiple Markets.

There are three classes of players in this complex Multi Player Optimization Game:

- 1) Access (Telecom) Service Providers / Internet Service Providers. {Such as, but not limited to, Airtel, Vodafone, Idea, Reliance, Tata, Aircel, BSNL, MTNL, etc.}
- 2) Consumers, who access the internet via the Telecom Service Providers. These consumers can again be subdivided into (i) high data users, (ii) low data users, and (iii) those who do not yet have access to the internet. This last category could be brought online through suitable incentives such as zero rated schemes.
- 3) Content providers {Such as, but not limited to, Social Networking sites such as Facebook, Google+, Twitter, YouTube; Email service providers and search engines such as Yahoo, Hotmail, Google; E-Commerce sites such as Amazon, Flipkart, Snapdeal; Messenger Services such as WhatsApp; Yahoo Messenger; websites of newspapers, etc.}

The consumers pay subscription fees (such as per MB or per GB, pre-paid or post-paid, under various data pack schemes) to the telecom access providers in order to access content provided by the Content providers.

The content providers earn their revenues from advertisements and / or from subscription fees.

The content providers may - or may not - enter into commercial arrangements with the Telecom Service Providers.

A further complication is that content providers, in some cases, deal directly with end customers, such as by offering them coupons for discounted or free products or services.

In multiple-player games / markets, it is often in the interest of one category of players to either partially or wholly subsidize another category of players.

Consider the analogy of a newspaper, its readers, and its advertisers, which is a Dual Market.

Readers purchase the newspaper, paying a price to the newspaper.

Advertisers advertise in the newspaper, paying an advertisement fee to the newspaper.

Thus, the newspaper collects revenues from both readers and advertisers. But the demand / price elasticities of these vary greatly.

The advertisement rates are determined by the number of readers, as well as by the quality of the readership.

In almost all instances, the larger the number of readers, the higher are the advertisement fees that the newspaper can command from its advertisers.

In almost all instances, the larger the number of readers, the greater is the benefit to the advertisers.

The newspaper can increase its number of readers by lowering its subscription price, or even giving it away for free (Analogous to Zero Rating).

The increase in the number of readers enables the newspaper to command a higher advertisement fee from its advertisers.

Even though the advertisers pay more to the newspaper, the benefits they obtain from reaching a larger audience far outweigh the increased advertising fees they pay to the newspaper.

The question that can be raised is that if a particular newspaper can give its copies away for free, that it may succeed in driving other newspapers out of the market, who may not be able to match its free offer. However, in a competitive market such as India, with ease of entry, this would not be a major consideration. There is nothing to prevent other competing newspapers from following the same strategy.

The benefits / value to society as a whole would be maximized by having:

A large number of newspapers, each with a large number of subscribers, who pay little to nothing.

A large number of advertisers, advertising in numerous newspapers.

Low barriers to entry for starting a newspaper, and free competition among newspapers.

Few to no restrictions by a newspaper that an advertiser can advertise only in it, and not in competing newspapers.

Few to no restrictions that a newspaper can reject an advertiser who is willing to pay the advertising fees it demands.

Advertising rates to be determined by market forces.

The questions posed in this TRAI Consultation paper are analogous to the above newspaper-reader-advertiser analogy.

Zero Rating Schemes

IPRG believes that zero rating programmes offer efficient means of enhancing the economic well being of consumers in the telecom and information technology markets. These help expand the market, and are particularly beneficial in emerging markets and low penetration markets where there is a large population of uninitiated and new users. Therefore, while regulators should monitor market practices, it is important to realize the any broad bans or restrictions on zero rating schemes are quite likely to harm consumer welfare significantly.

It is further to be noted that the banning of zero rating would result in the poor and developing nations blocking sure avenues of growth and prosperity. The people and businesses who need the internet the most would be the greatest sufferers as they would be prevented from harnessing the internet. Telecom and IT are well established to have very high power of externalities and for providing connectivity-derived benefits through multiplier effects, greatly lowering transaction costs and transaction times, and increasing the velocity of business.

IPRG recommends that Indian content providers be provided incentives to develop Zero Rated public service content in local Indian languages, such as health information, agricultural information, legal information, etc.

The above views held by IPRG have also been expressed by Jeffrey A. Eisenach, NERA

Economic Consulting, USA, as well as by Diana Carew, The Progressive Policy Institute (PPI), USA.

Reference: The Economics of Zero Rating, by Jeffrey A. Eisenach, NERA Economic Consulting, National Economic Research Associates Inc., USA, March 2015.

Reference: Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries, by Diana Carew, The Progressive Policy Institute (PPI), Washington, DC, USA, March 2015.

TRAI Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 2:

The IPRG believes that all consumers should have the ability to access any lawful content they desire, without any restrictions or hindrances. Operators should not be permitted to deliberately prevent access to any lawful content, nor to intentionally throttle access speeds of content they 'dislike'.

IPRG recommends that operators should be required to submit to TRAI their consumer tariff schemes as well as their arrangements / contracts with content providers. TRAI should monitor tariff plans to ensure that consumer interest is kept paramount, and that dominant platforms do not unduly take advantage of their dominant market share, and / or their gatekeeper status.

Even though courts in several countries have held in numerous instances that exclusive commercial arrangements or differential pricing are not necessarily illegal or discriminatory, IPRG recommends that exclusive agreements between operators and content providers should be scrutinized carefully by TRAI. This oversight is especially required in the case of content belonging to or created by the telecom operator / ISP.

IPRG recommends that telecom operators / ISPs be strongly encouraged to zero rate government services, public interest services, health services, weather information, disaster information, etc.

IPRG recommends that Affirmative Action Incentives could also be provided for development of zero rated content from India, in local Indian languages, or those developed by disadvantaged members of society.

In the event that there is *prima facie* evidence that dominant platforms or operators are taking undue advantage of their gatekeeper status or dominant market position, the matter can be examined by the Competition Commission of India.

At present, there is not enough empirical evidence from anywhere in the world that operators are abusing their “gatekeeper” positions to the detriment of either consumers or of competing platforms.

TRAI Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

No Response

TRAI Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer by IPRG - ICT Policy & Research Group to TRAI's Question 4:

The focus of the government should be to bring as many Indian citizens online at as low a tariff as possible. According to a World Bank study (which has been endorsed by ICRIER), a 10% increase in broadband penetration will lead to a 1.5% increase in GDP.

The Indian government should concentrate on building infrastructure, encouraging

the rollout of mobile broadband networks, and on providing government services, public interest services, health information, disaster relief information, weather information, etc. These should be provided at zero cost by operators to the public at large.

The issues of tariffs, especially Zero Rating Schemes, are best left to market forces.

If there is *prima facie* evidence that an operator is taking advantage of its dominant market power, the matter can be examined by the Competition Commission of India.

Concerns have been raised among the public and in the media that Zero Rating schemes will restrict freedom of expression in that people will believe that a few sites constitute the entire internet. Also, there has been speculation in the media that Zero Rating schemes would not allow small Indian online start ups to compete with corporations who are on Zero Rating platforms.

IPRG believes that both these concerns are totally misplaced. The Indian market is characterized by a large number of telecom operators / ISPs, and is arguably one of the most fiercely competitive in the world. Further, there are numerous sources of information, news, views, and opinions easily accessible in India in terms of websites, television channels, newspapers, magazines, etc.

In fact, in numerous countries, Zero Rating schemes have enhanced freedom of expression rather than curtailed it. The most popular Zero Rated content tend to be social networking platforms (such as, but not limited to, Facebook, Twitter, Wikipedia, YouTube, etc.) where subscribers are also content creators simultaneously. The evidence from political movements in several countries (such as Arab Spring) is that zero rating of social media platforms greatly expands freedom of expression and political freedom.

These above viewpoints of IPRG have also been expressed by Jeffrey A. Eisenach, NERA Economic Consulting, USA.

References

- 1) Zero-Rating: Kick-Starting Internet Ecosystems in Developing Countries, by Diana Carew, The Progressive Policy Institute (PPI), Washington, DC, USA, March 2015.
- 2) The Economics of Zero Rating, by Jeffrey A. Eisenach, NERA Economic Consulting, National Economic Research Associates Inc., USA, March 2015.
- 3) ZERO RATING - Do hard rules protect or harm consumers and competition? Evidence from Chile, Netherlands and Slovenia, by Roslyn Layton, Center for Communication Media and Information Technologies, Aalborg University, Copenhagen, Denmark, and Silvia Elaluf Calderwood, London School of Economics, UK. August 15, 2015.

About IPRG - ICT Policy & Research Group

ICT Policy and Research Group consists of professional technologists with several decades of

top managerial and engineering experience in telecommunications and information technologies.

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Former Director General of Software Technology Parks of India, Dept of Information Technology, Govt of India, 2000-2007.

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Former Director Finance & Chief Financial Officer, Mahanagar Telecom Nigam Ltd, 1992-1999.

3. Shri Pawan Kumar Garg

Former Wireless Adviser to the Govt of India, 2002-2008.

Formerly Internationally elected Member, Radio Regulations Board (RRB), International Telecommunications Union (ITU), Geneva, 2006-2014. Elected Chairman of RRB, ITU, for 2013.

4. Shri Rakesh Kumar Bhatnagar

Former Advisor Technology, Department of Telecommunications, Govt of India, 2012-2013.

Former Advisor Technical, Telecommunications Regulatory Authority, Sultanate of Oman, Muscat, 2007-2012.

Former Advisor, Telecommunications Regulatory Authority of India (TRAI), 2000 – 2006.

5. Shri Tirunelveli Viswanathan Ramachandran

President, Broadband India Forum.

Former Director General, Cellular Operators Association of India COAI, 1997-2009.

6. Shri Ravi Visvesvaraya Sharada Prasad

Rated by Onalytica in September 2015 as the 19th most influential person in the world in

telecommunications.

Editor of the book "Mobile Phones and Public Health - Myths and Reality", Har Anand, 2013.

Alumnus of Carnegie Mellon University and Indian Institute of Technology, Kanpur.

2.4.40 Priyank Chandra

Subject: Response to Consultation Paper on Differential Pricing for Data Services
Advfea1

To,
The Advisor (F&EA),
TRAI

Mam,
Please find my response below on consultation paper

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Concept of differential pricing has close link with widely debated topic of Net Neutrality, however my views are focused on today's discussion on differential pricing.

There is a need to understand patterns from the past and avoid taking a myopic view on existing issue in hand. Looking at history, Indian telecom industry has gone through a major innovation in past decades. There was decade of '80s when wireline players were in dominance or rather monopoly in many countries not to mention billions they were earning.

Then came revolution of mobile communications and disrupted the landscape. This disruption was due to faster way to communicate and at ease. Questions were then asked about basic need to have mobile phone and answer was luxury. Then came tariffs war in mobile industry which led to exponential growth of mobile subscribers.

Slowly, traditional revenue stream of wireline players started shooting downwards due to competition from wireless players. Adding to that, wireline players were slow to cater to customer need including lucrative international calling market wherein wireless players provided customer will better international calling rates. TSPs underestimated the need of customers to connect across the globe at cheaper rate especially in a highly globalized world. There was need in market and TSPs continued with exorbitant calling rates on international roaming and calling. India witnessed high IT/ITeS boom in 2000s with many international traveler to and from India. TSPs were slow to provide them with right services and at right rate. There was huge volume in terms of target market.

So here enters new age application or 'Apps' as they are called in todays generation which started offering innovative services over data to customers who are majorly benefitting from the same. TSPs in India were still basking in hay days while Apps slogged to continue improving on their service parameters, immediate recharge, offers, etc, thereby TSPs missed golden opportunity to capture the market which Apps/Platforms took from them.

History in telecom world clearly shows the importance of being customer centric, because if TSPs won't, then someone else be eating up that share and in this case it is Apps/Website/Platforms.

TSPs need to look inwards to create futuristic marketing strategy without blindly trying to cash money by using differential pricing just because particular App has strong usage base. It is important to regulate the same in case TSPs don't work in favour of customers. My answer to differential pricing is mentioned as answer to next question below.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

I would equate differential pricing scenario with our existing road infrastructure in India. Not long ago, state of our roads including national highways was in dismal shape. Obviously, Indians and tourists were not happy with experience driving on roads. Then came concept of Toll roads, wherein highways were widened(read mobile data). Indians were happy to see improvement of road conditions of course at a cost known as Toll. Things were fine till Toll continued but there were many highways which were in bad state despite of Toll been charged. The point is that customer was still charged but getting poor under-maintained highways and roads. Now, govt has asked many such road players to first improve/widen the road condition and then only increase Toll charges.

Same is true with our telecom landscape in India. Opening of wireless industry in India obviously made consumers happy wherein at a little higher cost they could make voice calls and at extra charges access data on mobile too. However, with time, QoS of wireless services has started getting deteriorated, but consumers are still been charged. Data QoS is in worse shape despite of high 3G service charges wherein many 3G subscribers are mostly latched on EDGE network.

These same subscribers are expected to access data heavy apps over so called dismal 3G data connections not to mention 2G/Edge network. How fair will it be for TSPs to ask an additional cost from subscribers for accessing data applications? There has to be controlled mechanism with defined SLAs for TSPs in case they want to provide differential pricing else TSPs will stream bandwidth for Apps for which they are getting more money and imagine the fate of other platforms been run on data.

Lets face the truth, the reality is TSPs are looking for differential pricing only for Next Gen Apps and not for other Websites or platforms.

For ex, OFCOM UK allowed charge to be levied by TSPs for preferential pricing for apps requiring faster bandwidth. However, QoS standard for wireless service is way far ahead in UK than India. Indian TSPs are nowhere close to even minimum speed being provided in UK and it won't be fair to ask for extra bit without providing basic data driven telecom infrastructure for other applications.

There is still some time before TSPs reach maturity in terms of better data QoS before they command control for differential pricing.

In case differential pricing is permitted, talking in terms of operator technical eco-system and transparency to customers, there are network related issued which TSPs face due to new OTT Apps getting added in IT eco-system. Some of these Apps cause network outages also due to excessive data usage in network. TSPs need to put smarter network analytics in place in order to identify such apps and stop/reset them in order to provide enhanced customer experience and data usage.

Traffic management practices however, have scenario beyond the above, wherein TSP may be blocking OTTs merely due to competition it face from them. Providing slower bandwidth speed to competitive OTT is another area of concern.

TSP need to adhere to approved policies when it comes to check what is permitted in terms of content and what is not. This is where TSPs need to play self-regulation hat and act what is in best interest of its subscribers. With Full MNP rolling out soon, customer will be happy to switch to TSP which provide them with more transparent data platform.

It is also observed that when it comes to customer centric regulations then TSPs submit their view about their helplessness due to 'technical challenges' but when it comes to areas where they faces competition they have 'all technical solutions' to block/regulate any competition. Lately, poor Indian mobile consumer was told through consultation paper on Mobile Broadband QoS that TSPs can't commit on minimum speed which subscriber can expect after paying high price for 3G pack.

Indian consumers are smart enough to find out themselves about smart traffic management techniques which TSP may apply to control competition. However, fair and transparent published techniques will provide better connect with its customers.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models.

Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

I would like to start with business & profit model in mobile data business. For Rs. X one gets 2GB of mobile data, but typically consumer is using only 600-1GB of that pack. So there is huge 50% margin in terms of MBs for TSPs. There is hardly any loss today for TSPs in data services and with increasing day data usage is going up. Network cost by default is getting recovered through each MB been used. TSPs need to enable improved customer experience to ensure maximum adoption of GBs by consumer thereby increasing profit margin.

Moving ahead, view of Free internet is – ' Its a farce'. It is a myth that India desperately require Free Internet as claimed by many industry stalwarts and visiting CEOs of Silicon Valley based internet companies who in turn also have profit angle to their thought (not in \$ but in terms of billion users)

Indian wireless industry has grown from Zero to more than 100% mobile density without single free minute (please note there was always minimum amount required

to keep SIM active and continue free incoming). With growing Indian economy and mobile been an important catalyst for the same, Indian users including rural areas are more than happy to pay for 'Quality' data services. Supporting fact exists is growth of data usage due to likes of WhatsApp, etc even in Tier 3 towns, interiors and villages. This also grew without any Free internet. Therefore, I started my comments in this document with linkage to Net Neutrality. Today, TSPs are looking to stop Net Neutrality by using concept of 'Free Internet' and then partnering with profit making listed entities who will introduce their business objectives in disguise of free internet by making profits and denying competition a fair chance. This is also expected to impact innovation in Apps eco-system.

Instead of competing head-on, TSP today need to partner with Apps to ensure revenue maximization of their network expenses. Ex, today customer has to take full data plan even for accessing only WhatsApp, why not TSP provide only WhatsApp pack to customer at less cost (or free for particular recharge pack) and still make money. But for same scenario, if TSP start blocking/slowing bandwidth of competitor Apps for same subscriber, then market is surely not regulated and with fair play.

We also need today is an environment to enable more 'Make in India' OTT apps. This new Apps eco-system should be used to provide economic solution to India specific problems be it education, travel, finance and so on. Ex Ola Cabs, Autowale wherein they created an App simply riding over data services which help commuters today with cabs/autos at their door step increasing employment and customer convenience and also increasing data usage of telcos.

For ex, our agricultural industry is so much in dire need to connect farmers with best technology for farming and mobile is only medium to enable them with information. There exists a huge opportunity for TSPs to partner with other industry players and become backbone of data connectivity and also become preferred TSP for the end customer due to differentiating services and therefore not need any differential pricing.

TSPs need to 'partner' rather than 'compete' with anyone and everyone who rides on their network. It is an open field for TSPs to capture huge opportunity since they have much higher edge in terms of network ownership and technical expertise to increase revenue from the Bottom of the Pyramid in India.

Let innovation by Apps create new means for utilizing data for betterment of consumer. Imagine a scenario, TSPs go ahead with heavy investment with 3G and 4G and there are not many appealing Applications for consumer to utilize data for, these data investment of TSPs might be struck by slowdown.

Market forces are strong enough to control the price of services, therefore regulating subscription charges for various Apps and Platform is not recommended especially for fast changing and growing OTT space. New innovation will itself fuel data usage therefore providing ample space for TSPs to play profit with regular data plans

In case we want to go ahead with differential pricing assuming maturity of TSPs of providing best QoS and non-competitive traffic management & analytics techniques, Fair and transparent published techniques will provide better connect with its customers.

There is another angle to subscription charges. OTT eco-system is pure product lifecycle driven wherein there is a need for right financial influx to companies at various point of time. While many OTT apps are riding on advertisement driven model, there are many like WhatsApp who has refrained from putting ads. So if customer is fine to pay a premium for non-ad driven OTT app, it should not be constrained by regulatory challenges of keeping price in a range. Cheaper or controlled prices necessary don't result in better services. However, a larger and more open range maybe thought over in case it is felt that Indian customers are being over-charged by OTT companies.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Today, TSPs themselves has changed their focus from ARPU to ARMB(Average Revenue Per MB) and as we agree that data and not voice is the future in telecom world, it is time we agree that customer need quality and not necessary 'Free' data. There has been govt schemes wherein Free Laptops have been distributed and there is no proof or supporting evidence that free laptop in anyway contributed to growth of computer literacy. Similarly, Free Internet is more of a hype than any realistic need. Chargeable data at much better QoS and higher speed will give far more data usage than 'Free' data at slower rate of 56/256/512 kbps that too for dedicated apps.

From:
Priyank Chandra
Strategy Consultant with Leading MNC

2.4.41 Darrell M West

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Should Telecom Service Providers be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSPs should be allowed to offer differential pricing for data usage as a way to improve Internet access. Right now, less than one-third of Indians have access to the Internet. This means that there are around 400 million users, but 850 million who are outside the digital revolution. Those individuals are not able to access online financial, employment, weather, or communications services. Nor are they in a position to engage in e-commerce or e-transactions. Overall, this slows economic growth and represents a serious problem for the Indian economy.

What measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

To deal with the access problem, many firms have launched what they call “zero-rating” practices as a way to improve Internet access among the disenfranchised. This policy allows people who lack the financial resources for expensive data plans to use certain applications without having that usage charged towards the individual’s data cap. It frees them to use the Internet and access various services without additional fees, and in conjunction with free wi-fi networks or library-based devices, represents a way to bring digital access to those who otherwise could not pay for desired services.

It is estimated that 45 percent of mobile operators around the globe provide some type of zero rating applications.¹ Zero rating programs for popular services free up data that users can employ to explore other sites, including local ones. In many places, platforms such as Facebook, Google, and Wikipedia are very popular. Even in a diverse digital marketplace such as the U.S., surveys show that people spend about 40 minutes each day on Facebook, and they rely upon that site for about 24 percent of the total time they spend on mobile devices.² In the developing world, usage is more concentrated on global Internet sites like Facebook, especially when tight data caps exist.

By exempting high-usage sites from data caps, operators give people the ability to see more of the web without spending additional money. Or to put it differently, zero rating can reduce the cost of Internet access to local sites for poor consumers because their consumption of data on global applications does not take their entire data caps. In the end, poor people get more data for their money.

In a number of countries, zero rating services have enabled people to get access to the Internet who otherwise had no access. As shown in Table 1, an analysis of the Filipino Network Globe found that “what we’re seeing in Globe users is the number of people who are using the internet – the data – was doubled, and Globe subscribers have grown by 25%”.³

In Paraguay, a project has generated an increase in “the number of people using the internet by 50% over the course of the partnership and [an] increase [in the] daily data usage by more than 50%.” A partnership between technology companies and the TIGO mobile operator has brought 3 million new people to the Internet who previously lacked service.⁴

Meanwhile, several African nations have reported substantial upticks in Internet usage following introduction of Facebook Zero. The number of Facebook users, for example, rose 154 percent in Nigeria, 85 percent in Ghana, and 50 percent in Kenya. For the continent as a whole, there was a reported 114 percent increase in Facebook users after the launch of Zero.⁵

Table 1 The Impact of Zero Rating Services on Internet Usage	
Paraguay	+50%
Kenya	+50%
Ghana	+85%
Nigeria	+154%

Source: The Paraguay figure comes from Internet.org, “Connecting the World from the Sky,” undated report, and the Nigeria, Ghana, and Kenya numbers come from April Deibert, “Google Free Zone and Facebook Zero: Products Targeting Developing Populations, Innovation Series, February 19, 2013.

At a recent Internet Governance Forum, zero-rating programs were cited as a popular way to provide Internet service in developing nations.⁶ For example, Wikipedia offers a “zero” version of its informational website for mobile platforms to 350 million people in 30 developing nations and it attracts around 65 million page views each month.⁷ Facebook meanwhile offers a “zero” service through 50 operators globally that has enabled Internet usage by low income people.⁸

Some firms have partnered with mobile operators to put together a diverse set of applications for people in a number of developing nations to access for free. The content is customized for local interest and language, providing access to basic services such as Accuweather, Facts for Life (how to raise healthy children), Kokoliko (a job board service), the Mobile Alliance for Maternal Action (information for new and expectant mothers), Facebook, Google Search, Wikipedia, and Women’s Right Application (information on the rights of women), among many others.

This service has been popular in the countries where it has been launched. In Tanzania, for example, few individuals have Internet access, according to the Tanzania Communications Regulatory Authority. David Zacharia, the head of data and devices for mobile phone operator Tigo, predicted that the partnership would “accelerate internet penetration in the country but will also open new socio-economic opportunities to the users in the fields of education, technology and commerce”.⁹

One zero rating service in Tanzania that has proved very popular is text messaging for mothers and pregnant women. The program regularly sends them information designed to reduce infant mortality and improve maternal health. Over a two-year period, 500,000 parents received 40 million text messages about “safe motherhood”. This helped reduce infant mortality by 64 percent and maternal mortality by 55 percent. Airtel Tanzania supports this service on a zero rating basis in order to improve health care in that nation.¹⁰

In many parts of the developing world, telecommunications data plans are expensive and it is hard for people to afford plans themselves and the usage fees that accompany them. In these places, zero rating programs help people access valuable services in e-commerce, health care, education, and communications. For example, OLX is an online site for people to buy and sell things, and it attracts 360 million page views each day. Being included in the Internet.org app – which results in being able to access it without incurring data cap charges – is a major benefit for entrepreneurs.¹¹ This website dramatically expands access to digital services for natives who do not speak English.¹²

In Zambia, the Women's Rights Application (WRAPP) compiles information on women's health and legal rights. Before connecting with Internet.org, only 1,000 women had used its website. But through the broader partnership, 15 percent of the country's population that had access to the Internet was able to connect to the site.¹³ This increased the reach and impact of the platform. According to Facebook chief operating officer Sheryl Sandberg, WRAPP allows a woman "to say to her husband, 'I have the right to a vote' or "I have the right to access healthcare. Sometimes women don't know those things. The goal is that giving out this information can be transformative and this is a very scalable way to do it."¹⁴

Having access to applications developed by the Mobile Alliance for Maternal Action has a positive impact on child care. In Bangladesh, for example, 69 percent of mothers who accessed the site received medical care, compared to 32 percent of non-users (see Table 2). On average, site users had at least four clinical appointments where they received medical care for their young child.¹⁵

Table 2 How Technology Boosts Medical Care	
Technology Users	69% Get Medical Care
Technology Non-Users	32% Get Medical Care
<i>Source: Caroline Fairchild, "For Facebook, Access to Women's Rights Information Is a Basic one." Fortune, August 14, 2014.</i>	

Are there alternative methods available to achieve the objective of providing free internet access to consumers?

Some critics assert that zero rating programs limit competition and are discriminatory. Their fear is that services that don't count against the data cap disadvantage all the other services which do count. This has led nations such as Chile to ban zero rating programs on grounds that they are anti-competitive and discriminatory.¹⁶ In addition, the Norwegian Communications Authority has argued that zero rating practices violate net neutrality by advantaging certain types of services or applications.¹⁷ The European Union is considering legislation that could limit zero rating practices.

Yet there are several reasons to dispute those criticisms. First, zero rating programs may encourage competition and limit discrimination by increasing access and fueling demand for Internet usage and Internet content. As an example, providing free wi-fi or access through public terminals in schools or libraries allows people to access zero rating services as well as those that

count against data caps. Those who worry about discrimination assume people who get free services will limit themselves to those offerings and not utilize other services. In reality, people who go online access other products and find ways to limit their data cap charges.

Mobile providers in a number of countries offer their own zero rating programs. They are combining services from other firms with video streaming or popular applications that people like to use. As long as they draw on services from large as well as small companies and feature a diverse range of applications, they do not seriously limit consumer options or harm competition.¹⁸

In fact, zero rating programs can promote competition, because they lead to more local eyeballs online, increasing demand for local content, and stimulating the local content creation sector. By offering costless access to global content and popular local content, zero rating gives consumers an incentive to get a phone and a data plan, which in turn, creates more of an audience for local content providers. Thus, zero rating can increase demand for local developers and local content, and promote greater competitiveness and diversity in the process. It is also a way for mobile wireless firms to differentiate themselves from competitors by bundling “unique” content with their mobile wireless services, increasing competition among mobile operators and potentially further lowering data costs.

Officials in many places believe that zero rating programs benefit consumers, especially those from disadvantaged backgrounds. Alejandro Pisanty, director general for academic computing services at the National University of Mexico, says that “users of zero rated programs combine them with wifi network access to access the rest of the internet.”¹⁹ This brings the virtues of the Internet to people who otherwise would have no connectivity.

Participants in a recent Internet Governance Forum rejected the anti-competition argument on grounds that “the programs are offered on a non-discriminatory basis, so other services can also be a part of the package.”²⁰ Helani Galpaya, the chief executive officer of LIRNEasia, claims that a way to promote competition is to combine partnerships with locally-developed apps and government services. That would guarantee there is diverse content and create a market for local programmers.²¹

A way to stimulate local applications is through prize competitions. In India, for example, an Innovation Challenge project awards \$250,000 to the top app, website, or service that helps women, students, farmers, or migrant workers. There also are Impact Award prizes of \$25,000 in each of these four categories. These kinds of cash prizes encourage developers to make digital services that will improve the daily lives of regular folks.²²

In short, zero rating services offer the advantage of improving digital access for those who otherwise cannot afford Internet services, as well as increasing the amount of connectivity available to those who currently have minimal internet access. Concerns that these programs could threaten competition are mitigated because such efforts are designed to free up data under caps and allow users to browse content they would not otherwise choose to view. This stimulates demand for local content and innovation, and helps government and business pursue initiatives that provide inexpensive internet access through wi-fi or publicly-available terminals. Overall,

zero-rating programs build tremendous public value in developing markets by creating demand for local content and significantly expanding Internet access, including to sites that are not zero-rated. The benefits of free services encourage people to seek products that bring them into the electronic world.

Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Improved Internet access would promote economic growth and move large numbers of people out of poverty. According to a Deloitte study, “extending internet access to levels seen in developed countries today means that long run productivity could be enhanced by as much as 25% in developing countries. Deloitte estimates that the resulting economic activity could generate \$2.2 trillion in additional GDP, a 72% increase in the GDP growth rate, and more than 140 million new jobs” (see Table 3).²³

Table 3 Economic and Social Impact of Improved Internet Access in the Developing World	
Productivity Gains	+25%
Total GDP Improvement	\$2.2 Trillion
GDP Growth Gain	+72%
New Jobs	140 Million Jobs
Personal Income Gains	\$600 Per Person Each Year
Number Lifted Out of Extreme Poverty	160 Million People
Lives Saved Through Improved Healthcare	2.5 Million Lives

Source: Deloitte, Value of connectivity: Economic and social benefits of expanding internet access, February, 2014.

This would have a dramatic impact on poverty alleviation and strengthening the middle class. The research found that “extending internet access in developing economies to the level seen in developed countries can raise living standards and incomes by up to \$600 per person a year, thus lifting 160 million people out of extreme poverty in the regions covered by this study.”²⁴

The value of the Internet is that it leads to increased investment and creates jobs for high-skilled workers in the developing world. This has been the case in Rwanda, which has formed partnerships with leading technology companies. These kinds of collaborations have brought valuable new funding into the country and broadened Internet access across the country. It has helped advance the knowledge society and provided benefits for millions of people.

Two of the sectors that are likely to grow as a result of improved Internet access are healthcare and education. In the developing world, both are vital to future economic growth and improved life quality. Both patients and healthcare providers benefit from timely access to medical information. They can use mobile devices to find out which drugs are most effective for certain illnesses, check for drug interaction effects, and access a database that will tell them whether particular medications are counterfeit.²⁵

Increasingly, healthcare providers are using remote monitoring devices to check vital signs. Patients who live a great distance from treatment centers can electronically transmit health

information to physicians, who can let them know if they have abnormal readings. This helps developing countries deal with healthcare disparities between rural and urban areas, and brings expert diagnosis even to physically remote locations.

According to a Deloitte study, “evidence on the link between health literacy and mortality rates suggests that access to the internet has the potential to save nearly 2.5 million lives across the regions covered by this study, if they were to achieve the level of internet penetration seen in developed economies.”²⁶

Technology also improves education. It connects students and teachers with electronic resources and digital textbooks. It gives them access to new forms of information such as instructional videos and computer games. Students appreciate digital education because it engages them in the learning process and provides instant feedback on their academic performance.²⁷

Endnotes

For more information, see my 2015 Brookings Institution paper, “Digital Divide: Improving Internet Access in the Developing World Through Affordable Services and Diverse Content” at http://www.brookings.edu/~/media/research/files/papers/2015/02/13-digital-divide-developing-world-west/west_internet-access.pdf

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2.4.42 Rajiv Kotibhaskar

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

Answer:

There are two aspects of the answer to this question.

1st one is namely, does it really matter to TSP from a technical stand point whether a subscriber to the internet is accessing this or that content, web site, applications and or platforms. Because any data being uploaded or down loaded is nothing but either a 0 or 1 bit. TSP doesn't incur any differential cost in carrying the data to and fro.

The 2nd one is namely, they are merely carriers of the data and have no right to decide for the subscribers as to what data the subscribers should choose to see or send or download.

All the TSP should have a common and a lower / negligible pricing to access all the emergency services that people at large can access. For that matter, if this could be made free for all the TSP, Nothing like it.

So the TSPs should not be allowed to have any differential pricing except for the above emergency services. They can create differentiation in their data services pack with speeds, limit to download etc., but that has nothing to do with restricting any content to the general internet users.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Answer

While I have expressed my opinion about allowing TSPs to have differential pricing in the Q1 as above, all the issues regarding non discrimination, transparency, affordable internet access, competition and market entry and innovation get automatically addressed by leaving the field completely open for the TSPs, content and Platform service providers, applications etc. The very fact that TSPs are allowed to offer a differential pricing, actually stifles innovation, creates barriers to market entry, creates discrimination and allows non transparency to creep in.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Answer

Emergency Services being made free

Allow expenditure by TSP to be treated as CSR expenditure in rural areas to make available and expand the internet

Using the Universal service obligation fund of Govt.

Question-4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

Answer

Skill development aspect for the people especially in the rural areas, so that they actually make use of the information available from the Net

Infrastructure development to enable universal net connectivity. This is a must as otherwise availability of opportunities and information on the net doesn't mean anything.

2.4.43 V B Lal

To,
RS Sharma,
Chairman, TRAI

CC:
Vinod Kotwal, Advisor (F and EA), TRAI

Dear Sir,

I thank you for the Consultation Paper on Differential Pricing for Data Services. I would request you not to publish my email address on the TRAI website.

According to me, both internet access and net neutrality are important and they are not antagonistic to increasing connectivity. Some questions on price discrimination were raised in the consultation on regulation of OTT services, to which over 12 lakh Indians had sent responses. Those answers should be considered by the TRAI in this consultation paper too. I hope the TRAI that the TRAI ensures that until a clear policy is finalized no violations of net neutrality or free access to net are permitted.

Q1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

NO.

*unrestricted access to the websites has been the force behind the internet's growth. Price discrimination will break the internet into multiple smaller parts and will unfairly benefit some applications and services which could be accessed at a cheaper price (or for free). If telecom operators are allowed to have differential pricing for data usage, it will significantly limit the universe of applications and services that can be accessed by users and strip the internet of diversity.

* Freedom of choice in information seeking is central to the value of the internet and contributes significantly to knowledge creation for citizens. Differential pricing will encourage users to gravitate towards cheaper offerings which will adversely impact the educational and other benefits of "exploring" the internet. Differential pricing may result in opaque billing practices among telecom operators.

* Discriminatory pricing will grievously hurt India's vibrant startup ecosystem. Internet provides a level playing field for all. And the best product find customers. By allowing differential pricing, companies, flushed with money, can strike deals with ISPs to make access to their services cheap or they can even block access to their competitors. This will eventually lead most small startups to shut down.

* Telecom operators have seen tremendous growth in data usage on their networks in recent years. The top four telecom operators in the country together registered an annual increase of 65% and 10% for the quarter ending September 2015 in their data usage, as per a report by MediaNama. This rapid growth in usage is resulting in higher revenues and profits for telecom operators. Therefore, differential pricing has no commercial justification as there is no evidence that the increase in data usage is hurting the financial position of the TSPs in the country. Spectrum is a public utility and telecom operators should not be allowed use it to advance their business interests.

Q2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non- discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for data usage should not be permitted in principle, given that it will allow TSPs to act as gatekeepers on how Indians experience the Internet.

*Differential pricing on a case to case basis will result in unclear non-discrimination standards, increasing the likelihood of litigation. Small players will find it hard to negotiate and will be excluded. Evaluation on case by case basis will entail considerable costs and delay. Therefore, discriminatory pricing for data should be prohibited through firm and clear, rules.

*Differential pricing won't permit transparency in the system. Even if rate plans are published publicly or after prior regulatory approval, the harm is done as such plans will be devised by TSPs. Given that large TSPs, in practice, often face limited competition working in specific geographical areas in India with respect to data services, transparency will not aid consumer choice. when it comes to data services and broadband. Transparency will also not mitigate the harm caused to smaller content- providers and startups that will be excluded from such plans. It may be noted that Reliance Communications and Facebook are yet to publish a complete list of services that form a part of Free Basics (Internet.org).

* Zero rated services such as Internet.org/Free Basics and Airtel Zero are a form of positive discrimination, making some sites free versus others, and ending up making some sites more expensive. Affordable internet access can be furthered in several ways which are consistent with net neutrality. See answers to Question. 3.

Q3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, several alternatives exist other than differentiated tariff plans or zero rated services that are practical to implement and will provide access to the Internet to millions of Indians who cannot afford it due the costs of data.

* Improving access is public priority It can't be left to some global private corporations. Private corporations cannot guarantee the neutrality and impartiality in exercising such a core government function and will only cite interests of access for furthering their own commercial profits. This will come at the cost of accountability which is at the core of any government process. Many experts have highlighted that access can be improved by the government through, "equal rated" plans that are deployed by the Government. This may be through deployment of the USO fund and creation of a national fiber optic network.

* The World Wide Web foundation has suggested several alternatives for furthering access without compromising network neutrality which include a free allowance of mobile data for each citizen funded through an universal service fund. Further, TSPs can also offer 2G data services which are capped at 10/20 MB a month which would not violate any forms of network neutrality. Further models exist and have been highlighted by entities such as the Mozilla Corporation and others. These are in the forms of, "equal rated" plans and are even being deployed in some countries.

"Could the private sector organize itself to provide a baseline "equal rating" for some amount of data necessary for modern life at discounted or no charge? Such a program would integrate the "version 1" private solution of limited access with the citizen demands for the opportunity and full inclusion of the full Open Internet. Perhaps those companies paying for the equal rating might get a "brought to you by" attribution that could bring brand value and network effects.

Orange and Mozilla are experimenting with this sort of model in multiple African and Middle Eastern markets, where users purchasing a \$40 (USD) Klif phone receive unlimited talk, text, and 500 MB a month for 6 months.

Another possible way of “equal-rating” content so it is free-of-charge to the user is a model where people watch ads in order to access other sites. Mozilla has been exploring this model in a partnership with Grameenphone (owned by Telenor) in Bangladesh, where users can receive 20MB of unrestricted data per day after watching a short ad in the phone’s marketplace.”

Q 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

As stated before some TSPs and Facebook have rolled out services and extended them during the midst of the present consultations, backed by large marketing and advertising budgets. Facebook has even used its own platform to push Facebook users to market their lobbying response to the present consultation with ambiguous phrasing. Some users who are using this form have been misled into believing they are supporting net neutrality. This is different from a person independently going on a website, filling in their name and email address and sending a response. The key difference here is user choice. This is the same user choice which is absent in Free Basics or any other zero rated service.

The aggressive push by several TSPs and Facebook in launching and expanding zero rated services is undermining the present consultation. I request that the TRAI look into this urgently and exercise its jurisdiction to issue a moratorium on violations of network neutrality till the conclusion of the consultation process;

.V B Lal

2.4.44 John Gibbons

To: Telecom Regulatory Authority of India (TRAI)

Subject: Comments for [TRAI consultation paper](#) on differential pricing for data services

Dear Madam,

As an Indian developer, I support [Free Basics](#) – and digital equality for India. Differential pricing programs – in particular, zero rating programs like Free Basics – are an essential tool for bringing more unconnected people online across India and should not be banned.

Free Basics provides free access to essential Internet services like communication, education, healthcare, employment, farming and more. It helps those who can't afford to pay for data, or who need a little help getting started online. And it's open to all people, developers and mobile operators.

To connect India and make the vision of 'Digital India' a reality – developers have a critical role to play. We face numerous challenges in making our products and services available to a large unconnected population and the [Free Basics Platform](#) helps our services reach the unconnected.

The [Free Basics Platform](#) represents a huge opportunity for us and other developers in India to bridge the connectivity gap and reach more people with valuable services. We strongly urge TRAI to support and encourage such programs.

Below are specific responses to the questions posed by the TRAI in the Consultation Paper.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

It is not clear that the Free Basics program should be considered as differential pricing, but even if it is, Free Basics should be allowed under any regulatory framework adopted by TRAI.

Free Basics is an essential tool for bringing more people online and expanding connectivity across India. Moreover, the structure of Free Basics is pro-consumer and pro-competition:

- Free Basics is non-exclusive. It is available to all operators on the same terms and conditions.
- Free Basics is an open and non-discriminatory platform. Any content owner can participate as long as it meets the same technical criteria, which are openly published.
- Free Basics is free to both users and content owners. No one is charged for accessing the content on Free Basics. No content owner is charged for participating in the platform.
- Free Basics is transparent. All of the technical standards are published and available online.
- Facebook does not pay carriers to exempt its content from usage limits.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable Internet access, competition and market entry and innovation are addressed?

TRAI should consider whether a program helps to expand connectivity and whether the program is free to both users and content providers, non-exclusive for operators, open to all content providers under objective standards, and transparent about its terms and practices. Free Basics meets all of these criteria.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free Internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models.

There are various models that could be used to provide free Internet access to consumers. However, Free Basics is the kind of program that should be allowed under any regulatory framework. Free Basics brings more people online faster and provides newly connected users with an onramp to the full Internet. Facebook has shown that when a carrier launches Free Basics, new users are brought onto the carrier's mobile network at an average rate that is 50% faster than before the launch of Free Basics. Free Basics also provides an effective onramp for users to quickly begin accessing the broader Internet. On average, in countries where Free Basics has launched, more than 50% of users who come online through Free Basics choose to pay for data and access the full Internet within 30 days.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

TRAI's public consultation on these issues is rightly guided by the goal of connecting the unconnected across India. Despite significant progress, 80% of India's population – 1 billion people – still are not connected. TRAI must therefore ensure that any regulatory intervention does not end up depriving people of the opportunity to come online. Instead, TRAI needs to create a regulatory environment where access-expanding programs can flourish.

2.4.45 Pranay

Response to TRAI's Consultation Paper on Differential Pricing for Data Services

by Sudeep Divakaran, Pranay Kotasthane and Pavan Srinath, The Takshashila Institution, Bangalore¹

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

No. TSPs should not be allowed to have differential pricing for data usage for accessing different websites, applications or platforms.

However, the industry is now mature to allow TSPs to offer differential pricing based on *Quality of Service* (QoS) of the channel, enabling TSPs to charge differentially for providing specific network capabilities based on user requirements.

Currently, QoS in India has been defined on the parameters of speed/bandwidth/data connection type and/or download limits prescribed by Fair Usage Policies (FUP). But TSPs should be allowed to experiment with other parameters like packet drop rates, priority packet error rates etc. in order to meet specific user requirements and in turn get paid differentially for providing such specialised services. For example, in LTE standards, there are several QoS class levels targeted for different types of traffic.² Parameters like packet delay budget, packet error loss rate help to differentiate the type of QoS, and the corresponding pricing.

There can be other such parameters which can be included to provide the desired quality of experience to the user based on the type of application being used compared to the current default best effort type of transport quality, which is typically used for all generic internet applications like email, browsing, etc. Different fees can be charged for each channel type based on user requirements.

The consultation paper correctly identifies that “the criteria for determining a valid classification for the purpose of differential tariff, has been undergoing change from time to time depending upon the sector’s growth, technological advancement and the emerging and changing regulatory concerns.” In line with this approach, it is time to allow a wider definition of QoS, based on user experience, to be considered as a valid criteria for differential pricing.

¹ The Takshashila Institution is an independent think tank on strategic affairs and public policy contributing towards building the intellectual foundations of an India that has global interests. To contact us about the research write to scholars@takshashila.org.in or visit takshashila.org.in

² Policy and Charging Control Architecture V12.10.0, page 44, September 2015, 3GPP.org

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential Pricing by TSPs based on transport channel QoS provided to the end-user to access the internet is fair, non-discriminatory and not anti-competitive. This measure has the potential to promote innovative services, where applications have a choice of which channel to use based on application requirements and associated charges (voice, video, real-time gaming etc). This also encourages competition amongst content providers and also amongst TSPs on how the different channel choices can be taken advantage of to provide a service of varying quality of experience.

This form of differential pricing based on QoS will not impact the choice of the end user on what content in the internet can be accessed, and that all content providers or OTT players will have equal chance to reach end users. Hence, this approach is non-discriminatory.

On the other hand, differential pricing on the basis of data usage for accessing different websites, applications or platforms violates the principles highlighted above.

It violates the nondiscrimination principle as follows: a specific set of OTT players being given preferential access through lower pricing rates (which could even be as low as being free) goes against the basis of net neutrality, wherein, it will impact user-choices and also make it harder for new players (OTT or content providers) to gain entry into the market. This point aligns with what is mentioned in Ch.2 point 12 and 14 in the consultation paper too.

It violates the transparency principle as follows: during any data access, there could be other unrelated background traffic which can consume bandwidth and will be charged without the user being aware of it or there could be website links or application services which the user may access thinking it to be under the subsidised rate when it is not.

It violates principles of competition and market entry as one OTT can act as a gatekeeper to disallow competing OTTs from getting preferential access.

Question 3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

First and foremost, providing *free* internet access is a very limited way of looking at the problem of universal internet access. Instead, we should look at this challenge in three ways:

First, given that less than three in ten Indians has access to internet services³, it should be a national priority to increase internet penetration. There is a correlation between quality internet access and economic growth rate. India's development needs our economy to leapfrog into the information age: for this we need reliable, affordable services. So when thinking about differential pricing at this stage, the government must give the highest priority to ensuring the maximum number of people take up to the internet in the shortest duration possible. This objective should not be reduced to the problem of making internet free. Instead, low prices should come as a result of market forces and competition.

Second, given that India's IT industry is an engine for growth and development, we must ensure that it remains globally competitive. The industry is worth more than 100 billion dollars and employs more than 10 million people⁴. There are thousands of startups in the country. Our IT policy should not create more hurdles for entrepreneurs and ensure that they have the best possible start to build world-class companies. Without preserving the internet as a neutral platform, the risk that startups will face even greater "unfair disadvantages" against established firms is higher.

Third, it is in the public interest for the telecom and mobile service provider industry is healthy and competitive. In the past decade, the regulators pursued the goal of forcing the telecom providers to lower user tariffs. While India has one of the lowest costs of telecom services in the world, the service quality is patchy. Calls drop frequently. Internet service often is of lower speed and suffers outages. All this is because TSPs are cutting costs in these areas. There are few lucrative or premium services left where they can increase their profitability. The only protection they enjoy is through licensing — the government limits the competition they face.

When deciding what to do about internet penetration, any policy must keep all the three considerations in mind, and optimise them simultaneously. This can be achieved through the following methods:

³ The Indian Telecom Services Performance Indicators, June 2015, TRAI

⁴ Employment, Department of Electronics & Information Technology, Government of India

One, the government should open up the telecom service market to greater competition, perhaps by issuing unlimited licenses. The current debate calls for the government to review the entire licensing regime and consider full liberalisation of the telecom industry.

Two, allow differential pricing based on QoS of the transport channel and in parallel encourage OTTs to give back credits to the user depending on the cost of the transport channel used. For example, if a channel with lowest QoS is used (like best effort channel), the cost to the user will be low. And, if a higher QoS channel optimised for video call is used, the charge to the end-user can be more. The choice of the channel and corresponding QoS requirement will be based on user requirements, and TRAI can regulate the QoS classes created. In doing so, the TSPs or OTT content or application service provider can have schemes to provide credits back to the end-user (points or other means) which the user can use to compensate for the additional costs incurred in using the higher QoS transport channel. This will help meet the objective of increased internet penetration. Alternatively, the cost borne by the user could also be reimbursed in some other manner like coupons, or direct money transfers, etc by the content provider, irrespective of whether the website was accessed or not (this is the same point as mentioned under section Alternative Models in Ch. 2 of the TRAI paper).

Third, TRAI may consider utilising the Department of Telecom's Universal Service Obligation (USO) Fund with the specific focus of getting more Indians online. Companies can contribute to this fund, which can solely be reserved for the purpose of getting most number of Indians online in the shortest period of time. USO funds can be used to incentivise TSPs to reach out to otherwise economically unviable geographies, with tightly defined coverage targets and deadlines to accompany the disbursals.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The point that needs to be appreciated is that getting the developing world online does not require methods that are different from how the developed countries got there. Hundreds of millions of people around the world became Internet subscribers not because of government schemes, but because they could afford it. They could afford it because market forces — competition — drove prices down to levels that made an Internet connection affordable. Unless government policies get in the way, there is no reason why the same forces will not reduce prices further to make the service affordable to ever more people, with lower disposable incomes.

Splitting the internet into a walled garden using differential tariffs based on data usage for accessing different websites, applications or platforms is not a method to get there. TRAI's success in transforming India from a low teledensity country to a moderately high teledensity one serves as a good example. This happened not due to "no-frills services for poor and developing country users" but by ensuring that market competition is allowed to take its course. There is no reason why mobile Internet services will not become as popular as mobile phone services as long as there is adequate competition.

The other issues that should be considered in the present consultation are:

1. Is whether there is sufficient competition in its current policy framework. Should it be licensing more telecom operators?
2. Has the government made enough spectrum available so that mobile operators can lower prices and ensure adequate service quality?
3. Are there bottlenecks in the hands of monopolists that raise the costs of service?

2.4.46 Jehangir gai

Submission to the Consultation Paper on Differential Pricing for Data Services

To,

RS Sharma,

Chairman, TRAI

CC: Vinod Kotwal, Advisor (F&EA), TRAI

Dear Sir,

On the outset, I would request you not to publish my email address on the TRAI website.

Thank you for this Consultation Paper on Differential Pricing for Data Services; this issue is key to securing net neutrality in India.

I am thankful that the TRAI has both highlighted the need for preventing discriminatory practices in this paper, and looked into the issue of making the Internet available to all. Both Internet access and Net Neutrality are important, and we shouldn't be choosing between the two. Instead we should strive for increasing connectivity which complies with Net Neutrality, ensuring meaningful Internet access for all Indians. I would like to point out that some of the questions on price discrimination, raised in this consultation, had already been raised in the consultation on regulation of OTT services, to which over 12 lakh Indians had sent responses. Those answers should be considered by the TRAI in this consultation paper on Differential Pricing for Data services. The TRAI should bring in rules to prevent Net Neutrality violations such as differential pricing - especially the practice of "Zero Rating".

I hope the TRAI considers my answers. In the meantime I request that it:

- a. Ensures that violations of Net Neutrality are paused until a clear policy is finalized
- b. Takes into consideration the submissions made to questions 14 and 15 in the previous Consultation on OTT Services for this current consultation process, and

Thanking you

My answers:

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

TSP's should not be permitted to engage in differential pricing for data usage for accessing different websites, applications or platforms, for the following reasons:

- a) A non-discriminatory Internet decentralizes the sources of innovation because everyone can create Internet services and applications without having to obtain permission from telecom companies or platforms. It allows collaborators to create open source and free tools to provide an alternative to proprietary tools, and improve on them. Differential pricing will damage the character of the internet. The internet has developed till date on the basis of the end to end principle, where there has been user choice to determine what content and platforms are accessed. This has

allowed the internet to organically develop into an ecosystem where information is shared across platforms. The power to control information is the biggest weapon in a democracy. Plurality and diversity of both views and platforms are important, and for this, the Internet needs to be kept open and neutral.

Price discrimination will incentivise the use of certain service providers or types of services. This will be against the agonistic function of TSP's and impact the future growth of the internet, where only specialised services which are priced not as per a neutral meter of volume of data consumed. It will likely lead to walled garden and bouquet of services and reduce the diversity of Internet services to, "pay packs" where particular services are bundled together with no user choice or ability to freely access information.

b) It will lead to discriminatory practices that will impact consumer welfare. Consumer welfare at present best served by the transparent billing practices where consumers are billed similarly for access to any website or web service on the sole measure of data usage that is neutrally applied across platforms. Such choice should be left to consumers and not the TSPs. Once the the TSPs are left to decide even if through regulatory oversight the kind of services which can be subsidised and ones on which additional levies are placed it will lead to discrimination that will function against content which is sought by individual users as per their tastes. It will create strong incentives to only use services which are subsidised on the choice of TSPs and prevent consumer discovery of new services and platforms. It will impact the diversity of content and will be against the individual choices of many users, especially those in the minority. Further, given the dynamic nature of content on modern Web services - where audio, video and text is often found within the same service - billing practices will at best be opaque for consumers, leading to unforeseen charges.

c) It will negatively startups/entrepreneurs and the fulfillment of Digital India. Startups are fragile businesses, ever evolving and innovating, at great speed, if not at great scale. For Internet startups to operate efficiently, there needs to be predictability, stability and reliability of Internet access. Many Indian startups have already voiced their opposition to the differential pricing of data services, emphasizing that such practices upset the level playing field. Deepinder Goyal, Founder and CEO of Zomato has taken his Delhi based business to 23 countries, tweeting that he "Couldn't have built Zomato if we had a competitor on something like Airtel Zero".

The letter of more than 450 startups to the Hon'ble Prime Minister lists several reasons why such startups believe that differential pricing, including zero rated services will destroy the startup ecosystem. I echo their concerns from the letter which I quote below:

"We stand to lose if telecom operators are allowed to strike deals to favour some online services over their competitors. Under these deals, companies may pay the ISP to make their competitors' websites inaccessible, slower or more expensive to access than their own. These practices, if allowed, will exclude promising startups from the Internet and end our dream of seeing them flourish. The western companies that dominate the Indian internet ecosystem today will use their deep pockets to perpetuate their position. The few startups that can afford it will be forced to find growth in foreign markets before they can return to India with the funds to pay ISPs, while the rest shut shop."

Allowing differential pricing will transform the Internet economy into a mirror of the Mobile Value Added Services ecosystem, which allows telecom operators to convert an access business into an audience business.

Currently, telecom operators provide Internet access to the interconnected network that is the Internet, and consumers choose where they wish to go. Any form of unnatural advantage that is an outcome of a partnership between a telecom operator and an Internet company converts this into an audience business, with telecom operators allowing businesses access to their "audience". This means lack of permission-less innovation, and can lead to three harmful activities:

1. Predatory activities from telecom operators, as was evident in case of Mobile VAS, which restrict the ability of consumers to access these startups. On Facebook's Free Basics, services that compete with telecom operator services are not allowed, and Facebook reserves the right to reject applicants to Free Basics. Even today, VoIP, Video, file transfers and large images are not allowed on Free Basics/Internet.org. The terms and conditions are determined by Facebook, and it reserves the right to change them as and when it desires. This is despite the fact that in the US, Facebook signed a brief saying that "The open architecture of the Internet creates an innovation-without-permission ecosystem. Consumers (and consumers alone) decide the winners and losers on the open Internet", that without Net Neutrality, "Consumers would lose the ability to choose freely among competitive services and sources of information. It would also significantly decrease the rewards edge providers could realize from innovating, further decreasing consumer choice."

2. Collusion between larger Internet companies and telecom operators, in order to reduce competition for the Internet companies, such as in case of Free Basics. In countries such as Indonesia, research has shown that where free Facebook is made available, consumers end up confusing Facebook as the Internet itself. This impacts access to diversity and plurality of content, especially on a platform which controls what content users get to view in their newsfeed.

3. Zero Rating of vertically integrated services, which are owned by telecom operators. Bharti Airtel, when it launched its online music streaming service Wynk, it waived data charges for Airtel users, using its ownership of content and carriage. This effectively puts competitors like Saavn and Gaana at a competitive disadvantage. Imagine what this might do to competition in case of financial inclusion, if transactions using Airtel Money were made cheaper than those using some other payments bank.

d) There is no commercial need for permitting differential pricing given the large growth in revenues and profits of TSPs. TSPs are today seeing an unprecedented rise in growth in data revenue and profits disclosed in their annual reports and earnings calls. On the basis of this they are investing more in data networks even marketing themselves as high speed cellular data networks to the public. This is clearly a contradiction in the stands of TSPs which are at one end showing profitability and at the same time seeking to engage in practices which turn them from charging carriage fees from content providers. These are unhealthy practices without any commercial justification except to use their monopoly powers to engage in rent seeking behaviour. Private companies which are utilising public spectrum cannot do so to seek windfall profits which comes at the cost of public welfare.

e) Differential pricing practices such as Zero rating, whether paid or unpaid, creates a fundamental and permanent shift in the way the Internet works, by splitting it into free and paid. Services such as Airtel Zero will slice the Internet, and will lead to the launch of similar services from all telecom operators. There might be an Idea Zero, Vodafone Zero, Uninor Zero, Tata Docomo Zero. This means that each user will get a different experience of websites, and may never know the universe of knowledge outside of this collection of websites. That restricts consumer choice. Zero rating is "positive discrimination". Airtel Zero favors those services who pay them to be zero rated. Internet.org favors those services which are low bandwidth, and allow Facebook to access user data even if Facebook is not being used on Internet.org.

f) Usage of the open web declines: When consumers try and move out of a zero rated platform to the open web, they will rightly be informed that they are going to be charged for this. This is information is essential in order to prevent charges when the user may not want to be charged. However, adding a layer of confirmation usually leads to reduction in conversion rate, since accessing a link is often on an impulse, whereas choosing to pay to access a link is an additional decision. In case of Free Basics/Internet.org, users would get an advisory asking them to buy a data pack. At this point, many users choose to not access the open web, and continue to use only Facebook and its partners, thereby giving them a competitive advantage.

Additionally, I would like to draw your attention to the 12 lakh submissions to the TRAI on its Consultation Paper on OTT Services to Question Nos. 14 and 15 which similarly called for prohibiting TSPs from having differential pricing for data usage for accessing different websites, applications or platforms.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of non-discrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for data usage should not be permitted in principle, given that they will allow TSPs to act as gatekeepers on how Indians experience the Internet. Principles of non-discrimination, transparency, affordable internet access, competition and market cannot be furthered if differential pricing is permitted in any form.

- a) Differential pricing on a case to case basis will result in unclear non-discrimination standards, increasing the likelihood of litigation. Again, players which are smaller will not have any ability to negotiate and will be excluded. Differential pricing by its very nature and phrase is a discriminatory practice. Given the clear harms which come through and the considerable costs and delay in evaluating case-by-case behavior, discriminatory pricing for data should be prohibited through firm, clear, bright-line rules.
- b) Transparency in a system in which differential pricing is permitted will not serve the public purpose. Even if rate plans are published publicly or prior regulatory approval is demanded the harm is already caused as such plans will be devised by TSPs and not by individual users. Given that large TSPs often face limited competition in practice in specific geographical areas in India with respect to data services, transparency will not aid consumer choice. Quite simply just because a plan is published on the TRAI website will not ensure users can choose - especially if they actually do not actually have the ability to easily switch to other operators when it comes to data services and broadband. Beyond not assisting consumer choice in any meaningful manner, transparency will not aid in mitigating the harms caused to smaller content providers and startups that will be excluded from such plans. Please note that Reliance Communications and Facebook are yet to publish a complete list of services that form a part of Free Basics (Internet.org).
- c) Zero rated services such as Internet.org/Free Basics and Airtel Zero are a form of positive discrimination, making some sites free versus others, and ending up making some sites more expensive. Affordable internet access can be furthered in several ways which are consistent with net neutrality. Some TSPs and Facebook through its Internet.Org/Free Basics zero rated offering has posed this in terms of a faustian bargain which completely ignores what some term "equal rated" services and other efforts that seek to expand Internet connectivity to all without compromising network neutrality. These alternatives are described in the answers to Question No. 3.

The submissions are in addition to the 12 lakh submissions to the TRAI on its Consultation Paper on OTT Services to Question Nos. 14 and 15 which similarly called for prohibiting TSPs from having differential pricing for data usage for accessing different websites, applications or platforms.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

Yes, several alternatives exist other than differentiated tariff plans or zero rated services that are practical to implement and will provide access to the Internet to millions of Indians who cannot afford it due the costs of data.

a) At the very outset it must be remembered that improving access is public priority - and not one only to be left to some global private corporations. Private corporations cannot guarantee the neutrality and impartiality in exercising such a core government function and will only cite interests of access for furthering their own commercial profits. This will come at the cost of accountability which is at the core of any government process. Many experts have highlighted that access can be improved by the government through, "equal rated" plans that are deployed by the Government. This may be through deployment of the USO fund and creation of a national fiber optic network.

b) The World Wide Web foundation has suggested several alternatives for furthering access without compromising network neutrality which include a free allowance of mobile data for each citizen funded through an universal service fund. Further, TSPs can also offer 2G data services which are capped at 10/20 MB a month which would not violate any forms of network neutrality. Such measures would improve access and give millions of Indians access to the Internet, not some stripped down, wall garden in which content options are determined for them.

c) Further models exist and have been highlighted by entities such as the Mozilla Corporation and others. These are in the forms of, "equal rated" plans and are even being deployed in some countries. Some examples of it include:

"Could the private sector organize itself to provide a baseline "equal rating" for some amount of data necessary for modern life at discounted or no charge? Such a program would integrate the "version 1" private solution of limited access with the citizen demands for the opportunity and full inclusion of the full Open Internet. Perhaps those companies paying for the equal rating might get a "brought to you by" attribution that could bring brand value and network effects. Orange and Mozilla are experimenting with this sort of model in multiple African and Middle Eastern markets, where users purchasing a \$40 (USD) Klif phone receive unlimited talk, text, and 500 MB a month for 6 months.

Another possible way of "equal-rating" content so it is free-of-charge to the user is a model where people watch ads in order to access other sites. Mozilla has been exploring this model in a partnership with Grameenphone (owned by Telenor) in Bangladesh, where users can receive 20MB of unrestricted data per day after watching a short ad in the phone's marketplace."

Some TSPs and Facebook have incorrectly framed a debate around access at the cost of network neutrality to further their commercial interests. As it is evident from the above models access does not come at the price of network neutrality.

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

I believe TRAI will take my answers into consideration in forming its opinion. Several experts in the field hold similar views and have expressed their concerns on zero rating and net neutrality violation at various public forums. I would reiterate that several telecom operators and Facebook have launched products and services that violate net neutrality, undermining the consultation process. I request TRAI to put a temporary ban on such services till a decision is reached.

Additionally, it should be brought to your notice that Facebook has also used unscrupulous methods to get its users to submit their responses to the present consultation, misleading its users into believing they will be supporting net neutrality by doing so.

Lastly, I request the regulator to consider the submissions made to Question Nos. 14 and 15 in the Consultation on OTT Services (April, 2015) for the Consultation on Pricing Discrimination and come out with a definitive timetable for the conclusion of both consultation processes.

Thank you.

2.4.47 Layton



7 January 2016

Ms. Vinod Kotwal, Advisor (F&EA)
Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan
Jawahar Lal Nehru Marg, New Delhi – 110002

Re: Differential Pricing for Data Services, No. 8/2015

Dear Ms. Kotwal,

Thank for you for opportunity to comment in the TRAI's consultation on differential services. That TRAI reviews its rules, makes appropriate updates, and removes obsolete regulation demonstrates that it is doing its job. In fact TRAI has had considerable success to date in promoting competition in the mobile industry. The *10th Anniversary Telecommunications Regulation Handbook*¹ notes the following about TRAI,

In 1999, when its New Telecommunications Policy was adopted, India had about 1.2 million mobile subscribers, and effective charges were 14.51 Rs./minute. Pro-competitive and liberalization-oriented policies . . . had a positive effect both on penetration and prices. As of December 2009, mobile subscribers had increased to 525 million and prices had dropped to 0.64 Rs./minute.

Simply put, within a decade of unleashing market forces in India mobile subscriptions increased 500-fold and prices dropped more than 95 percent. This success was achieved by allowing telecom service providers (TSPs) to differentiate in offer and price. The Indian government recognized this success and enshrined the market-oriented principles in its National Telecom Policy of India of 2012.² The policy acknowledges the paradigm shift of convergence and wants to support triple play packages (voice, video, and data) for wireless services as means to expand broadband deployment and access.

India may comprise nearly a fifth of the world's population, but its level of Internet adoption is quite low. However the country could make a quantum leap in Internet adoption—similar to mobile--by allowing market forces to work. This means that TSPs need to be able to differentiate themselves on price and data services, and TRAI needs to allow the legally afforded forbearance.

The key points in this comment are

- TSPs appear to be following the requirements of the Telecom Tariff Order. There is no evidence of a problem or market failure that requires regulatory intervention with regard

¹ Colin Blackman and Lara Srivastava, *10th Anniversary Telecommunications Regulation Handbook*, vol. March 2011 (infoDev | The World Bank | The International Telecommunication Union, n.d.),
<http://www.infodev.org/articles/10th-anniversary-telecommunications-regulation-handbook>.

² <http://www.trai.gov.in/WriteReadData/userfiles/file/NTP%202012.pdf>

to differential prices and data services. Competition is robust with a variety of TSPs offering diverse offers at multiple price points.

- Differential pricing has always been part of the market for content and connectivity. This is a basic tenet of economics and must continue if India wants to realize its Digital India goals.
- TRAI needs to cultivate independence and functional competence to be a credible telecom regulator.
- A review of empirical evidence for bans on differential pricing show that they hurt consumers and competition, most especially small content providers and entrant TSPs. TRAI should collect the facts and conduct a proper investigation before making any decisions.
- The US and Denmark have allowed TSPs to differentiate on price for data services and content. There is no record of consumer complaint, and these offers are most valuable for small content providers and entrant TSPs.

Please know that I appreciate the opportunity to comment and share my relevant academic research and work experience in India. This comment is submitted with sincere wishes for India to get its Internet policy right so that the country can develop its digital economy and lift the poor out of poverty. Few things can do so much good as good telecom policy, but remember the first rule of regulation: do no harm. As such, the countries that have succeeded with telecom policy are generally countries that ensure a limited role for regulation, foster meaningful facilities-based competition, and remove regulations when they are no longer necessary.

I have not received any compensation to submit this response to the consultation. This comment reflects the results of my research and my views. I do not speak on behalf of Aalborg University or any other organization with which I am affiliated.

A list of my relevant papers and articles for your proceeding appears at the end of the document. A copy of my paper on zero rating is attached. Thank you for considering my comments. I am happy to elaborate or answer any questions from TRAI.

Sincerely,



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My qualifications to participate in this consultation

Though born in the US, I have worked in the IT industry and studied Internet policy in many countries, including India. I was honored to work under the tutelage of Dr. M. Vidyasagar at the Advanced Technology Center at TCS Innovation Labs-Hyderabad. Now I am part of Denmark's Industrial Ph.D. program,³ an initiative of the country's Ministry of Science, Innovation and Higher Education. To improve the quality of internet policymaking, I research the impact of net neutrality rules to innovation and investment in 50 countries. I am one of the few academics who has conducted an empirical inquiry on zero rating.⁴ My preliminary results of a test of the efficacy of net neutrality has been published by Springer and appears in the Dynamic Coalition on Net Neutrality's Compendium⁶ in a chapter titled "Test of the FCC's Virtuous Circle: Preliminary Results for Edge Provider Innovation and BIAS Provider Investment by Country with Hard Versus Soft Rules."

I work at the Center for Communication, Media, and Information Technologies (CMI) at Aalborg University in Copenhagen, Denmark.⁷ Aalborg University is known for its scholars of innovation, including Bengt Åke Lundvall who coined the term "learning economy"⁸ and who developed the National Innovation System⁹ concept. The mission of CMI, a cross-disciplinary center within the Department of Electronic Systems, is to explore and develop the potential of new converging communication, media and information technologies and associated platforms and to offer competences and expertise to companies and public institutions. Our university has a partnership with Vishwaniketan's Institute of Management Entrepreneurship & Engineering Technology (iMEET)¹⁰ outside Mumbai and hosts Indian PhD students in Denmark. My doctoral project leader Knud Erik Skouby is Special Advisor to the The Global ICT Standardization Forum for India with the goal of helping to develop telecom infrastructure in rural India.¹¹

At CMI we teach telecom regulation, and our scholars have been important global policymakers. One of our teachers is William Melody¹², founder of the World Dialogue on Regulation and founding director of LIRNE, a cross-national academic collaboration to facilitate telecom reform and information infrastructure development. You will likely recognize LIRNEAsia, a pro-poor, pro-market think tank. An alumna of my department is Lara Srivastava, editor of the *10th Anniversary Telecommunications Regulation Handbook*.

I blog at TechPolicyDaily.com and Forbes.com. I am affiliated with the American Enterprise Institute and Strand Consult.

³ <http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/programmes-managed-by-innovation-fund-denmark/industrial-phd>

⁴ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587542

⁶ <http://www.springer.com/us/book/9783319264240>

⁷ <http://www.cmi.aau.dk/>

⁸ <http://www3.druid.dk/wp/20060006.pdf>

⁹ Lundvall, B.-Å. (ed.) (1992). National Innovation Systems: Towards a Theory of Innovation and Interactive Learning, Pinter, London

¹⁰ <http://vishwaniketan.edu.in/>

¹¹ <http://slideplayer.com/slide/7652986/>

¹² <http://www.itu.int/en/ITU-T/academia/kaleidoscope/2013/Pages/MelodyW.aspx>

Preamble

The NTP makes a number of important points worthy to mention in light of the current consultation. It observed that India has the world's fastest growing telecom sector, that telecommunications comprises 3 percent of gross domestic product, and that the private sector accounts for an impressive 88 percent of telecom investment. The goal of the policy is to achieve the following goals

- Support telecommunications deployment and adoption in rural and remote areas
- Ensure the availability of affordable and effective communications services
- Support growth and employment in telecommunications industry and related sectors
- Foster an investor-friendly environment

Thus TRAI should be mindful that its decisions support and fulfill the overall NTP objectives and take great care not to reduce the benefits that the policy has allowed to date, namely a competitive marketplace with pricing flexibility as well as consumer choice.

With regards to the referenced Telecom Tariff Order (TTO), the Memorandum makes some important points as well including

- The need for tariff reform to stimulate competition, specifically to support entrant TSPs and reduce the power of incumbents
- Emphasis on the "social objective" of encouraging low users of telecom to get connected and use the system more intensively; and
- That service providers will be provided enhanced flexibility for pricing and giving alternative tariff packages to customers.

The memo then explains subscribers have the freedom to select the tariffs of their choice ("*Subscribers shall have the freedom to choose among the available tariff packages, including the standard tariff package*"), and that forbearance to tariff regulation is applied in particular areas. Specifically, forbearance is offered for tariffs for

- *Value added services, and other services with competitive markets;*
- *New or emerging services; and,*
- *Services which require to be studied further* (Annex A, Section B Flexibility of Tariffs, Standard Tariff Package and Alternative Tariff Packages)

The Memo also notes, "*It is important that the conditions of access to the network do not constrain subscribers from getting connected to the network.*" TRAI should also be concerned that any decision it takes to reduce pricing flexibility not only departs from a successful policy to date, but may slow the rate of Internet adoption in India.

While it is not mentioned in the consultation paper, the memo also explains the importance of the *affordability* of tariffs and cites a statistic from the ITU that telecommunications should not comprise more than 5 percent of household income. The memo also notes that "*Internet tariffs*

should encourage the supply, use and expansion of Internet services, and promote innovation in these services.”

It is clear that the Indian telecom laws were written to promote competition and flexibility in pricing and data services, not uniformity. Other goals are to promote the entrance of TSPs as well as the affordability of pricing and the adoption of services, particularly for people with low income and in rural areas. Moreover the regulator emphasizes the role of consumer choice and has an express forbearance policy with regard to tariffs for new and emerging services as well as those which require further study.

TRAI has been featured in the American and EU media over the last year regarding a number of consultations, most recently this differential pricing consultation. That Indian TSPs Airtel, Reliance, Idea, Vodafone, and others offer competitive content bundles at differential prices should be embraced. In reading the law, it appears that these operators are doing what the law says: fulfilling the “social objective” to encourage low users of services and to provide consumers “alternative tariff packages”. In fact with free and low cost offers, TSPs are following the NPT and TTO mandates.

TRAI should not be concerned about these developments; this is exactly the evolution that the law had in mind. Moreover it is confounding, as reported in the media, that a set of Internet activists—mobilized from their US counterparts—would oppose what the Indian laws states TSPs should do.

The differential pricing consultation inquires to what degree mobile broadband Internet pricing plans conform to its standards and principles of non-discrimination, transparency, and the assurance that tariffs are not anti-competitive, predatory, ambiguous, or misleading. It also intimates the question of whether current mobile tariffs are not arbitrary with regard to either class or subscribers. It is widely recognized that traffic in mobile networks is increasingly data. Meanwhile a TSP’s voice and SMS are increasingly commoditized. It would seem then that the pricing for data services, in its current competitive mode, is not in fact arbitrary. TSPs are simply responding to the competitive marketplace in which consumers demand more Internet and less voice/SMS.

Regarding TRAI’s point about tariff transparency, the point is for TRAI to ensure transparency so that consumers select their own plans. It is not the role for TRAI to decide the way the market organizes or what kind of tariffs TSPs offer, provided they comply with the TTO. That is to say, TRAI’s should not ban tariffs that do not contravene the laws. From reading the laws, that TRAI would suspend an emerging service offer from Reliance—from which it is supposed to forbear, at least until it studies it further—seems to be a violation of the law.

Ideally telecom regulation should be explicit so that TSPs and the public understand it. Moreover TRAI itself should be able to perform real world tests to prove its assertions as well as to validate its decisions. If TRAI does not have the information it needs to make a decision, then it should collect the necessary information. While TRAI needs to collect public comment, it should not be swayed by it. Regulatory investigations should proceed in the same manner as scientists conduct

experiments. Similarly, regulatory decisions should have the same quality of process and logic as scientific experiments, and the outcome should be factual and independently verifiable.

Telecommunications has historically been a highly regulated sector for legitimate reasons: there was a national telephone company; telecommunications were considered crucial for national security; and in many countries, the TSPs were de facto tax collectors for the state. However as communications technologies have advanced and diversified, deregulating the national telephone monopoly was seen as key regulatory activity. In the last 25 years alone, more than 100 telecom regulators have been established for this singular task. In fact ensuring the transition from monopoly to competition is the charter of a telecom regulator. So as much as possible, the telecom regulator should facilitate market entry, differentiation, and competition. Regulation by its nature creates distortions and asymmetries, so it needs to be applied in a limited way and only when absolutely necessary. Pricing and offers are some of the most basic ways that firms can compete, so this ability should be encouraged.

Following are answers to the consultation questions.

1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platforms?

The short answer is yes. TSPs should be allowed to have differential pricing, and this is protected by law. But the need for differentiation can be explained from the basics of economics and the history of connectivity and content which were always sold with a differentiated price.

Economic justification for differential pricing

We may take for granted why we use prices, but they play an important role in the marketplace. Prices communicate information to consumers. Prices help to provide efficient distribution of goods and services. Price regulation, such as ceilings or floors, are in fact distortionary and misleading, and generally result in shortages or surpluses. In telecommunications this means that some users would go without connectivity or access. It could also mean that TSPs would have unused capacity that would be wasted.

The role of pricing in the modern telecommunications is to drive competitive dynamics. Having differentiated pricing is essential to realizing Prime Minister Modi's Digital India initiative. Its three major goals can be realized in part through differential pricing: the creation of new telecommunications infrastructure; the delivery of digital services; and digital literacy.

Network industries, such as telecommunications, have high upfront costs which are generally fixed for a large set of users. Once established, the cost of incremental output declines. It makes sense, therefore, to charge users with lower willingness to pay a discount, and thus cover the overall costs.

To put it another way, the fixed costs of a network are the same whether there are 1 million or 100 million users. Thus it behooves the TSP to maximize the number of users on the network at all possible price points because it maximizes revenue. By imposing a rate regulation or price controls (or by banning the ability to differentiate on price), TRAI will reduce the incentive for a TSP to invest in new networks. To be sure, some users can afford a higher, regulated price, but

the regulated price reduces the number of users on the network. It also decreases the incentive for the TSP to invest because its revenue is reduced.

I have observed this very dynamic in my own research. When bans on zero rating were imposed in Netherlands and Slovenia, the amount of data in the largest packets was increased, but the lowest price or zero rated offers in the marketplace were removed. This has the effect of punishing those who can least afford service. It essentially subsidizes the rich at the expense of the poor. It also punishes the TSP by reducing the number of users on its network and reducing the number of subscriptions from which it can earn a return on its investment.

A TSP will expand its revenue if it can increase the number of users on its network. Thus getting the users from the proverbial “bottom of the pyramid”¹⁵ on board, even if for free to start, is crucial. With more users and subscriptions, a TSP earns revenue, the capital needed to invest in new infrastructure, thus achieving the first goal of the Digital India project.

As for whether there should be different price points to access different content, websites, applications and so on, the short answer is yes. The simple reason is that people value content differently. There is no reason to force people to pay for content they do not value. Here is an example.

You are a fan of kabbadi. I am a fan of cricket. That I purchase a package of connectivity bundled with cricket information does not make you worse off. Similarly if you purchase connectivity bundled with kabbadi information does not make me worse off. However there is a cost to a TSP to try to make such bundles, and any exclusive bundle means that the TSP must expend marketing funds to find a relevant audience. Thus the TSP is incentivized to create a package with the content that has the broadest appeal, including both cricket and kabbadi (and many other types of content). That is to say that there are costs to making bundles, metering them, and marketing them. In general it is more economic for operators, all things being equal, to offer bundles with the maximum broadest content possible that users want, provided that the price is competitive.

However the laws of supply and demand still hold. The assertion that all plans must be “full access to all possible content” assumes that users value all data equally. They do not. Traffic to the world’s internet content is highly disproportionate. Ninety nine percent of the world’s users go to only 1 percent of its content.¹⁶ Similarly we can see that people have different tastes in books, music, movies and so on. “Lagaan”, my favorite Indian movie, is 100 times more popular than “OMG: Oh My God”. I am not willing to pay see “OMG”, but I would pay to see “Lagaan”. However someone else may be willing to pay for “OMG”. It is because of differentiated prices that the market will produce both films. If we insist on one price for all, only “Lagaan” will get made. There will be no “OMG”.

¹⁵ Pralahad, C.K. *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*. Pearson Education, 2004. <http://www.amazon.com/The-Fortune-Bottom-Pyramid-Eradicating/dp/0131467506>

¹⁶ See the list of the world’s most popular websites. <http://www.alexa.com/topsites>

India is a country with many languages and cultures. A operator based in Delhi would be foolish to offer a package of Telugu language content which would be better marketed to subscribers in Andra Pradesh. A TSP that does not obey the laws of supply and demand will be out of business.

In fact there is not a single good or service that we consume that is not subject to a differential price. Price differentiation is commonplace in ticket sales for movies, sports, and cultural events. For example discount tickets for students and the elderly are a matter of course, as are reduced prices for off-peak performance times. With regard to transportation, whether bus, plane, train, or ferry, reduced ticket prices are also offered to certain segments of the population. Additionally there are discounts for early purchase, off peak purchase, and so on. The Internet is no less important than culture, transportation, and health, and if price differentiation is the norm in those markets, there is no reason why Internet access should not have the same privilege of flexibility.

For people who have never tried the Internet, they may need an incentive to try it. It is commonplace to offer a sample or free trial for any number of goods and service. It should be no different with the Internet, and differential pricing allows more efficient delivery of services, not to mention a greater diversity of services. Thus allow differential prices for data services, TRAI will fulfill the second goal of the Digital India plan, the delivery of digital services.

The Digital India Initiative contemplates the totality of the digital experience. This incorporates the networks, devices, and services that make up a symbiotic ecosystem. A healthy system requires the free interplay of these actors and the ability to price efficiently. Digital literacy, the third pillar of the Digital India Initiative, requires the external factors such as education. But the more diverse and efficient the networks, devices, and services are, the more affordable they will be. This only supports digital literacy.

In thinking about its role to support the Digital India program, TRAI should appreciate the totality of the forces at play and not attempt to jigger the system by manipulating one part of a highly interdependent ecosystem.

History of content and connectivity

Differential pricing has been crucial for the history and development of the provision of content and telecommunications.²⁸ That we use mobile devices to connect to the Internet is not new. From its very invention, the telephone was considered to be a medium to distribute content, not just voice.

In the US in the 1880s-1890s AT&T made a number of attempts to deliver a news and entertainment services over the telephone, but it wasn't a success. This shows that just because a network provider offers a service does not mean that it will succeed, even if it owns the network facilities.

Various “telephone newspapers” which delivered news and entertainment over the telephone existed in Europe, including the successful Telefon Hírmondó (Telephone Herald) in Budapest

²⁸ <http://www.techpolicydaily.com/internet/telephone-newspaper-todays-internet/>

which operated for 50 years beginning in 1893. It was funded by monthly subscriptions and advertising.

A similar concept existed in France, called the Théâtrophone²⁹ (1890-1932). Transmitters were installed on the stage at the Paris Opera connected by wire to a dispatch center and then to hotels, clubs, cafes, and subscribers' homes. News supplemented the daily transmission of performances. Differential pricing was employed to sell subscriptions and tickets at various rates to different levels of content.

In Britain the Electrophone³⁰ (1895-1925) service was offered over the existing telephone network in cooperation with the National Telephone Company and British Post Office. Content included live theatre, music, and on Sunday, religious services. One could request a particular program a la carte or by subscription. There was no advertising, and subscriptions were high, \$50/year in 1900, equivalent to a monthly fee of \$1428 in today's dollars. At its height, it had only 2000 subscribers. That there was no ability to price differentiate may have had something to do with the limited uptake of the service.

In the US, it could be observed that regulation actually deterred the early development of content delivery by telephone. M. M. Gillam, former advertising manager of the New York Herald, licensed the telephone newspaper concept from Budapest. He suffered a six month delay from the Public Utilities Commission.³¹ He reached 1000 subscribers in a small part of New Jersey after one year in 1912. But without a dedicated line for the service, it was not possible to consume news and make a phone call at the same time. That the US government created the Kingsbury Commitment in 1913, enshrining the AT&T monopoly, may have been part of the demise of Mr. Gilliam's innovation.

Lee De Forest was a key innovator in content and connectivity, having developed the audion (three electrode vacuum tube) and phonofilm (sound-on-film recording). He also allegedly coined the name "radio". He founded the De Forest Radio Company to deliver a WWW of its own: "world wide wireless." Though opera had long been broadcast by telephone in Europe, the company's radio transmission of Tosca from the Metropolitan on January 12, 1910,³² was considered a revolution in communications in America.

DeForest continued experimenting in radio broadcasts in cooperation with the Columbia Graphophone Co. In exchange for providing records to the DeForest, Graphophone received a mention on the radio each time a new song was played,³³ a form of advertisement. There were

²⁹"The Theatrophone," *The Electrical Engineer*, Page 161, August 30, 1889, <http://earlyradiohistory.us/1889thea.htm>.

³⁰"News and Entertainment by Telephone," *United States Early Radio History*, accessed August 12, 2015, <http://earlyradiohistory.us/sec003.htm>.

³¹ Arthur F. Colton, "The Telephone Newspaper--New Experiment in America," *Telephony*. Page 391-392, March 30, 1912, <http://earlyradiohistory.us/telenew3.htm>.

³² "The Decades That Invented the Future, Part 1: 1900-1910," *Wired*, October 18, 2012, <http://www.wired.com/2012/10/12-decades-of-geek-part-1/>.

³³"Columbia Used to Demonstrate Wireless Telephone," *The Music Trade Review*, Page 52, November 4, 1916, <http://earlyradiohistory.us/1916col.htm>.

neither licenses to deliver radio broadcasts nor consumer subscriptions to receive them. Essentially all transmission were “zero rated” by the network and content providers.

Ultimately radio broadcasting supplanted news over the telephone and phonograph supplanted music over the telephone, having more favorable economic and physical properties to deliver information more cost effectively. However the mobile phone, digital technologies, digital advertising, and related business models have evolved to disrupt the entertainment business. Now people stream music on their phones though Spotify, Deezer, Pandora, and other services. Those app companies could not offer their services for free if they did not have a third party advertiser or employ a differential price model in which premium users pay, thereby subsidizing free users. It is not logical that TRAI can allow differential pricing across the Internet, but not for Internet access.

TRAI's should be well acquainted with differential pricing from its history. There were any number of differential pricing arrangements for telephony, whether volume discounts, toll free numbers, wholesale and retail pricing, interconnection, and so on. The growing trend in the world is to sell mobile access with content, particularly branded content. Mobile telephony used to be about voice and SMS. Differential pricing was the norm. Now we are moving to a world of data. Prices need to evolve if we want to effect this change.

There is no reason to suggest that we have reached the end of innovation. Pricing and packaging themselves are forms of innovation. It is necessary that experiments are tried in India to allow the appropriate models to be developed. Consider the innovation of the sachet to market soap, shampoo, and detergent in small, competitively-priced amounts in India. “Sachet marketing” makes valuable products available and accessible to people on limited income. They will likely never buy the supersize box of detergent commonly sold in the US and Europe, but there is no reason why they should not have the benefit of clean hair and clothes.

To be sure, as people acquire more income, they will increase their consumption of soap in larger packages (notably when they purchase a large washing machine). The situation with telecommunications and Internet is similar. Users in the US and Europe buy supersize Internet packages because they have multiple Internet enabled devices including standalone computers, television, tablets, and smartphones. They consume large amounts of video which require heavy bandwidth. It is not necessary to require Indians to purchase supersize Internet packages to enjoy the benefits of the Internet. They can purchase sachet size packages of connectivity to get started and progress as needed. But regulating sachet provision of the Internet would undermine the ability of India's poor to enjoy the Internet today.

Banning the provision of a sachet-size Internet packages, whether 2-for-1 deals, zero rated subscriptions, or however they are marketed, is akin to requiring all Indian to purchase supersized boxes of detergent. It makes no sense from the perspective of economics or human welfare. The point is that differentiated pricing is nothing new. If allowed, India can spawn a variety of new innovations.

Let me address a few of the concerns raised by TRAI about differential pricing its consultation. TRAI notes,

It may be argued that while these preferential tariffs offers effectively result in easy access to these websites etc., it may also result in making the entry of certain websites through the pipes of the TSPs more difficult. For example, a TSP or a group of TSPs could come up with such differentiated tariff offers wherein they disincentivize access to certain websites by putting higher tariffs for accessing them. In other words, accepting the principle that the TSPs should be able to provide differential and attractive tariff offers for different websites/content providers, whom they 'like', one is accepting the principle that service providers may also effectively prescribe nonattractive/prohibitive tariffs for some websites whom they may 'not like'. (paragraph 12)

TRAI has tools in its toolbox to make an evidenced-based assessment and the authority to enforce the law. TRAI need not conjecture about what could happen. Instead it can look at the offers in the marketplace, apply the relevant tests related to tariffs (transparency, non-discrimination to subscribers, and whether the pricing is anti-competitive, predatory , ambiguous, or misleading), and make the determination. However TRAI cannot make a legitimate determination without facts. It needs to allow the pricing plans to occur in order to collect data.

TRAI also notes,

On the other hand, several negative effects might ensue. Differential tariffs results in classification of subscribers based on the content they want to access (those who want to access non-participating content will be charged at a higher rate than those who want to access participating content). This may potentially go against the principle of non-discriminatory tariff. Secondly, differential tariffs arguably disadvantage small content providers who may not be able to participate in such schemes. Such providers may have difficulty in attracting users, if there exist substitutes for free. This may thus, create entry barriers and non-level playing field for these players stifling innovation. (paragraph 14)

The operative word is “might”. TRAI is likely familiar with the concept of Type I and Type II errors in regulation. Type I, mistakenly prohibiting activity that pro-competitive, is more damaging than Type II, mistakenly allowing anti-competitive activity. It is very difficult for TRAI to estimate the costs and benefits of any activity without real world information. On the other hand, if TRAI collects real world data, it can make a more realistic and credible decision. If TRAI discovers a problematic tariff, it can address it, but it is unwise to set ex ante bans because of the real and established problem of Type I errors.

TRAI also suggests that a differential tariff disadvantages the small content provider, but my research on differential pricing around the world suggests the opposite. To be sure, both small and large content providers benefit from differential pricing, but small content providers even more so. Large content providers can already exploit economies of scale. As is established in the cable industry, much of the service price is composed of high fees demanded by large content providers

in exchange for the right to distribute content. Sports rights holders demand a premium because few will watch the World Cup a day after it's aired. Consider that the International Cricket Council has doubled its revenue for sale of television rights in the period 200-2015³⁵ from the preceding period.

It is precisely the small content provider that needs flexibility and price differentiation. If it is the case that a small provider is being denied market access because of an unfair or unreasonable price, then TRAI can certainly remedy it. But in the context of Internet access, there are no salient examples of small content providers being denied access to platforms because of differentiated prices. If anything, charging a too high price would mean that the TSP would get no revenue at all because the small content provider would not pay.

TRAI also observes,

Theoretically this might entail providing certain content for free while making other content prohibitively expensive for subscribers to access. Allowing service providers to perform what effectively amounts to a gate keeping function might potentially empower TSPs to select certain content providers and disadvantage others, thereby adversely affecting public interest (paragraph 15).

TRAI suggests a theoretical outcome. However TRAI needs to consider the equal and opposite possibility supported by the vast majority of all Internet experience and the overwhelming conclusion in the relevant academic literature³⁶ in that TSPs engage in a two-sided market such that they are incentivized to get both sides on board. Anything they do to limit either content on the one side, or users on the other, limits their profits. The amount of content that Internet users consume in total as well as per capita increase every year, and in general at a declining unit price.³⁷ This suggests that users are getting more, not less, content. As for the public interest, it would seem getting more users online faster is in the public interest.

TRAI notes,

...TSPs may start promoting their own websites / apps/ services platforms by giving lower rates for accessing them. They may take advantage of owning the primary access of the consumer by offering better, unlimited connectivity, free or near free, when using their own service or service of their partner, while offering limited or capped connectivity at higher price when consumer accesses some other website/platform. This may be perceived to be an anticompetitive move that stifles innovation and competition, leaving absolute power in the hands of the TSPs (paragraph 17).

For some real world evidence, TRAI can review the period around the 2000 when a number of the world's leading TSPs tried and failed famously with their walled garden strategies. It was a massive

³⁵ <http://www.espnccrictinfo.com/ci/content/story/271994.html>

³⁶ I am happy to provide a list of these references upon request.

³⁷ <http://www.cisco.com/c/en/us/solutions/service-provider/visual-networking-index-vni/index.html>

waste of investors' money that no TSP would easily try again. It is not logical that TSPs would risk shareholder returns simply to promote content they like that their customers do not. This point that TSPs offer content that they want, not what consumers want, is facile and unfounded. Every decision an operator makes must face the test of market discipline. Consider: is the choice to rollout 4G that of the TSP or that of the market?

TSPs make content offers every day in an attempt to discover what their consumers want. Most offers fail in the marketplace. Consumers decide for themselves what they want. It is a dynamic process to which regulators need not control. The regulator only needs to ensure that rules of the TTO are followed.

Some important points should be made about vertical content and telecommunications arrangements that are made in South Korea and Japan. There are countries have chosen vertical integration of content and communication on purpose and for good reason. These countries are relatively small geographically and are linguistically homogenous. My research show that these countries have a higher rate of mobile application innovation even with the vertical integration. Moreover they, like the Nordic countries, have soft net neutrality rules in place, meaning that they manage net neutrality with inclusive participatory governance,³⁸ such as multi-stakeholder models. Soft net neutrality rules turn out to be better to support emergent content providers on mobile networks.³⁹

The lesson for India is that it makes sense to allow TSPs and content providers to create partnerships to serve their distinct audiences. India is a highly diverse country with people of multiple languages, tastes, and interests. There is no one service or platform that does it all, nor should there be a single price for access. TRAI need not be fearful of diversity but embrace the dynamic, emergent forces which have worked to date.

TRAI notes the following,

Analysis of the terms and conditions of certain offers launched in the market claiming free access to certain services shows that though there is no charge in accessing the platform itself, the moment a consumer clicks on any other link which directs him to a different website or clicks on the pictures or videos, applicable data usage charges is payable. In addition, if the smart phone has some application running in the background utilizing data, charges would be payable irrespective of the fact that the customer is using a free facility at the relevant time. Therefore, there is every chance of such consumers ending up paying for data usage. Since such 'free' facility is availed primarily by non-users of data, they would not have availed any data packs providing lesser effective usage charges. Tariffs for wireless data as per default tariffs are considerably higher (up to even 100 times higher) than the effective tariffs in data packs. The magnitude of price differential is huge and can have dangerous implications for users of such facilities which are claimed to be free, if not conveyed to the consumer transparently and effectively. (Paragraph 21)

³⁸ For a review of the three types of legal instruments of net neutrality and the countries where they are used, see my referenced paper by Springer.

³⁹ See my research published by Springer as part of the Dynamic Coalition on Net Neutrality.

One can appreciate that a regulator would be concerned about a user being charged unnecessarily, but this particular scenario is not a reality. Whether an app runs in the background and whether one goes online are two different issues. If the app runs in the background, it is the decision of the app developer and the user, not the TSP. The user can turn off apps and change the phone's settings. Moreover whether an app is zero rated has nothing to do with an app running in the background. TSPs are not responsible for the development of third party apps nor do they control the setting that users enable on their phones.

2. If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, transparency, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing has been a part of mobile tariffs from the beginning, so it is not logical or supportable that there should be categorical bans on entire classes of business models such as zero rating, sponsored data, and so on. TRAI can take a case by case approach to see that any offer meets tariff requirements. For example, does a particular offer fulfill the NTP goals, such as increasing adoption of the Internet or particular services such as health or egovernment? Are offers available to all comers? Are the terms and conditions of any offer transparent? Do offers expand the subscriber base and the number and range of connected devices? That multiple TSPs making differential offers would be evidence of effective competition.

I would urge TRAI to investigate whether there are substantive consumer complaints about these offers. TRAI must thus distinguish between slick "clicktivist" campaigns versus a bona fide consumer complaint in which an individual has followed the necessary steps of redress. In my research, I have not found a record of genuine consumer complaint about differential pricing.

If TRAI has not done so already, it should implement a process to conduct Regulatory Impact Assessments (RIA) to test the efficacies of its regulation. RIAs are increasingly important because the cost of bad regulation to society is considerable. The OECD offers a helpful toolkit.⁴¹ There are some preliminary questions as well as a battery of assessment tools to determine how and whether intervention is needed.

3. Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumers? If yes, please suggest/describe these methods/technologies/business models. Also, describe the potential benefits and disadvantages associated with such methods/technologies/business models?

TRAI mentions some alternative methods such as free access to unspecified content as well as coupons, direct money transfers or rebates from content providers. There is nothing wrong with a diversity of approaches, but TRAI should not favor one or another either by requiring one

⁴¹ <http://www.oecd.org/gov/regulatory-policy/44789472.pdf>

approach or outlawing another. A dynamic marketplace will experiment with these and other approaches. The role for TRAI is to allow experimentation and then to assess whether there is harm to consumers or competition.

4. Is there any other issue that should be considered in the present consultation on differential pricing for data services?

The Good Telecom Regulator

The good telecom regulator has three key aspects of institutional design

1. Structural Independence to reduce political or industrial capture
2. Financial Independence to ensure the agency's funding is not dependent on political or private influence
3. Functional Competence in that the agency delivers consistent, timely and accountable regulations as well as procedures that ensure transparency of the regulatory process.

Without these things, the regulator does not have the necessary credibility for participation in the sector. Thus the telecom regulator is expressly chartered and designed to be *above politics*.

That India is so animated by the American experience is understandable. The two countries have many affinities and relationships. The activism afoot in India is a form of coordinated and sophisticated transnational activism⁴² with many of its leaders based in the US. SavetheInternet.in is a white label campaign from Free Press, an advocacy group in the US that has long been funded by US foundations and corporate interests with a particular regulatory end game in the US.⁴³ The same campaign is copy-pasted by advocates in other countries.⁴⁴ This endgame may or may not be in India's interests, but TRAI should proceed with its consultation by looking at the facts. To be sure, public comment is a necessary and valuable input to regulatory assessment, but it should not have excessive influence.

Key points from my research on differential pricing

Nearly every good and service on the market today is a subject to differential pricing. This is necessary to make goods and services available to poor and disadvantaged populations. This has been recognized by America's Federal Trade Commission for its analysis of loss leaders products in supermarkets and by the UK Department for International Development for the pricing of medicine, as essential public good, the consumption of which has spillover benefits to society. Similarly Internet access has many properties of a public good, and it follows that offering it on a discounted basis to people of low-income is a vital strategy to promote Internet adoption and connectivity.

For more than a century telecommunications has been priced flexibly to encourage wide adoption. In more recent history, mobile operators have used "zero rating", a practice in which

⁴² Tarrow, Sydney. *The New Transnational Activism*. Cambridge University Press, 2005.

<http://www.amazon.com/Transnational-Activism-Cambridge-Contentious-Politics/dp/0521616778>

⁴³ <http://watchdog.org/187392/ford-foundation/>

⁴⁴ <http://www.savetheinternet.com/sti-home> is presented with a banner "Presented by Free Press". See also <https://www.savetheinternet.eu> for Europe.

certain data does not count against a mobile plan. About half of the world's operators have used zero rating for more than a decade, and it has been helpful to increase internet adoption particularly in developing countries.

Facebook's Free Basics, which offers users free access for essential services in developing countries has encouraged millions to get online without any charge for data. Facebook reports that about half of Free Basics' users become Internet adopters in 30 days as a result of the program.⁵² Facebook has suffered an undeserved backlash from net neutrality advocates who capriciously conflate principles of Internet openness with anything that does not meet their unrealistic and undesirable standard. It would seem that Internet activists would support efforts from mobile operators and Internet companies to facilitate people of low-income to get online, particularly those in developing countries. Such programs should be celebrated by activists as valuable demonstrations of corporate social responsibility.

My paper on zero rating is one of the few empirical investigations to test the assertions that zero rating practices are harmful. In general zero rating is used by small and entrant mobile operators as a way to differentiate from incumbents. The entities that take advantage of zero rating tend to be small and emerging content providers and applications. But even in cases where established services such as WhatsApp and Instagram enjoy zero rating, I do not find that they do not crowd out competing services. In fact even where WhatsApp is zero rated, those countries enjoy a multitude of messaging apps.

The amount of zero rating activity is less than 1% of all contracts and traffic in the markets studied. Thus the impact of zero rating is negligible but not negative. My research finds the opposite to advocates' claims; it turns out that bans on zero rating harm competition and consumers. However bans negatively and disproportionately impacted smaller telecom providers and their customers.

The research was set up to test the purported harms as suggested by critics of zero rating

- The operator that offers zero rating will win market share.
- The zero rated service will win market share.
- The presence of zero rating will preclude the emergence of new applications and services.
- Users don't go to non-zero rated content. If Facebook is free, they don't venture beyond it.
- Operators that zero rate their own content foreclose other content.

I looked at countries with hard net neutrality rules that imposed bans on zero rating: Chile, Netherlands, and Slovenia. In Chile and Slovenia, there was no record of consumer complaints about zero rating. Bans were implemented as the result of a single complaint by a net neutrality activist organization. In Netherlands the ban was implemented to effect a policy desired by the Ministry of Economic Affairs, not the telecom regulator.

There are a number of compelling studies and reasons to allow differential pricing including

⁵² <https://developers.facebook.com/docs/internet-org>

- Differential pricing strategies are important to achieve social/public goods, for example how differentiated prices are used to provide medicines, an key input for public health (Yadav 2010)
- Users prefer to select mobile subscriptions on a range of parameters, not just speed and price (Fortunati & Tipale 2014; Postrel 2004).
- Programs such as Free Basics increases the number of users on network and has the double benefit of fostering content consumers and creators (Eisenach 2015)
- Differentiated pricing strategies common amongst Internet OTT services including the loss leader (FTC) and freemium (Lukin). It is illogical and inconsistent not to allow it for mobile internet services.
- Differentiated pricing is used particularly by entrant TSPs and service based competitors such as MVNOs.
- Economist William Baumol discussed how price differentiation is used to recover fixed costs. But he notes that price differentiation is common in markets both with high and low barriers to entry. Markets are so competitive that it is impossible for operators to enter without it (2005).
- My research shows that TSPs don't use price differentiation because they want to, *but because they have to*. Prices in the mobile market are already so low. TSPs cannot offer lower prices or they will not cover costs. As such the only way they can attract customers is to make differentiated offers for content.
- The freemium⁵³ model is widely practiced in digital industries. This consists of a free digital offer for software, media, games, or other service, but a charge or premium charged for special features, increased functionality, or virtual goods. LinkedIn, Amazon, online newspapers, and countless other companies offer freemiums. It is not logical that such companies should be allowed to offer for free—or zero rate⁵⁴—certain aspects of their service to stimulate adoption and yet TSPs cannot. Regulators may enter some legal challenges by doing so.

Another reason not to enact proactive bans on price differentiation is that they may constitute violations of free speech and enterprise. Court cases on this very topic are playing out in the US and Europe. They underline the important point that the ability to make an offer in the market—to provide a differential price—is a form of free speech.

Getting people online as quickly as possible facilitates their human rights, and reducing the rate of adoption by insisting on “perfect” access actually delays people’s enjoyment of human rights. Moreover requiring that people buy only one kind of mobile package—or constraining the parameters on which mobile service can be offered--rather than tailoring packages to consumers’ wants, needs and budget, has the perverse effect of making the poor subsidize the rich. In the countries where zero rating is banned, the lowest price offer disappears in the market, hurting those who have never tried the Internet and those with the least willingness and ability to pay.

⁵³ Lukin, Jarid, “Jarid Lukin (@jblukin) | Twitter,” November 7, 2014, <https://twitter.com/jblukin>.

⁵⁴ Michael Katz, comments: “Should Wireless Technologies Be Regulated Differently?,” ISOC-DC TV - Live Events, (October 15, 2014), <http://www.isoc-dc.org/isoc-dc-tv/>.

Tapping price as a form of innovation

I experienced India's power in Information Technology firsthand as an employee of Tata Consultancy Services (TCS), including the company's immigration and deputation process that at the time, hired 100 people per day. Prior to joining TCS, I studied the concept of cost competition and radical innovation as a differentiator for emerging countries in business school. Competing on price is essential as a means to get the attention of first world customers, but once established, emerging country competitors invest the revenue they earn back into their business and fundamentally innovate their enterprise. Companies initially chose TCS because of its competitive price, but now they choose it because of the quality.

When I was employed at Tata, the company had 18 R&D centers. The lab where I worked in Hyderabad leveraged the brain power of top Indian PhDs in a number of important technical areas including IT development, bioinformatics, security, quantitative finance and other disruptive technologies. It might be observed that TCS capability of advanced technology was developed and offered in part through "zero rating" of a type; essentially other business lines funded the initial investment. However over time advanced technology created new products and services that created revenue. So the symbiotic process helped the company overall. The same dynamic is pursued by TSPs today. Again, it is not logical or supportable that every other industry in India is allowed operate within a plane of real world economics, but telecom is not.

Simply put, India has used radical innovation to leapfrog into the future. It is a testament to the country that in just 1-2 generations, India's IT companies could leverage the country's considerable human capital into an industry that today drives almost one-tenth of the Indian economy. As described before with entrepreneurship in "sachet marketing", India needs to embrace similar innovation with Internet pricing. My colleague Dan Lyons describes it well in an important paper, *Innovation in Mobile Broadband Pricing*.⁵⁵

Requiring standardization of a product—as net neutrality does—removes an important plane upon which firms can compete, and actually gives an advantage to large incumbent players against newcomers who are looking for ways to distinguish themselves. Mandating that services providers offer all users access to all online content is costly. This model does not serve the needs of consumers who may not want or need broadband that supports heavy-bandwidth activities such as online gaming and video streaming.

Beyond the basics goals of supporting a competitive market for telecommunications and the removal of barriers to new TSPs, innovations in mobile pricing can do the following

- Expand the number of Indians, particularly of low income, to access the Internet
- Lower the cost of Internet access
- Increase consumer choice in types, modes and means of Internet access
- Drive adoption of Indian-made Internet goods and services
- Drive adoption of egovernment in India
- Educate and inspire Indian entrepreneurs to develop their own platforms and services

⁵⁵ <http://mercatus.org/publication/innovations-mobile-broadband-pricing>

- Expand the market for devices, increasing both adoption and device diversification.

Differential Pricing and the TTO today

As discussed, TRAI has succeeded to create a competitive market for mobile communications in India by increasing the number of networks, providers, and technologies. As a consequence, prices have fallen, the number of subscribers has increased, and the number of devices enabled has expanded. TSPs differentiated on price and bundles in the past and many benefits results for consumers and content providers; if TRAI allows, this can continue in the future. As we move away from a world of voice and SMS to a world of data, it is logical and fitting that TSPs will offer differentiated data and content bundles. If they did not, there would be something wrong.

But strangely regulators who are tasked fostering competition are simultaneously restricting the parameters by which TSPs can compete. The net neutrality activists' charge that operators should only differentiate on the basis of speed and quantity of data are unwittingly and perversely support incumbent TSPs with large networks. Moreover they are denying consumers the choice to select their own offers and to purchase from a market with multiple players. This action appears to contravene the TTO. That Indian TSPs are offering content bundles should be embraced, not discouraged by the regulator.

Lessons from the US and Denmark

This situation in India today has played out in many countries. I describe the experience in Chile, Netherlands, and Slovenia the attached paper, and the lessons from the US and Denmark are recounted here. They are instructive for India as its TSPs begin to introduce 4G networks.

In the US, the first TSP to offer a 4G data plan was not Verizon or AT&T but MetroPCS. MetroPCS had only 10-20 MHz of spectrum capacity and focused on a budget-conscious market segment with a set of pre-paid, no contract, "all you can eat" offerings. In 2010 it was the 5th largest operator in the US with only 3 percent market share.

The company provided 2.5G service on a CDMA network, and it realized that going forward, GSM would become the global standard. It would not be economical to evolve to WCDMA 3G, so it decided to leapfrog directly to 4G/LTE. In any case, it knew that many of its budget-minded customers would not take a full-priced 4G data plan at \$60/month so it needed a way to serve that market segment.

MetroPCS observed that its customers preferred YouTube almost entirely over any other video provider. Without any money changing hands, MetroPCS engineers worked with YouTube to develop an optimal format for the video service under the spectrum constraints.⁵⁸ According to MetroPCS, the offer to optimize the video streams was made available to other content providers, but none were interested. Thus an offer of unlimited talk, text, Web browsing, and YouTube for \$40 was presented. In 2011, a group of advocacy organizations led by Free Press complained to the FCC that the plan violated net neutrality.⁵⁹

⁵⁸ <http://assets.fiercemarkets.net/public/mdano/metropcsresponse.pdf>

⁵⁹ http://www.freepress.net/sites/default/files/resources/MetroPCS_Letter_1_10_11.pdf

MetroPCS duly responded to the FCC⁶⁰ and ultimately sued the regulator because its net neutrality rules would effectively put it out of business. In 2014 the FCC's net neutrality rules, all but the transparency provision, were struck down. Thus ill-informed regulation is counter-productive to the regulator's goals. Moreover such decisions can bring costly legal challenges to regulators.

Importantly the current FCC has taken a case by case approach with differential pricing. In fact FCC Chairman Tom Wheeler called the recent T-Mobile zero-rated mobile video program Binge On as "highly innovative and highly competitive."⁶¹ Unsurprisingly and once again, it was advocacy Free Press that complained to the regulator about the program⁶², not consumers, who love it. T-Mobile reported adding more than 8 million net new customers in 2015,⁶³ an impressive result in a mature market such as the US. Moreover this market-based mechanism supports the regulator's goals of supporting market entry, reducing incumbents' market power, and making access more competitive through differential pricing.

In the case of Denmark, all four mobile network TSPs offer content with a differential prices and bundles. Music offers have been in place since 2008. There have been no complaints to the regulator, and the regulator has not found it problematic. Incumbent TDC introduced a proprietary service called Play in which the TSP contracts directly with music producers. All TDC customers get the music offering without additional charge. Telenor partners with TIDAL, noted for offering high fidelity music streaming. When streaming services compete on price, TIDAL attempts to offer sound quality as a differentiator, a valuable market development. This shows that differential pricing can also create new categories and parameters for competition and customer choice. HI3G offers Deezer. Telia has long worked with Spotify.

Spotify, a Swedish company, is one of the few non-American mobile apps which has global significance. As it turns out, the conversion rate of free users to paying users on the Spotify platform is small. But offering premium versions of its service in a location where users need not add new payment details, in the context of their mobile contract, Spotify can increase its conversion rate significantly. Spotify also avoids the billing costs by having the operator take on this function. Thus it's a win for the TSP, Spotify, subscribers, and musicians. Spotify has been instrumental to reduce music piracy, so partnerships can also deter the criminalizing of users for stealing music.⁶⁴ To be sure, premium versions of Spotify are still available on its website for the same price as that offered with telecom providers.

Denmark has been a pioneer in the mobile industry for years, and even with ubiquitous fixed line broadband, about one-tenth of Danes use mobile only for broadband.⁶⁵ Denmark recently unseated South Korea to be named the world's top digital nation by the ITU.⁶⁶ Denmark is the

⁶⁰ <http://assets.fiercemarkets.net/public/mdano/metropcsresponse.pdf>

⁶¹ <http://www.multichannel.com/news/fcc/wheeler-binge-pro-competitive-pro-innovation/395474>

⁶² <http://www.dailydot.com/politics/t-mobile-binge-on-net-neutrality-streaming-plan-zero-rating/>

⁶³ http://www.phonearena.com/news/T-Mobile-says-that-it-added-more-than-8-million-net-new-customers-in-2015_id77203

⁶⁴ <https://press.spotify.com/uk/2013/07/17/adventures-in-netherlands/>

⁶⁵ <https://erhvervsstyrelsen.dk/>

⁶⁶ https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2014/MIS2014_without_Annex_4.pdf

country where the Mobile Virtual Network Operator (MVNO) was born and is considered to have some of the lowest prices for mobile services in the developed world.

Telmore was founded 2000 as an MVNO and was subsequently sold to Danish incumbent TDC, which has maintained Telmore as an independent sub-brand with 700,000 customers. In a country of 5.7 million people, Telmore has a market share of around 11%. The Telmore launch will undoubtedly eat into TDC's lucrative pay TV business which consists of a IPTV and cable. In any case, TDC knows that if they don't cannibalize themselves, their competitors will.

In 2014 Telmore launched a competitive flat rate content package for €33 (including the 25% VAT) which offers unlimited voice, SMS, MMS and 5GB of data traffic via TDC's 4G network. On top of that, customers get a content package of 12 premium services: music, TV, movies, books, magazines and newspapers. The traffic cost is €22 and the content, a €127 value, is €11. The premium services include Telmore Music (music streaming), Mofibo (ebooks), online newspapers (including Ekstra Bladet and Politiken), magazines (including the publishing conglomerate Egmont's titles Euroman, Eurowoman, food magazine Gastro, and home decor Rum). In addition, there are four premium video options: HBO Nordic, TV2 Play, CMore, and MinBio. The services can be consumed on phone, tablet or TV.

This package is also indicative of the serious attempts by content providers HBO Nordic, TV2 Denmark, CMore and Egmont to compete with Netflix in the streaming film and TV market. Netflix has been successful in attracting customers (their exclusive English-language TV shows are popular in Denmark), but their range of new films is limited. CMore owns many of the rights to the latest movies. Not only is Telmore creating competition for Netflix by bundling four Danish streaming services, but it also creates competition for other mobile operators.

While consumers will love Telmore's offer of a great value with a low price, net neutrality advocates will likely call it discriminatory. Indeed they don't like the idea of TSPs offering content. They say its distorts the picture for consumers who should only be allowed to purchase connectivity based on the commodity of data transport cost. However, Telmore has the ability to buy content in bulk which it offers to its customers at a lower price, essentially at a 90% discount.

By not allowing bundling, net neutrality and so-called consumer advocates insist that consumers pay more. They argue that the benefits of unbundled content is greater than the benefit of having a value priced bundle. However when a consumer can get a package of premium content and connectivity for €33/month, it's hardly worth the time to select individual vendors for each of these services. This is the essence of a firm: it exists to lower transactions costs, and to that extent, it saves time for consumers, not to mention offering a greater value in a bundle than the sum of its individual parts.

Another important point about the deal is that it creates competition. It might be described as upstarts and the "little guys" in the Danish market finding a way to take on the powerful global players such as Netflix and Google. Especially important for the online newspaper and magazine companies, the deal offers them an important way to earn revenue as their traditional business models have been crushed by Google.

That Indian TSPs and content providers create similar partnerships and offer data services with differentiated prices is only fitting.

Preliminary Research on Free Basics

There has been much debate about a particular offering in India called Free Basics by Facebook. My colleagues and I are researching this service and other zero rated programs. We are in a race against time and activists to collect information, assess the impact, publish our studies, and critique the methodology and results with peers. I have documented that regulators in a number of countries have implemented bans on zero rating without even conducting regulatory impact assessments to determine whether there is harm to consumers or competition. It is very troubling from the perspective of good regulatory practice and due process. The anti-intellectual environment to pronounce services discriminatory without investigation is reminiscent of the Inquisition which punished Galileo for challenging orthodoxy with his empirical study of the solar system.

While there are many apparent benefits to Free Basics, I see one above all that is important to India. Just like any innovation, the project needs to be tried so that Indian entrepreneurs can learn and launch their own platforms and services. Ideally Indian entrepreneurs will develop killer apps for the Internet for Indians, like sachets for soap. If India can export its digital innovation, following its successful outsourcing model, so much the better. But TRAI will disadvantage the country if it limits the parameters on which market actors can partner and transact.

Free Basics demonstrates the concept of complementary assets that is essential to innovation. When thinking about Internet innovation, David Teece's 1986 paper "Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy"⁶⁸ is a touchstone. Teece observed that most innovations are not products themselves. They have to be combined with complementary assets before they can be marketable products. Such partnerships lower barriers to entry for the innovator and can provide rewards to an innovator upfront.

Teece discusses a number of assets that must be in place before an innovation can take root. They include marketing, specialized manufacturing, and/or after-sales support. He distinguishes the assets into generic, specialized, and co-specialized categories. In the context of the Internet, HTML may be a generic asset, a language that allows innovators to create websites. Just as a factory is needed to make shoes, a mobile application needs a network. Thus a specialized asset may be an operating system that runs on a mobile phone, such as Apple iOS or Android. A co-specialized asset may be a 4G mobile network and an Apple iPhone 6S, its complementary asset. The iPhone features can't be realized unless they are delivered on the appropriate 4G mobile network.

Teece says that different parties have to make partnerships or "join complementary assets" (e.g. content provider and broadband provider) in order to make applications known. Applications on

⁶⁸ David Teece, "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy," *School of Business Administration, University of California, Berkeley, CA 94720, U.S.A.*, June 1986, http://www4.lu.se/upload/CIRCLE/INN005/Teece_Reflections.pdf.

their own have no value, or will almost never be found, unless they are joined with their complementary asset.

Marketing is a type of complementary asset, but Internet marketing can be extremely costly and cumbersome, especially for startups. Moreover essential public services for health, employment, transportation don't have budget for Internet marketing. Facebook being a global and recognized platform can offer Indian startups this advantage. In fact, the services included in Free Basics get far more than Facebook. I hypothesize that the word of mouth alone which local apps receive from being part of Free Basics will make them destinations in themselves.

In fact Facebook bears most of risk in the transaction for Free Basics. The company's advertising models for India is far from established; and Free Basics is major gamble for the company. There is no way Free Basics would survive if users did not believe it to be beneficial. Regulators will miss an important learning opportunity if they ban Free Basics. Moreover, if after the proper investigation, it turns out that Free Basics is harmful, it's relatively easy to stop: Just tell operators to cease and desist the program.

However, it is not possible to regain the lost opportunity for innovation if Free Basics cannot be tried. Thus regulators need to be on guard to avoid the most common pitfall, prohibiting procompetitive conduct that can benefit consumers and innovation, the Type I regulatory error.

Emerging services in India have limited resources to market and distribute themselves to users. Free Basics does three essential things to help local applications and services be known

1. Provide a set of technical standards that optimize the delivery of local apps on feature phones that run on low bandwidth networks.
2. Reduce, if not eliminate, marketing and promotion costs for local app providers
3. Reduce, if not eliminate, transaction costs of local app providers with TSPs.

Key criticisms against Free Basics are that users will mistake Facebook for the Internet itself and that the provision of free Facebook will somehow crowd out other services. First of all, my own data of zero-rated services shows that these things don't happen, but more to the point: There is nothing to stop Indian developers from making their own platforms. Indeed if there ever was a country which had engineers and computer scientists to develop Internet platforms, it is India. Perhaps the single best argument to allow Free Basics is that it will stimulate competition in Internet platforms and mobile innovation made in India.

Consider the the exclusive arrangement between AT&T and Apple to launch the iPhone in 2007, obliging users to some extent to Apple's walled garden. The partnership succeeded to introduce the concept of the smartphone to users, gather critical mass for advanced wireless services, and provide a catalyst to mobile wireless innovation in devices, content, and applications. The world is better off because this partnership took place.

From my understanding of telecom regulation, Free Basics meets the requirements of the TTO.

The TTO describes non-discrimination as, “*No service provider shall, in any manner, discriminate between subscribers of the same class and such classification of subscribers shall not be arbitrary*” (TTO Section IV Transparency and Consumer Protection). More generally the principle of non-discrimination of subscribers means that the offer is available to all comers. To my understanding, Free Basics is available to any subscriber where the platform is enabled by the TSP, as well as any service that would like to be on the platform as long as the service meets the program’s technical guidelines, which apply equally to all services. As such, the platform is agnostic to services. There is nothing exclusive about the Free Basics platform; any app provider can join, and any operator can participate. Moreover Facebook does not pay the operator to offer Free Basics, and the program is free for all users and content providers.

Transparency in telecommunications refers to services that are delivered without change to the end user. Should any changes be made, they are disclosed and do not alter the intention or meaning of any information. The TTO describes Transparency in pricing under Terms and Conditions as

Service providers shall clearly indicate the terms and conditions of the provision of telecommunication services to subscribers which shall not in any manner be inconsistent with the provisions of this Order. Such terms and conditions shall inter-alia include the following:

- a. *Terms and conditions under which such services may be obtained, utilised and terminated;*
- b. *Terms and conditions relating to the use of service, billing, repair, fault rectification and the like;*
- c. *choice of tariff packages available to a subscriber and the procedure available for revising the choice along with the conditions thereof.*

In general transparency in pricing refers to the ability of price to be known to the various actors in a marketplace. In the case of Free Basics, there is not a fee to participate for users, TSPs, or applications.

A tariff that is anti-competitive would be one that runs afoul of India’s antitrust laws and/or stifles or suppress competition among TSPs. It appears that Free Basics does not violate antitrust laws, as far as I know, and if anything, as evidenced by the various tariffs, TSPs are competing with a variety of differential prices on data services to win customers. As such, the presence of Free Basics appears to be pro-competitive.

A predatory price is one that set so low so that it drives other competitors out of the market or prohibits TSPs from entering the market. As any TSP can partner with Facebook for Free Basics, there is no way for any one firm to win a predatory advantage. Free Basics could actually support market entry. For example, an entrant TSP could leverage Free Basics as a ready-made marketing and customer acquisition plan. Marketing and customer acquisition is perhaps the single highest cost for a TSP, comprising up to a quarter of a TSP’s revenue.

Marketing is also a significant cost for app and content providers. Facebook a well-known global brand can significantly lower those costs. Otherwise startups must expend precious resources in advertising.

An ambiguous or misleading price is one that is unclear, uncertain, or one that is not easy to be understood, or easily misinterpreted. In telecommunication, this would be a case where a subscriber could not easily discern the terms and conditions of the offer. A problem could be that receiving a certain benefit required the purchase of separate item or service (bundling, tying) which is not disclosed. Another problem would be the advertisement of one price in one place but at the point of sale, the consumer gets another. A price could be misleading if the intent is to deceive the subscriber with disclosures that are difficult or time-consuming to understand. Another issue may be auto-renewal; consumers may like this feature for its convenience, but many operators disable it to ensure that customers conscientiously pay for their mobile service.

It appears that Free Basics is offered in such a way to avoid any ambiguity or confusion. Subscribers need not even purchase a data plan and can free access the platform even if they have a zero balance.

Thank you for considering my comments for this consultation. My research on differential pricing follows, and a copy of my paper on zero rating is attached.

My research differential pricing

Dynamic Coalition on Net Neutrality

Report 2 Network Neutrality : An Ongoing Regulatory Debate

Net Neutrality Regulation and Broadband Infrastructure Investment:

How to Make an Empirical Assessment p. 82

<https://docs.google.com/file/d/0B4CMvT0NORh9RHhKa2lybThhROU/edit?pref=2&pli=1>

Report 3 Net Neutrality Compendium

Test of the FCC's Virtuous Circle: Preliminary Results for Edge Provider Innovation and BIAS
Provider Investment by Country with Hard Versus Soft Rules

<http://www.springer.com/us/book/9783319264240>

Zero Rating: Do Hard Rules Protect or Harm Consumers and Competition? Evidence from Chile, Netherlands and Slovenia, August 2015. Co-authored with Silvia Elaluf-Calderwood, London School of Economics

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587542

FHI360, Webinar and Presentation on zero rating, September 24, 2015, Washington, DC

<https://mstar.adobeconnect.com/p5lqqr30dt5/>

Telecommunication Policy Research Conference, September 26, 2015, Arlington, VA Presentation

<http://roslynlayton.com/zero-rating-help-hurt-consumers-competition-evidence-chile-netherlands-slovenia/>

Submission to Indian Regulatory Authority, TRAI, April 2015

<http://roslynlayton.com/wp-content/uploads/2015/04/Layton-Elaluf-Submission-to-TRAI-OTT-Consultation-24-Apr-2015.pdf>

<http://roslynlayton.com/message-to-india-on-zero-rating-dont-ban-what-you-dont-understand/>

Internet Governance Forum, November 9-13, 2015 Brazil

My co-author Silvia Elaluf-Calderwood attended 4 events and provided the academic perspective on zero rating, using our paper

Plenary Session on zero rating

<https://www.youtube.com/watch?v=OmyloVASos0> <http://www.intgovforum.org/cms/187-igf-2015/transcripts-igf-2015/2457->

<http://www.intgovforum.org/cms/10thIGFCairsSummary13novFINAL.pdf>

IGF 2015 DAY 2 WK 4 WS 156 Zero rating and neutrality policies in developing countries

<https://www.youtube.com/watch?v=APTRcUon7qQ>

IGF 2015 Day 4 - WK 8 - WS 79 Zero Rating, Open Internet and Freedom of Expression

<https://www.youtube.com/watch?v=EKIzecmhHOA>

Participated in ACCESS workshop on Tuesday 9 am to 12m – gave a presentation on Zero-Rating

Participate in panel IGF – WS 207 Economics of Global Internet Deployment

<https://www.youtube.com/watch?v=cX0JCK-U4us&feature=youtu.be>

CAIDA Sixth Workshop on Internet Economics, December 16-17, 2015, San Diego, CA

<http://www.caida.org/workshops/wie/1512/>

Presented paper on zero rating

Articles in the media

[Is the Internet a Human Right?](#)

[Zero Rating: Who Bears the Cost of Bans](#)

[IGF highlights how developing countries use zero rating programs to drive Internet adoption](#)

[2015's 100 billion question: What drives the mobile app economy?](#)

[Response to the Norwegian Regulator on Zero Rating](#)

[AT&T's Sponsored Data is Nothing New. Here's What Americans Need to Know](#)

ZERORATING

**Do hard rules protect or harm
consumers and competition? Evidence
from Chile, Netherlands and Slovenia**

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AUGUST 15, 2015

INTRODUCTION

Zero rating, the practice of not charging data to a mobile broadband subscriber's contract, is emerging a potent issue in telecom policy. The zero rating of mobile subscriptions has been extant for almost two decades with SMS, MMS, Blackberry Messenger, and WAP services¹ and with smartphone subscriptions for almost a decade with little to no controversy.

Zero rating has become increasingly popular in both developed and developing countries and plays a particularly important role in developing countries, where the costs of mobile data services are higher relative to per capita incomes. About half of all mobile operators employ the strategy in some way.² In fact network operators have used the equivalent of such strategies to incentivize both subscribers and content providers to be part of their network for well over a century.

In the last two years, however, zero rating become a flashpoint in the net neutrality debate.³ Whether a country allows it has become a litmus test for net neutrality supporters to certify the strength of the rules. At issue is whether operators and their customers should have the freedom to create contracts for mobile broadband service based on their preferences and constraints or whether mobile Internet service must be sold in a so-called "neutral" fashion where the only differentiating parameters are speed and megabytes. As the Internet increasingly transitions to mobile platforms, and the likelihood that the next two third of world who yet to come online will do so via mobile, who and how to provision mobile bandwidth has is an important, complex issue.

This paper examines the arguments for and against zero rating and the charges that zero rating hurts competition and consumers. It formulates 5 assertions based on the alleged harms and attempts to test them with empirical analysis from quantitative and qualitative perspectives. The paper reviews the leading database of financial information of the world's mobile operators to see whether the impact of zero rating may be observed, for example with undue financial benefits earned by operators through the use of zero rating. To understand the issue more closely, the paper reviews zero rating in Chile, Netherlands, and Slovenia, countries which have banned some forms of the practice. The paper then examines whether there is harm to consumers and innovation by reviewing a leading database of mobile application market data. The paper concludes by suggesting reasons why zero rating is maligned in telecom policy debates.

¹ "Zero Rated WAP Traffic," Geekzone, September 6, 2005, <http://www.geekzone.co.nz/forums.asp?topicid=4895>.

² Anne Morris, "Report: 45% of Operators Now Offer at Least One Zero-Rated App," *FierceWirelessEurope*, July 15, 2014, <http://www.fiercewireless.com/europe/story/report-45-operators-now-offer-least-one-zero-rated-app/2014-07-15>.

³ John Carbone, "Zero-Rating The Internet, or Why You Should 'Unlike' Facebook: A Partnership of a Different Color.," *Medium*, October 2, 2013, https://medium.com/@john_carbone/zero-rating-the-internet-or-why-you-should-unlike-facebook-ae9f7ec13faa.

Arguments against zero rating

A recent white paper by net neutrality advocacy organization Public Knowledge provides an overview of the arguments against zero rating.⁴ It argues that zero rating violates net neutrality, the principle that all data must be treated equally, and given that zero rating is not a neutral practice, it must be banned. In its place, they assert that only "Affordable Full Access" is acceptable. They claim as well that a zero rated offer is the operator's, not users, choice, and therefore zero rating is discriminatory and wrong. They declare that zero rating limits a user's choice, and that he will only choose zero rated services. They observe that zero rating limits innovation of third party applications and services.

Their opposition to zero rating might also be understood in relation to their advocacy against data caps. Public Knowledge explains,

Zero-rating and data caps may lead to a backslide into the world of scarcity. Data caps have been used as limitations on content usage and designed to create artificial scarcity. This type of scarcity is harmful because of its affect on a user's behavior, specifically regarding users' fear of going over their caps. Playing on users' fears of exceeding their data caps makes cap-exempt regimes more attractive which incentivizes the content providers to pay for prioritization. The potential for data cap abuse in discriminatory ways may outweigh any purported benefit.⁵

A related advocacy paper calls on the Federal Communications Commission to outlaw data caps as part of its new Open Internet Rules.⁶

Though no money changes hands in the bulk of zero rating offers, detractors are concerned about "pay to play" situations, in which they claim startups can't get Internet access, but we have not been able to find such a case. A type of zero rating is called sponsored data in which a content provider subsidizes the cost of a user's subscription. A key application for sponsored data is health care education and delivery. A health provider wants to ensure that low-income pregnant women watch a series of pre-natal videos, a preventative form of health care that improves infant and mother outcomes. Similarly the health care provider is willing to subsidize the entire mobile subscription to encourage adoption of preventative health care and monitoring tools. The cost of avoiding an adverse health event is well worth the price of a broadband. The patient benefits with better health outcome and the health care provider reduces costs.

Another concern is that zero rated programs such as Facebook's Internet.org will create parallel Internets and users will never venture outside of the social network. This situation is examined in the country case studies.

It should be noted that not all net neutrality supporters believe zero rating to be problematic,⁷ however the issue appears to be a growing schism between those who favor soft and hard approaches.

⁴ Carolina Rossini and Taylor Moore, "Exploring Zero-Rating Challenges: Views From Five Countries" (Public Knowledge, July 2015), <https://www.publicknowledge.org/documents/exploring-zero-rating-challenges-views-from-five-countries>.

⁵ Ibid

⁶ Danielle Kehl and Patrick Lucey, "Artificial Scarcity - How Data Caps Harm Consumers and Innovation" (New America, 2015), https://static.newamerica.org/attachments/3556-129/DataCaps_Layout_Final.b37f2b8fae30416fac951dbadb20d85d.pdf.

⁷ Mike Godwin, "What the 'Zero Rating' Debate Reveals About Net Neutrality," *Reason.com*, April 8, 2015, <http://social.reason.com/archives/2015/04/08/nothing-but-net>.

Arguments in favor of zero rating

Some key assumptions in the arguments against zero rating are worth examining. At its heart, net neutrality implies a pure, ideal way in which a user connects, navigates and learns on the Internet, free from influence and intermediaries. However this notion of a neutral experience conflicts with the established theories of the sociology of knowledge⁸ which posit that knowledge is mediated by social constructs. Neutrality is impossible because the Internet, like any medium, is by definition *mediated* or conveyed by intermediaries.⁹ Calling a longing for a “paradise lost”¹⁰ of a golden age of Internet neutrality that never was, net neutrality advocate Alejandro Pisanty critiques the excessive idealism of the net neutrality movement in favor of practical measures. In any case, one shortcoming of net neutrality is that it overwhelming focuses on internet service providers (ISPs) but fails to recognize the influence and non-neutral practices of global platforms, which have significant market power, users bases in the hundreds of millions (if not billions), and far high profitability and market shares than ISPs.

One proof point against neutrality is the popularity of walled gardens. Apple’s hardware and software designs are part of a tightly-controlled, vertically integrated, closed product ecosystem. Apple would not exist if there was the equivalent of network neutrality for computer hardware and software. Similarly “curated” Internet experiences are demanded by users, including The J Net for conservative Jews which blocks offending content; Islamic Mobile¹¹ which offers zero rated mobile access to the Koran and other religious content for Muslims; broadband packages bundled with software and support tailored for the elderly in Denmark;¹² zero rated mobile plans for the World Cup,¹³ and mobile plans designed for grandmothers to message with the grandchildren via WhatsApp.¹⁴

The assertion that all plans must be “affordable full access” assumes that users value all data equally. But many would gladly substitute “low cost limited access” without feeling any twinge of discrimination; rather they feel it is their right. Consumers increasingly demand the ability to pick and choose among the cable channels and eschew paying for the full packages; they see no difference with internet access.

For many users, selecting a provider purely on speed and price is not only difficult, it’s boring. It is preferable for some users to select a plan based upon brand identity,¹⁵ cross-marketing, cross-selling, a particular phone, features, benefits, or functionality they value. In this way, users are looking for operators who best cater to their needs, not necessarily the provider that provides the most data at the lowest price.

⁸ Karl Mannheim. *Ideology and utopia: an introduction to the sociology of knowledge*. Translated by Louis Wirth and Edward Shils. New York: Harcourt, Brace and Company; London: Kegan Paul, Trench, Trubner & Co., 1936

⁹ Christopher Yoo, “Free Speech and the Myth of the Internet as an Unintermediated Experience,” *George Washington Law Review*, Vol. 78, Pg. 697, 2010 University of Pennsylvania, Inst for Law & Econ Research Paper No. 09-33 University of Pennsylvania Law School, Public Law Research Paper No. 09-26 TPRC 2009, September 2009, 77.

¹⁰ Comments by Alejandro Pisanty: “Dynamic Coalition on Network Neutrality” (The Internet Governance Forum, September 2, 2014), <http://www.intgovforum.org/cms/174-igf-2014/transcripts/1923-2014-09-02-dynamic-coalition-on-network-neutrality-room7>.

¹¹ “Free Islamic Ramadan App from Amadan Omantel,” OmanTel, accessed August 5, 2015, http://www.omantel.om/Omanweblib/Individual/Mobile/islamic_mobile_app.aspx?.

¹² NemPC or EasyComputer is a bundled service designed for the elderly in Denmark sold as a monthly subscription. It consists of a (1) software package that becomes a “skin” for computers and devices optimized for the key digital activities for the elderly in Denmark (official Danish government websites for health, home care, pension, digital signature etc) and the national banking security for financial applications, NEMID (Easy Identification); (2) 24/7 call center and online tech support; (3) a broadband connection; (4) connected computers and devices. All the items can be purchased a la carte. The service is popular and expanding to similar segments in other countries.

The packages comes with enhanced security features: “NemPC,” accessed August 12, 2015, <http://nempc.dk/produkter.php?page=nempc>.

¹³ <http://www.fonearena.com/blog/131758/rcom-offers-free-access-to-twitter-during-world-cup-2015-introduces-data-recharge-offers.html>

¹⁴ <http://www.hyderabadass.com/2014/02/20/my-indian-grandmother-convinced-me-to-download-an-app-that-just-sold-for-19-billion/>

¹⁵ Virginia Postrel. *The Substance of Style: How the Rise of Aesthetic Value Is Remaking Commerce, Culture, and Consciousness*. Harper Perennial, 2004.

For many users, their choice of phone is personal statement, and though they may buy the newest model, they use only a fraction of its functionality, perhaps only a third of its features,¹⁶ meaning that a large data plan is not always necessary. Others may have a more standard phone, but use it like a workhorse. Offers such as the zero rated version of WhatsApp¹⁷ by EPlus, a leading Germany MVNO, offers free WhatsApp even when the user has no balance on the account.

Some have no interest to access all internet content, even if it is free. A number of users consider the Internet a mecca for pornography, gambling, piracy, and other digital vice. Many are legitimately concerned that mandated all or nothing offers put them at risk to have their security and privacy compromised, particularly for malware that may be embedded in certain content. Such users may also buy subscriptions that block ads because they do not want to come in contact with offending tracking software, as well as to reduce data consumption from advertisements. It follows that not all broadband offers, zero rated or not, appeal to users equally. Baseball lovers might not buy a zero-rated mobile offer tailored for the football fan, but they are not necessarily worse off because those offers are in the marketplace.

There are some valuable reasons to support zero rating which include but are not limited to positive spillovers, network effects, market competition, and lower prices. Simply put, zero rating is a way to increase the number of users, which increases the value of the network.¹⁸ There is a value to get more people on the network, whether it's through universal service, broadband subsidies, or zero rating. Proponents of corporate social responsibility may recognize zero rating as one way a company makes its product more affordable and available to disadvantaged communities. Orange describes it as one of their CSR initiatives.¹⁹ Proponents of government subsidies may see a role for zero rating, as they know public money is not unlimited.

Eisenach observes the double benefit stimulated by zero rating is that users are both content consumers and creators (e.g. Facebook, Wikipedia, Twitter etc).²⁰

Zero rating can also be a driver of competition in the marketplace and is a model most frequently used by entrant operators. As the case studies will show, zero rating is generally deployed by mobile virtual network operators (MVNOs) and resellers. As they cannot differentiate on network quality or price, they only have marketing and customer service. Zero rating becomes increasingly important for them both to establish themselves against incumbents, and perhaps to offer zero rated forms of customer service applications, similar to an 800 toll free number for support.

Zero rating is a type of price differentiation, the practice of offering the same or similar product to different segments and different prices. Network industries, such as broadband networks, have high upfront costs which are generally fixed for a large set of users. Once established, the cost of incremental output declines. It makes sense, therefore, to charge users with lower willingness to pay a discount, and thus cover the overall costs. Yet price differentiation occurs in industries with low-barriers to entry as well, which led William Baumol to conclude that competition forces firms to adopt price differentiation.²¹ In many cases, firms cannot enter the market without it.²²

¹⁶Leopoldina Fortunati and Sakari Taipale. The advanced use of mobile phones in five European countries. *The British Journal of Sociology* Volume 65, Issue 2, pages 317–337, June 2014
<http://onlinelibrary.wiley.com/doi/10.1111/1468-4446.12075/abstract>

¹⁷ "WhatsApp Ohne Guthaben Und Ohne WLAN," *Eplus*, accessed August 7, 2015, <https://www.eplus.de/WhatsApp>.

¹⁸ Jeffrey Eisenach, "The Economics of Zero Rating," Nera Economic Consulting, (March 2015),
<http://www.nera.com/content/dam/nera/publications/2015/EconomicsofZeroRating.pdf>.

¹⁹ "Committed to Europe - Ensuring an Open Internet for All," *Orange*, April 2015,
http://www.orange.com/en/content/download/30121/838284/version/2/file/Orange_open_internet2015.pdf.

²⁰ Supra

²¹ Baumol, William J., "Regulation Misled by Misread Theory - Perfect Competition and Competition-Imposed Price Discrimination" (AEI-Brookings Joint Center 2005 Distinguished Lecture Presented at the American Enterprise Institute,

It is puzzling why price differentiation is so maligned for mobile broadband access and yet embraced, if not demanded, in many other areas. An eminent example is differential prices for medicines, particularly in developing countries. A recent study²³ by the British government observes,

Adapting drug prices to the purchasing power of consumers in different geographical or socioeconomic segments could potentially be a very effective way to improve access to medicines for people living in low and middle-income countries. A well-implemented differential pricing system could also lead to increase in sales for pharmaceutical manufacturers.

Price differentiation is commonplace in ticket sales for movies, sports, and cultural events. For example discount tickets for students and the elderly are a matter of course, as are reduced prices for off-peak performance times. With regard to transportation, whether bus, plane, train, or ferry, reduced ticket prices are also offered to certain segments of the population. Additionally there are discounts for early purchase, off peak purchase, and so on. Many plan their visits to restaurants to take advantage of early bird specials, late night specials, half-priced happy hour, and so on.

Even the US Federal Trade Commission²⁴ recognizes that loss leader pricing strategies can be competition enhancing, the practice of selling one product at below cost to stimulate related products and services. For example, supermarkets may stock bread and milk at or below cost but earn revenue on other items. Pubs may sell low-priced food but earn a profit on alcohol. Many establishments may offer low cost entertainment but earn revenue on refreshment.

Similarly the freemium²⁵ model is widely practiced in digital industries. This consists of a free digital offer for software, media, games, or other service, but a charge or premium charged for special features, increased functionality, or virtual goods. LinkedIn, Amazon, online newspapers, and countless other companies offer freemiums. It is not logical that such companies should be allowed to offer for free—or zero rate²⁶—certain aspects of their service to stimulate adoption and yet broadband providers cannot.

September 22, 2015), http://www.aei.org/wp-content/uploads/2014/03/-regulation-misled-by-misread-theory_105820523401.pdf.

²² Baumol explains, "Not only will each firm be forced to adopt discriminatory prices, but each firm is likely to be forced to adopt a unique vector of prices, each of which is dictated by the market. Thus, this paper seeks to show why price discrimination may occur—and may occur frequently—not despite relative ease of entry (or other competitive pressures) but because of it. In fact, I will show that in highly competitive markets, firms may have no choice: Competition can force them to adopt the vector of profit maximizing discriminatory prices. Moreover, the second central proposition of the paper argues that, in equilibrium, these discriminatory prices are not haphazard in their welfare properties but will generally constitute a Ramsey optimum—satisfying the second-best welfare attributes of revenue constrained economic welfare. Neither conclusion means that the public interest requires all industries that employ discriminatory prices to be exempted automatically from regulation. But it does imply the converse: that such industries should not automatically be deemed appropriate objects of regulatory oversight."

²³ Prashant Yadav, "Differential Pricing for Pharmaceuticals: Review of Current Knowledge, New Findings and Ideas for Action" (MIT - Zaragoza International Logistics Program Zaragoza Logistics Center, August 2010), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67672/diff-pricing-pharma.pdf.

²⁴ Federal Trade Commission and Patrick DeGraba, *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers* (Pennsylvania Press, 2013).

²⁵ Lukin, Jarid, "Jarid Lukin (@jblukin) | Twitter," November 7, 2014, <https://twitter.com/jblukin>.

²⁶ Michael Katz, comments: "Should Wireless Technologies Be Regulated Differently?," ISOC-DC TV - Live Events, (October 15, 2014), <http://www.isoc-dc.org/isoc-dc-tv/>.

ANALYSIS

This paper has covered arguments for and against net neutrality. This section discusses mobile operators' financial performance in specific countries and the issue of Internet traffic at exchange points and the backbone. Zero rating comprises one element of an operator's sales and marketing strategy which it uses to earn revenue. Such revenue is necessary to be viable to make network investments and upgrades. Thus the ways in which bandwidth is paid—whether by end users, content/application providers, or both—is both important and complex.

The analysis attempts to test the following assertions made by the opponents of zero rating.

1. The operator that offers zero rating will win market share.
2. The zero rated service will win market share.
3. The presence of zero rating will preclude the emergence of new applications and services.
4. Users do not go to non-zero rated content. If Facebook is free, they don't venture beyond it.
5. Operators that zero rate their own content foreclose other content.

This section provides an overview of a large financial database for mobile operators and then drills down to three countries which have specifically banned zero rating practices. Case studies are offered to describe the factors which emerged to make zero rating illegal. Thereafter a brief review of the tests of harm is offered. Finally the assertions of zero rating detractors are tested using data on mobile applications. The Merrill Lynch Bank America Wireless Matrix is a database of collected publicly available financial statements from the world's mobile operators collated and organized by country with on a set of metrics over a period of time. For some measures data is not available, so that table is blank for the particular country.

Financial Analysis

The data examined covers the period 2007 to 2013. The analysis is started in 2007, the year in which the iPhone was launched and because it marks the shift to the modern era of broadband data subscriptions sold for smartphones. We focus on Year on Year (YoY) increments and assume that user demand for digital service will drive the purchase of zero-rating contracts and interest to access sites.

It should be noted that some data, particularly for developing countries may have been collected or estimated with heterodox methods and may be inconsistent or incomplete. We note any items that we believe to be material.

The following countries were chosen because of their dynamic emerging economies, fast development of mobile services, the existence of zero-rating contracts, and in some cases, the presence of net neutrality rules. For the data set, we tried to identify per country whether zero-rating was implemented, the correlation with the year in which smartphones were introduced to the local market, and the type of tariffs available.

The block of Latin America countries (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) in the study share a common geographical location and multiple similar cultures, however the history of mobile networks is quite different in each and their net neutrality policies.

Argentina is a country with one of the longest-running commercial mobile network (1989), with the use of smartphones and data contracts established around 2010-2011.

Brazil and Mexico follow with similar numbers. The other countries have been able to fast forward their assimilation to digital services in the last three of four years.

As shown in table 1, the some countries had years of continuous expansion but others such as Colombia and Peru, the saturation of the urban market has reduced expansion. Mature markets such as Brazil and Argentina are still growing, but at low rates.

For comparison a set of Africa countries were selected: Algeria, Egypt, Nigeria and South Africa. They have been chosen because of the faster development of mobile networks, adoption of mobile payments, and clear drive towards the generalized mobile technology for both private and public use.

South Africa is one of the African countries with the oldest mobile networks, followed closely by Egypt and Nigeria. The rapid adoption and success of mobile networks in Africa is well documented,²⁷ though it appears that hyperfast growth has slowed since 2010. Growth in subscribers remains above 10% per year.

The explosion of mobile networks in Latin America and Africa parallels a reality where a significant proportion of population still lacks basic access to food, clothing and shelter.²⁸

	%	CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	32.7%	30.2%	15.0%	20.7%	21.9%	18.9%	18.0%
	Brazil	27.3%	20.8%	9.1%	10.0%	11.9%	6.3%	1.3%
	Chile	29.4%	16.7%	-5.9%	17.1%	15.1%	10.3%	5.0%
	Colombia	22.8%	3.8%	-1.9%	7.3%	14.7%	7.5%	4.4%
	Mexico	22.3%	11.6%	3.7%	10.0%	0.4%	9.1%	-1.2%
	Peru	31.5%	22.3%	6.7%	13.7%	13.3%	10.1%	8.7%
Africa	Algeria	14.9%	3.3%	-1.4%	1.9%	12.5%	15.2%	3.7%
	Egypt	31.2%	30.9%	9.5%	6.8%	-1.0%	4.7%	4.5%
	Nigeria	56.4%	26.8%	21.6%	-3.5%	31.4%	6.4%	4.6%
	South Africa	16.0%	5.4%	9.5%	12.4%	4.2%	4.2%	-1.8%

Table 1: The growth of subscribers Year to Year (YoY) in the period 2007 to 2013.

One interpretation of table above is that as adoption slows, incentives such as zero rating can help get more people on the network. It might also reflect a point of diminishing marginal returns. All of those who have had the wherewithal to adopt mobile broadband to date have done so. In order to get the next tranche on board requires a stimulation to demand, either in the form of incentive (lower price, zero rating etc) and/or increase in the user's interest, skills etc. It might be observed that zero rating offers a self-reinforcing way to educate new users about the Internet; they get a free trial to do something they haven't used before. Getting new customers on the network also helps to cover costs and provide revenue for further investments.

Table 2 is a summary of the mobile network operators in the regions studied. All these companies are registered in local and international stock markets and many have strategic partnerships with telecom operators from outside the region such as Telefonica, Telecom Italia and others.

²⁷ GSMA. "Women&Mobile: A Global Opportunity - A Study on the Mobile Phone Gender Gap in Low and Middle Income Countries." London, UK: GSMA Development Fun -Cherie Blair Foundation for Women, 2010. http://www.gsmworld.com/images/mwomen_pr_assets/women_mobileReport.pdf.

²⁸ GSMA, and Deloitte. "Brazil Mobile Observatory." London: GSMA, 2012. http://www.gsma.com/spectrum/wp-content/uploads/2012/10/gsma_brazil_obs_web_09_12-1.pdf.

Country	Telecom providers
Argentina	Telecom Argentina (TI), Movistar Argentina (TEF), Movicom (BLS), Claro (AMX), NIHD
Brazil	Vivo (Telefonica), TIM Brazil (TI), Claro Brazil (AMX), Oi (PT), NIHD, Other
Chile	Movistar Chile (TEF), Entel Chile, Bellsouth (CHL), Claro Chile (AMX)
Colombia	Comcel (AMX), Movistar Colombia (TEF), Tigo Colombia (MICC)
Mexico	Telcel (AMX), Iusacell, Movistar Mexico (TEF), Unefon, NIHD
Peru	Movistar Perú (TEF), Claro Perú (AMX) , BellSouth, Nextel
Algeria	Djezzy, Mobilis, Ooredoo
Egypt	ECMS (Mobinil), Vodafone, Etisalat Egypt
Nigeria	MTN, Airtel (Bharti), Globacom, Etisalat, Others
South Africa	Vodacom, MTN, Cell C, Telkom

Table 2: Mobile providers by country.

Although the growth is impressive in the countries selected, the use of contracts differ according to local conditions. There are many niche markets depending which sector of the population is experiencing fast economic growth.

Strategies for sales and marketing differ and impact service revenue growth. Because of the diverse economies and inflation rates, we compare the percentage of year to year expansion in the local currency. For all countries in the study, service revenue as a whole has been declining for years. This is part of a larger global trend for operators which are transitioning from a paradigm of selling voice and messaging to one of selling data.

The shift is not necessarily profitable for operators, even though the amount of data consumed by end users is generally increasing. Net neutrality advocates assert that operators should simply compete on data, but most operators face heavy price competition because of multiple providers in the marketplace. Additionally their largest source of revenue, voice and messaging, has been significantly reduced by the proliferation of free alternatives such as Skype, WhatsApp, Facebook Messenger etc. Thus net neutrality rules are a double-whammy for operators; not only are they not allowed to manage their networks with increasing data demands, they cannot make offers to cover their costs.

		CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	32.7%	30.2%	15.0%	20.7%	21.9%	18.9%	18.0%
	Brazil	27.3%	20.8%	9.1%	10.0%	11.9%	6.3%	1.3%
	Chile	29.4%	16.7%	-5.9%	17.1%	15.1%	10.3%	5.0%
	Colombia	22.8%	3.8%	-1.9%	7.3%	14.7%	7.5%	4.4%
	Mexico	22.3%	11.6%	3.7%	10.0%	0.4%	9.1%	-1.2%
	Peru	31.5%	22.3%	6.7%	13.7%	13.3%	10.1%	8.7%
Africa	Algeria	14.9%	3.3%	-1.4%	1.9%	12.5%	15.2%	3.7%
	Egypt	31.2%	30.9%	9.5%	6.8%	-1.0%	4.7%	4.5%
	Nigeria	56.4%	26.8%	21.6%	-3.5%	31.4%	6.4%	4.6%
	South Africa	16.0%	5.4%	9.5%	12.4%	4.2%	4.2%	-1.8%

Table 3: Service Revenue Growth. % calculated on local currency.

Our table 4 shows a different perspective, but data is available only for a few countries. While total service revenue is declining, average revenue *per user* (ARPU) is growing. This demonstrates that users want to access to more applications and services with their mobile broadband subscription. It would seem to be the proof that assertion #4 is false, that users do not go to non- zero rated content. This chart clearly shows that subscribers

are increasingly paying for data subscriptions. However this chart does not tell us what percentage of any operator's subscriber base has been transitioned to data packages. To be sure, operators want to increase the value of any single customer, but the rate of success likely varies across operators and with the sophistication of their networks. It is also important to note that these figures are not necessarily synchronized with profitability. Though any one customer could be more profitable for an operator with a data package, it is not necessarily the case that selling data is more profitable for operators as traditional SMS or voice was before.

		CY07	CY08	CY09	CY10	CY11	CY12	CY13
Latin America	Argentina	18.8%	24.9%	28.9%	31.4%	36.6%	40.8%	45.8%
	Brazil	7.4%	9.2%	12.4%	15.7%	18.7%	22.5%	26.3%
	Chile	N.A						
	Colombia	N.A						
	Mexico	13.3%	15.9%	20.3%	24.2%	29.7%	35.0%	39.0%
Africa	Peru	N.A						
	Algeria	N.A						
	Egypt	4.6%	6.6%	8.5%	9.8%	11.0%	12.5%	13.7%
	Nigeria	3.5%	4.0%	5.0%	6.0%	7.4%	21.0%	22.7%
	South Africa	9.9%	12.8%	15.6%	19.0%	22.0%	26.4%	30.2%

Table 4: Monthly ARPU YoY Growth.

Smartphones in 2007 were extremely expensive for users of the countries in this analysis. However smartphones have significantly fallen in price (as well as used smartphones have become available), something that helps make data packages more affordable. Though some data is missing the following table, it shows the relative success that operators' have made in transitioning to selling data instead of voice and SMS. Operators in these countries still earn more than half of their revenues from voice and SMS, in many cases on 2G infrastructures. This presents a challenge and opportunity.

The challenge is meeting the expectation of the international community that operators should deploy broadband infrastructure, even though relative demand for broadband is low and the revenue to support it has yet to be earned. The opportunity is finding the business model to bridge the gap. This is where zero rating, along with other types of offers come into play.

To explain the situation, a column showing the percentage of the population using the Internet is added. Though the 2014 operator data is not available, the comparison between the 2013 percentage of data service revenues compared to the 2015 estimated internet adoption provides some indication of the opportunity for operators to sell mobile broadband to people who have yet to adopt the Internet, provided offers can made in a compelling way. In the countries below, at least a quarter, if not half, of the population has yet to come online. This population generally represents people of lower income and perhaps education, so it is of particular importance that offers be low-cost and accessible. There should not too be many contract restrictions or signup requirements (e.g. bank references etc); as such, prepaid offers are so important.²⁹ For those who

²⁹ Roslyn Layton, Role of Prepaid in Africa, Chapter in The African Mobile Story, River Publishers, 2014.

have never tried the Internet, having an incentive such as a free trial, will support adoption.

More generally the mobile broadband penetration in the developing world is 39.1 persons for every 100. This exceeds the number of people who have computers and Internet at home, roughly one third of the population of the developing world.³⁰

	CY07	CY08	CY09	CY10	CY11	CY12	CY13	% Pop using Internet 2015 ³¹
Argentina	18.8%	24.9%	28.9%	31.4%	36.6%	40.8%	45.8%	64.70
Brazil	7.4%	9.2%	12.4%	15.7%	18.7%	22.5%	26.3%	57.60
Chile	N.A	72.35						
Colombia	N.A	52.57						
Mexico	13.3%	15.9%	20.3%	24.2%	29.7%	35.0%	39.0%	44.39
Peru	N.A	40.20						
Algeria	N.A	18.09						
Egypt	4.6%	6.6%	8.5%	9.8%	11.0%	12.5%	13.7%	31.70
Nigeria	3.5%	4.0%	5.0%	6.0%	7.4%	21.0%	22.7%	42.68
South Africa	9.9%	12.8%	15.6%	19.0%	22.0%	26.4%	30.2%	49

Table 5: Data % of service revenues

Another challenge in the provision of mobile services is that prices generally have no relation to fixed costs such as spectrum, and in some cases, operating costs such as traffic delivery. Mobile service markets are so competitive, that spectrum is generally a sunk cost. Another issue for mobile operators in developing countries is that users disproportionately request data from far away countries. This also adds to the challenge of pricing mobile broadband competitively and affordably.

Traffic analysis

An important issue that is overlooked in the discussion of zero rating is an economic analysis of the disproportionately high level of traffic generated by the top 10 mobile applications and the aggregation of traffic at exchanges and backbones. Net neutrality wants to ensure equal access to sites and services for end users, but such performance can only be achieved by keeping good provision, upgrade, and maintenance of the telecom network, which implies costs and relationships between the pricing of services and expenditure.

How traffic is aggregated and the impact the transport cost of data through backbone networks is transferred to users is not clearly understood, nor is such vital information

³⁰ "Core Household Indicators" (ITU World Telecommunication/ICT Indicators Database., 2015), <http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/CoreHouseholdIndicator.xls>.

³¹ Metadata for Percentage of Individuals Using the Internet," 2015, http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/Individuals_Internet_2000-2014.xls.

readily available. Not having the information or mischaracterizing the situation can lead to false conclusions. Some basic trends are known however and are helpful to review.³²

Video is a huge and growing portion of the traffic delivered to mobile devices, comprising more than two-thirds of all traffic in some countries. Significantly, just two entities, Google/YouTube and Netflix take an overwhelming share of this traffic.

Data centers are integral to the way the Internet works, not only because of the prevalence of virtualization and cloud services, but also because they provide the means to structure traffic worldwide. This puts considerable power in the hands of a few big players, including Google, Facebook, and Amazon. Akamai, Level 3, and other content delivery providers are important, as are the data centers of banks and telecom providers.

The structure of the traffic flows differ significantly from the archetypal model of the three layered internet (infrastructure, transport, service/data). Internet exchanges and private contracts for peering and transit re-draw routing worldwide. The structure today is more modular and "platformized." The idea of content/application providers passively accessing transport networks has given way to the reality of proactive approaches in which content provider develop individualized solutions and relationships for advanced, dynamic delivery and competitive differentiation. Content providers avail themselves to non-neutral pricing as a matter of course. This means that Internet service providers (ISPs), including mobile operators, simply don't have the market power that net neutrality advocates claim.

Differential treatment of traffic is the norm, and this is what content providers want when they purchase traffic delivery solutions from a range of intermediary providers.

Decisions about transit and data centers by content/applications providers have material impacts to end users. For example, people in Latin America use global (American) platforms such as Google, Facebook and Twitter to talk with people around the corner. How those platforms are provisioned locally and regionally has technical, regulatory, and geopolitical implications. For example Google built a CDN in Chile, allowing traffic to be redistributed from the Miami internet exchange. This improves the experience for its end users in Chile.

In Europe, the practical evidence shows that Europeans largely use American platforms to communicate with other Europeans. Unfortunately the Amsterdam Internet Exchange (AMIX) has not been forthcoming to allow academics to measure or test these traffic trends.³³

³² Weller, Dennis, and Bill Woodcock. "Internet Traffic Exchange: Market Developments and Policy Challenges." OECD Digital Economy Papers, No. 207, OECD Publishing., 2012. <http://www.internetsociety.org/doc/weller-d-and-b-woodcock-2012-internet-traffic-exchange-market-developments-and-policy-challenges>.

Liebenau, Jonathan, S. Elaluf-Calderwood, and P. Karrberg. "European Internet Traffic: Problems and Prospects of Growth and Competition - White Paper." London: London School of Economics and Political Science, 2013.

Liebenau, Jonathan, S. Elaluf-Calderwood, and P. Karrberg. "Strategic Challenges for the European Telecom Sector: The Consequences of Imbalances in Internet Traffic." *Journal of Information Policy* 2 (2012): 248–72.

³³ Silvius, Stephanie. "Internet Exchange Points: A Closer Look at the Differences between Continental Europe and the Rest of the World." Amsterdam: EURO-IX, 2011.

Case studies of zero rating in Chile, Netherlands, and Slovenia

Given that the country level financial information offers limited opportunity to address the five assertions, case studies are offered to give further insight and context. Chile, Netherlands, and Slovenia are three countries with hard net neutrality laws and bans on forms of zero rating. This section explores a number of factors and dynamics related to the banning of zero rating. It generally starts with a belief amongst net neutrality advocates that regulators are not doing enough to enforce net neutrality rules. While advocates recognize that blocking and throttling either don't happen or are rare occurrences, it is seen as urgent to address what they consider a growing problem, the presence of price differentiated offers in the marketplace. The net neutrality organizations make formal complaints to regulators and competition authorities with a similar argumentation: The country has a net neutrality law requiring all data to be treated equally. Ergo zero rating is a violation.

In each of the three countries, the first response of telecom regulator was that zero rating is not a violation. There seems to be a reluctance of the regulator to rule that zero rating is discriminatory, whether for a recognition of its benefits, a waste of political capital on an insignificant issue in light of more pressing priorities; or even misgiving about net neutrality itself.

Undeterred, net neutrality advocates step up the campaign against zero rating by writing blogs and enjoining sympathetic journalists to take up the story. In each of the three countries, advocates have succeeded with bans. However, the rulings decisions are flawed, according to net neutrality advocates. Bans are not uniform across all offers and providers. Many stakeholders complain that efforts made to provide more clarity end up creating more confusion. Moreover regulators find themselves in embarrassing situations in which they have to backtrack on judgements, correct earlier statements, and mediate moral decisions about why zero rating is ok for Wikipedia but not for WhatsApp.

We find as well that net neutrality advocates and organizations are closely tied to the regulatory authority and government. In one case, a net neutrality advocate rises to a position of regulatory power to implement the zero rating ban himself. Victory is declared by net neutrality advocates when operators raise or remove data caps.

Chile

In 2010 Chile was the first country in the world to make a net neutrality law.³⁴ The effort was an outcome of many years of lawsuits between operators and attempted telecom regulation that was ultimately found unlawful. To make rules, the country's communications laws needed to be updated to vest the proper authority within the telecom regulator, a situation currently in play in the US, as the FCC faces lawsuits for its attempt to make net neutrality rules. The situation is indicative of outdated communications laws that Congress needs to modernize. But just because net neutrality rules are in place does not necessarily mean the issue has more clarity. The Chilean case illustrates that rules can create more disputes.

Virgin Mobile launched an MVNO on Movistar network's in Chile in April 2012. Because virtual operators resell network access, they cannot differentiate on speeds or quality, so they must differentiate on marketing, customer service, and other non-network parameters. As such zero rating is an important tool for MVNOs.

Virgin Mobile Chile used a common marketing strategy employed by MVNOs: paint the established operators as dinosaurs and celebrate customers as "rock stars". "Chileans

³⁴ *Consagra el Principio de Neutralidad en la Red Para Los Consumidores y Usuarios de Internet*, General de Telecomunicaciones Ley 18.168 (August 26, 2010), <http://www.leychile.cl/Navegar?idNorma=1016570&buscar=NEUTRALIDAD+DE+RED>

can now get fair flat rate calling and great Data bundles and "Anti-Plans"³⁵ with everything they need. And Virgin Mobile Chile throws in extra goodies like Unlimited Whatsapp when you buy data. The Rock Star customer support team has brought a new level of care to the Chile market, and customers are the most satisfied in the market," notes the operator's Chilean website.³⁶

A year after launch, the company had 200,000 customers which the CEO owes to "a simple offer, without asterisks, flat rate data, convenient bags of minutes, and a call center."³⁷ Over three years, the company earned 1% of the Chilean market and is on track to have 400,000 customers by the end of 2015, half of which are post-paid.³⁸ Other explanations for its success include laws in 2012 that allow number portability and unlocking of phones.³⁹ Virgin Mobile has extended its concept to Mexico and Colombia and has a goal of winning 5% of the Chilean market.⁴⁰

To be sure, with 70 percent of its customers aged 15-35, of which 70% have data plans and 85% have smartphones, WhatsApp would be one of the popular apps to include in an offer. In response to Subtel's decision to ban zero rating, the CEO explained,

Well, certainly it had an impact because we had to revise our offer. We have not eliminated the promotion, but we had to change it. Back when you bought a package of data, we gave free Whatsapp for the 30 day duration of the package, and if a customer left without any balance, the customer could continue using WhatsApp to the end of the period. Now we continue offering this service for free, that is, that the use of data Whatsapp not count toward the package, but the moment in which the client runs out of contract data, he cannot continue using WhatsApp. That is, customers have Whatsapp free while having data package.⁴¹

However the CEO asserts that zero rating has less importance in light of other activities, which include its distribution strategy through the large retail chains Ripley and Falabella and wholesaling with small shops. Virgin Mobile operates its own distribution channels with kiosks in subway stations and its website. The country also adopted a framework to support MVNOs⁴² and made a law to ensure number portability. The success of Virgin Mobile cannot be attributed directly to its zero rated offer.

It would be expected that net neutrality advocates would appreciate such service-based competition in the market, but no. Neutralidad Sí! in concert with CivicoONG complained to the regulator that Virgin Mobile's offer of free WhatsApp was an attack on the law of net neutrality. They asserted that Virgin Mobile is creating a disincentive to use competing messaging services such as Line and Telegram. Correspondence between Neutralidad Sí and the regulator was reviewed. The original complaint, No. 324923 posted on January 29, 2013, has been removed,⁴³ but the rest of the exchange remains.

In the correspondence, the regulator reiterated that the Chilean rules state that operators cannot arbitrarily block, interfere, discriminate, hinder or restrict the right of any Internet user to use, send, receive or offer any content, application, or legal service. Offers cannot arbitrarily distinguish content, applications, or service based on source or

³⁵ Anti-plan was the idea of an offer that is not constrained to the traditional telecom contract, e.g. long contract life, termination fees, extra charges etc

³⁶ "Virgin Mobile Chile," [Virgin.com](http://www.virgin.com/company/virgin-mobile-chile), accessed August 5, 2015, <http://www.virgin.com/company/virgin-mobile-chile>.

³⁷ "Virgin Mobile Cuenta En Chile Con Más de 200.000 Clientes," *CIOAL The Standard IT*, April 17, 2013, <http://www.cioal.com/2013/04/17/virgin-mobile-cuenta-en-su-primer-ano-en-chile-con-mas-de-200-000-clientes/>.

³⁸ Markus Zallman, "Virgin Mobile Chile Targets 400,000 Mobile Subs by End- 2015," *MVNO Dynamics*, April 22, 2015, <http://www.mvnodeynamics.com/2015/04/22/virgin-mobile-chile-targets-400000-mobile-subs-end-2015/>.

³⁹ "Virgin Mobile Chile's MVNO Signs up 36,000 Subscribers," *MVNO Dynamics*, July 24, 2012, <http://www.mvnodeynamics.com/2012/07/24/virgin-mobile-chiles-mvno-signs-up-36000-subscribers/>.

⁴⁰ Leticia Pautasio, "Queremos Alcanzar 300.000 Clientes Al Cierre de 2014," *Telesemana*, April 13, 2014, <http://www.telesemana.com/blog/2014/08/13/queremos-alcanzar-300-000-clientes-al-cierre-de-2014/>.

⁴¹ Ibid

⁴² Ibid

⁴³ Civico ONG, "Denuncia Por 'Whatsapp Gratis' En SUBTEL," Storify, accessed August 5, 2015, <http://storify.com/ongCivico/denuncia-por-whatsapp-gratis-en-subtel>.

owner. The legislation still allows operators to manage traffic within a set of constraints, provided that the actions do not impact competition. The purpose of the law is to ensure that services, applications, and content are offered without discrimination to the time the user access is allowed without arbitrary restrictions and that access be provided in a competitive way.

The offer by Virgin Mobile and WhatsApp did not prevent access to other applications, according to the regulator. It only releases metering for the one application for the period of the offer, and therefore does not constitute a breach of net neutrality. The user can also access the application even when he has no balance.

Neutralidad Sí! responds the same day. They extrapolate that it will lead to situations in which users are coerced with rebates and discounts to use "search engine X" or "video provider Y". Secondly they object to the idea that "traffic management and network management" do not harm competition. They note that if access to WhatsApp is free then it effectively harms other competitors because to access to them must be paid.

The regulator replies that it has revisited the net neutrality law and reiterates the points. As for the threat described, that an operator is favoring one application over another, this is not case because the offer is not restricting the right of users to access the Internet, which is the point of the law.

Neutralidad Sí! responds with a reference to Article 19 of the Civil Code: "When the meaning of the law is clear, its wording be disregarded under the pretext of consulting its spirit." They reiterate the words "discriminate" and "offer" that exist in the net neutrality law and the Royal Academy of the Spanish language definition of discrimination being "select excluding". They suggest that if other services receive the same treatment as WhatsApp, the arbitrary nature of the discrimination will be eliminated.

The complaint was brought to the Secretariat of the Regulator and then closed with the explanation that the regulator had provided an adequate explanation. The Neutralidad Sí! blog says that the regulator's response was "awkward" and did not rule on the merits.

It appears that the issue gets no further attention until a new chair comes to the telecom regulator. Pedro Huichalaf, former head of related net neutrality advocacy organization ONGMeta, took office in March 2014.⁴⁴ The ban on zero rating of selected social media sites is pronounced illegal the following month.⁴⁵

The official decision notes that companies are not punished for offering zero rating, but are invited to end the practice, or to provide the benefits to all traffic of the same class. Some confusion emerged once the decision was released as to nature of the word "arbitrary", whether traffic is treated an an "arbitrary" or deliberate way. At the time of the ruling, Wikipedia Zero was not yet available, but the rule ostensibly outlawed it. Wikipedia noted the Chilean decision is "example of when net neutrality — which is an important principle for the free and open internet — is poorly implemented to prevent free dissemination of knowledge."⁴⁶ The regulator then needed to relent and allow Wikipedia to be an exclusive zero rated service, noting that there is a clear difference between Wikipedia Zero and unlimited social messaging.⁴⁷ Neutralidad Sí called the exception for Wikipedia, the "last unicorn of the 'good Internet'", a double standard.

Neutralidad Sí appears to be dissatisfied because the regulator while pronouncing the practice illegal, does not do enough to prosecute or punish telecom providers for the

⁴⁴ "Renuncia de Pedro Huichalaf Por Nominación Como Subsecretario de Telecomunicaciones," ONG META, accessed August 5, 2015, <http://ongmeta.cl/renuncia-de-pedro-huichalaf-por-nominacion-como-subsecretario/>.

⁴⁵ *Zero Rating of Such Social Media as Pronounced Illegal*, 2014, http://www.subtel.gob.cl/transparencia/Perfiles/Transparencia20285/Normativas/Oficios/14oc_0040.pdf.

⁴⁶ Yana Welinder, "[Wikimedia Announcements] [PRESS RELEASE] Airtel Offers Nigerians Free Access to Wikipedia," June 1, 2014, <https://lists.wikimedia.org/pipermail/wikimedia-l/2014-June/072336.html>.

⁴⁷ <http://www.vpschile.cl/servidor-virtual/3821/1/internet/wikipedia-zero-avanza-en-chile.html>

practice. The organization says that the situation is contradictory and calls on the regulator to clarify. The comments under the blog blame Neutralidad Sí for making the zero rating complaint in the first place. The commenter notes that the ban hurts poor people who can't communicate with their family through WhatsApp. Another comment refers to the slippery slope of ill-defined rules such as the ban on zero rating, what may be legal today will not be tomorrow and vice versa. Additionally he faults the organization for not recognizing how internet companies (Facebook) take advantage of users' information with free services. Another commenter criticizes the net neutrality rhetoric of "free Internet" because technically a zero rated offer is free access.

Earlier heads of the Chilean regulator criticized the ruling. On Twitter, one called it "populist idiocy from a small group of activists. A new form of regulatory capture."⁴⁸ Another penned an opinion piece in the leading newspaper titled "positively discriminatory, but not arbitrary, in favor of the poor."⁴⁹

To put the issue into perspective, we reviewed official materials of the Chilean telecom regulator. Along with the consumer authority, it publishes an annual report of complaints related to telecommunications. The report⁵⁰ for 2012-2013 is telling in what consumers complain about; which companies; and how complaints are resolved. Specifically we were interested to see whether consumers complained to the regulator that zero rating is harmful.

Complaints about mobile communications make up about half of all the complaints in the country for the period. About 2 of every 200 mobile subscribers complain. For mobile communications, the single largest set of complaints is about phones (13%) and problems with phones connecting with networks leading to slow speeds (11%). Thereafter the bulk of complaints (56%) have to do with the contracts themselves, issues of customer care information is faulty, wrong or inadequate; disputes on charges for additional services; charges made for services not used; contract termination; term of warranty for phone; lack of accurate and timely information; and billing cycle change. In fact the largest single complaint across all telecommunications networks is incorrect charges, 27%. The report notes that complaints were resolved at least two-thirds of the time for all but one mobile operator. The report notes that total complaints declined 3.6% from 2012 to 2013.

Importantly the report does not list specific net neutrality or zero rating complaints, and if they exist, they do not amount to any more than 1.8% of complaints, the smallest category of any collected complaint. It would be expected that if zero rating was so destructive to consumer welfare and competition that it would garner at least 1.8% of complaints to the regulator. Moreover, if the zero rated version of WhatsApp was hurting competition, it would be expected that Facebook Messenger, Line, Telegraph, and other services would have complained. No evidence of this can be found on the regulator's website. The only complaint we could find was that of Neutralidad Sí!

Chilean consumers increasingly demand content that is not Chilean. It is housed in far locations and takes time to reach Chile. This can also be observed that when one is in Europe accessing a Chilean website, one may experience latency. Sandvine notes,

In Latin American mobile networks, two companies, Facebook and Google, now control over 60% of total traffic in the region. This dominance is driven by the popularity of low cost Android smartphones in the region as well as Facebook's

⁴⁸ "Sobre Redes Sociales Gratis (with Image, Tweets) · ongCívico," *Storify*, accessed August 5, 2015, <http://storify.com/ongCívico/sobre-redes-sociales-gratis>.

⁴⁹ Pepe Huerta, "Redes Sociales Gratis Y La Circular de SUBTEL. ¿Dónde Surgió El Problema?," *Neutralidad Sí*, June 2, 2014, <http://www.neutralidadesi.org/2014/06/02/redes-sociales-gratis-y-la-circular-de-subtel-donde-surgio-el-problema/>.

⁵⁰ "Servicio Nacional Del Consumidor | SERNAC Y SUBTEL Dan A Conocer Ranking de Reclamos En El Mercado de Telecomunicaciones," Sernac, (January 24, 2014), <http://www.sernac.cl/sernac-y-subtel-dan-a-conocer-ranking-de-reclamos-en-el-mercado-de-las-telecomunicaciones/>.

decision to embrace social networking and messaging through their acquisitions of Instagram and WhatsApp. With such concentration, corporate decisions by these major players, like Facebook's decision to auto-play videos uploaded to its site, can instantly and dramatically impact subscribers and network operators.⁵¹

The issue can be resolved with intermediaries such as content delivery services, video encoding, and content formatting. Generally content owners purchase these services to ensure the fidelity of their content, as well as to lower their operating costs (better formatting reduces storage cost and energy consumption). However it is not necessarily clear that all content owners will have a strategy for Chile, especially if they don't license their content for the country.

Given that contract complaints are a leading issue, it begs the question why the regulator does not focus more on transparency requirements. Such an approach was taken by the Swedish regulator (PTS) in 2009, establishing guidelines in 2009⁵² in lieu of making a net neutrality law. In the Swedish perspective, net neutrality is about ensuring transparency in pricing, service offerings, network quality, as well as upstream and downstream capacity so that consumers are clear in what they purchase and can easily switch providers. PTS claims its consumer-centric, light-touch approach is successful and has improved operating norms so much that adopting to the EU's new solution is a step backward.⁵³

In a recent presentation⁵⁴ to the Body of European Regulators for Electronic Communications (BEREC), Subtel chair Huichalaf declared that zero rating is attractive from the point of view of users. However he believes that the regulator still has a role to decide whether such offers should be allowed.

Netherlands

The Netherlands is recognized by the OECD as the world's most competitive broadband market for the number of multiple broadband facilities available.⁵⁵ On account being the world's flattest and most densely populated country, there are nearly two wired infrastructures (copper and cable) to every residence, three mobile networks (and a fourth under construction), resellers on top of the copper infrastructure; and dozens of virtual mobile providers. Fiber is available in some cities as well. It is counterintuitive that net neutrality laws should be so strict, for if ever a market existed where consumers could switch if they didn't like their provider, it is the Netherlands.

Since adopting the net neutrality law, a number of financial indicators reveal a worsening situation for Dutch telecoms, though a number of trends were already in play well before the law, including declining voice revenue and service revenue growth. The Netherlands is a saturated market in both fixed and mobile. Growth of subscribers is flat in fixed. In mobile, it has been declining since 2011 when it had a high of 105% and has fallen below 100%. There are no new customers for operators; the only possibility is to poach each other's customers. Frequently this can mean a race to the bottom. The monthly churn rate for the industry is 2.5%, relatively high for a postpaid market. This indicates that customers can and do change providers.

⁵¹ "Sandvine - Global Internet Phenomena - Latin American Report May 2015," Sandvine, (May 2015), <https://www.sandvine.com/trends/global-internet-phenomena/>.

⁵² Post-och Telestyrelsen (PTS), "Nätneutralitet", <http://www.pts.se/sv/Bransch/Internet/Oppenhet-till-internet/>

⁵³ ETNO, "Ola Bergström, Director at Swedish Post and Telecom Authority - PTS, Gives an Interview at ETNO-MLex Summit 2014," viEUws, July 7, 2014, [www.vieuws.eu/etno/etno-mlex-summit-2014-interview-with-ola-bergstrom-director-for-international-affairs-swedish-post-and-telecom-authority-pts/](http://www.vieuws.eu/etno/etno-etno-mlex-summit-2014-interview-with-ola-bergstrom-director-for-international-affairs-swedish-post-and-telecom-authority-pts/)

⁵⁴ Pedro Huichalaf, "Neutralidad de La Red: Explorando El Impacto En REGULATEL," *Gobierno de Chile*, July 2015, <http://berec.europa.eu/files/doc/4.%20PPT-%20CHILE%20-%20REGULATEL%20-%20BCN.pdf>

⁵⁵ See section 3 on Coverage and Geography. "OECD Broadband Portal," July 23, 2015, <http://www.oecd.org/sti/broadband/oecd broadband portal.htm>.

Nevertheless financial results reveal that costs are managed prudently. To maintain profitability in a strict regulatory environment where new business models are not allowed, the only recourse is to lay off workers. In 2014, KPN laid off 2000 in the consumer branch and another 500 in the corporate.⁵⁶ This follows other cuts in recent years across the industry.

Net neutrality advocacy organization Bits of Freedom has been instrumental to bring attention to net neutrality.⁵⁷ Though they had conducted campaigns for a number of years on the topic, they found little interest with the general public. However a statement from a KPN executive, suggesting that the company would charge users to access WhatsApp, catapulted Bits of Freedom (BoF)'s efforts to center stage. In addition to viral take-up of the issue in the media, the stakeholders BoF had cultivated, including key parliamentary sponsors, allowed the organization, in just two months, to push through the legislation it had created. There was no hearing of mobile operators or investigation of traffic management. The Law was promulgated in 2012 and came into force the following year.

The Dutch Parliament had been revising its Telecommunication Act during this period, and BoF found support among a number of Parliamentarians. It also provided the lawmakers with a proposed text for the law⁵⁸ as well as position papers developed under the support of the Council of Europe (an agency empowered to protect human rights) to support the legislation.⁵⁹ Encouraging Dutch innovation in internet services and applications was a reason given to support net neutrality.

From the operators' side, the uptake of the free SMS applications in lieu of proprietary services materially affected revenue. KPN, for one, was not prepared for the shift. For the first time in many quarters, the company issued a profit warning.

In its quarterly announcement, it noted a large drop in SMS revenue in Q1 of 2011 and lowered EBITA projections by €200 million euros from the prior year. KPN also noted that to lower costs, it would lay off 25% of its Dutch workforce, about 4000-5000 employees.⁶⁰ Before making the suggestion of charging for WhatsApp, KPN obtained permission from the Dutch telecom regulator OPTA.⁶¹ The regulator approved the offer and noted, "This means more choice for consumers, which allows subscriptions can take better suited to use. We therefore welcome such a development, on condition that the provider is transparent about the cost."⁶²

What is frequently described as a predatory situation between operators and third party applications, might also be viewed as operators having the wrong business model in a time of change. Until 2010, data consumption on mobile devices was limited in the Netherlands, and the price reflected that users did not demand it very much. But with smartphones and emerging online services, consumers started to shift their consumption. This came at a time where the prevailing terminating regime in the caller

⁵⁶ Janene Van Jaarsveldt, "KPN to Cut 580 Jobs," *NL Times*, December 10, 2014, <http://www.nltimes.nl/2014/12/10/kpn-cut-580-jobs/>.

⁵⁷ Roslyn Layton, "Net Neutrality in the Netherlands: Dutch Solution or Dutch Disease?," 24th European Regional ITS Conference, Florence 2013 (International Telecommunications Society (ITS), 2013), <http://econpapers.repec.org/paper/zbwitse13/88488.htm>.

⁵⁸ Matthijs van Bergen, intern at Bits of Freedom "played a consulting role in the establishment of net neutrality legislation in the Netherlands." <https://www.linkedin.com/in/matthijsvanbergen>

⁵⁹ "Protecting Human Rights through Network Neutrality: Furthering Internet Users' Interest, Modernising Human Rights and Safeguarding the Open Internet" (Steering Committee on Media and Information Society (CDMSI), December 3, 2013), [http://www.coe.int/t/dghl/standardsetting/media/CDMSI/CDMSI\(2013\)Misc19_en.pdf](http://www.coe.int/t/dghl/standardsetting/media/CDMSI/CDMSI(2013)Misc19_en.pdf).

⁶⁰ "2011 EBITDA Outlook Adjusted Downwards, Free Cash Flow Confirmed," KPN, (April 21, 2011), <http://corporate.kpn.com/press/2011-ebitda-outlook-adjusted-downwards-free-cash-flow-confirmed.htm>. Hear KPN CEO Elco Blok <http://nos.nl/audio/234661-ontwikkelingen-hebben-negatieve-invloed-op-omzet.html>

⁶¹ OPTA is the Dutch Post and Telecommunications Authority, the now closed Dutch telecom regulator. It was subsumed into ACM (Consumer and Market Authority) in early 2013

⁶² Arnoud Wokke, "KPN: 'Chatheffing' Voor Mobielt Internet Komt Deze Zomer," Tweakers, (April 21, 2011), <http://tweakers.net/nieuws/74017/kpn-chatheffing-voor-mobielt-internet-komt-deze-zomer.html>.

pays, both increased the price of voice and SMS, but also created an incentive for off-net termination.⁶³

It is important to note that WhatsApp has remained in the top position as the most popular messaging app in the Netherlands for years. No operator or competitor has succeeded to impact its position.

Once the law came into effect, there were no reports of net neutrality violations for some time.⁶⁴ One view is that the law was working to deter violations. On the other hand, it be embarrassing politically if no violations occur, for it may appear that the law was made too hastily. As such, there could be political pressure to find a problem to justify the law ex post.

In January 2013 the new telecom regulator, now rationalized in the Dutch Consumer and Market Authority (ACM) commissioned a study⁶⁵ of over-the-top (OTT) services. Rather than prohibiting the development of third party applications and services, operators facilitate OTT services through their provision of mobile broadband. Increasingly consumers use these services. It also noted the declining power of mobile operators, specifically, "On sales level we see a shift from KPN to cable and a parallel of shifting market shares. Mobile data market is the engine of growth, with WiFi as a substitute for mobile or mobile data. The mobile service revenue and ARPU show a slight downward trend."⁶⁶

Meanwhile in Brussels, the European Parliament passed a net neutrality resolution on April 3, 2014. The Alliance for Liberal Democrats for Europe (ALDE) drove its passage with Dutch Member of Parliament Marietje Schaake.⁶⁷ She celebrated the passage on the website of D66, the Dutch Democratic Party, noting "Conversely, Europe must also ensure that Internet and communication technologies are regulated too. More and more countries and the UN are working on laws and regulations to enhance the control of governments."⁶⁸ Though the Parliament's resolution requires the agreement of the European Commission and the Council of Ministers (head of state of the EU member nations) to become law,⁶⁹ the resolution triggered the Dutch to strengthen the interpretation of their net neutrality law, specifically to eliminate exceptions for zero rating.

The Dutch Ministry of Economic Affairs started a process to discuss how the net neutrality law should be interpreted, how strict it should be, and what to do about the practice zero rating, called "loose" or stand-alone services. A consultation was held in May 2014.⁷⁰ Among the 30 respondents was Netflix,⁷¹ which just a few months before, signed on as

⁶³ An important point to underscore for the US is that having a termination in which both sides paid reduced any incentive to block VOIP and SMS applications on smartphones.

⁶⁴ There was one complaint about T-Mobile throttling wifi on trains. ACM ruled that it is acceptable for T-Mobile to manage its networks for congestion. Peer to peer and file sharing applications create a lot of traffic and this harms other applications, especially on a train where 2G/3G service is offered. The moving trains also makes the connection difficult. Managing the traffic is acceptable in this circumstance. "Correspondentie Afsluiten onderzoek 'T-Mobile HotSpot in de trein' | ACM.nl," Correspondentie, (December 30, 2013), <https://www.acm.nl/nl/publicaties/publicatie/12508/Afsluiten-onderzoek-T-Mobile-HotSpot-in-de-trein/>.

"Nieuwsbericht T-Mobile mag gratis internet in NS-treinen beperken," Nieuwsbericht, (December 30, 2013), <https://www.acm.nl/nl/publicaties/publicatie/12507/T-Mobile-mag-gratis-internet-in-NS-treinen-beperken/>.

⁶⁵ "Onderzoek Overzicht markt voor over-the-top diensten Nederland - januari 2013 (Telecompaper) | ACM.nl," Onderzoek, (July 23, 2013), <https://www.acm.nl/nl/publicaties/publicatie/11717/Overzicht-markt-voor-over-the-top-diensten---Nederland---januari-2013-TelcoCompaper/>.

⁶⁶ Ibid

⁶⁷ Marietje Schaake, "Europees Parlement Steunt Voorstel Schaake Voor Netneutraliteit in Europese Wet," D66, April 3, 2014, <https://d66.nl/europees-parlement-steunt-voorstel-schaake-voor-netneutraliteit-europese-wet/>.

⁶⁸ "Digitale Vrijheid Prioriteit in EU-Buitenlandbeleid - Doe Mee, Word Lid!," D66, November 7, 2014, <https://d66.nl/ep-commissie-steunt-d66-digitale-vrijheid-prioriteit-in-eu-buitenlandbeleid/>.

⁶⁹ This was ultimately resolved on June 30, 2015 with rules coming into force on April 30, 2016. "Commission Welcomes Agreement to End Roaming Charges and to Guarantee an Open Internet," European Commission, June 30, 2015, http://europa.eu/rapid/press-release_IP-15-5265_en.htm.

⁷⁰ "Consultatie Beleidsregel netneutraliteit," consultatie, (May 2, 2014), <http://www.internetconsultatie.nl/netneutraliteit/>.

⁷¹ "Consultatie Beleidsregel netneutraliteit, reactie," webpagina, (May 28, 2014), <http://www.internetconsultatie.nl/netneutraliteit/reactie/71331718-03d9-43be-9d87-43d2cdff1355>.

the first customer in the New York office of the Amsterdam Internet Exchange⁷² (The company has since moved its European headquarters to Amsterdam and plans to use the location to help grow its business in the Middle East and Africa.⁷³) Netflix commended the Ministry's efforts, supported a strict policy against zero rating, noted that net neutrality stimulates innovation, and suggested a broad interpretation of net neutrality, effectively ensuring that consumers increasingly choose flat rate packages. The outcome of the consultation is strict version of net neutrality with a strict interpretation which the regulator must enforce.⁷⁴ Interestingly Netflix is zero rated in Australia as part of its partnership with fixed lined operator iiNet.⁷⁵ The company calls the introduction of Netflix to the Australian market a game changer.⁷⁶

On June 5, 2014 in "Net neutrality the work in progress"⁷⁷ Bits of Freedom described the process conducted by the Ministry of Economic Affairs to clarify ambiguities in the Dutch net neutrality law. It criticized Facebook, Vodafone, RTL, and Endless Spotify⁷⁸, a zero rated program offered by Hi, a virtual mobile provider (owned by KPN) offering discount services focused on the youth market. The blog refers to an article⁷⁹ mentioning the Vodafone's Sizz⁸⁰ and T-Mobile's Deezer. The article includes a quotation from the Dutch regulator, calling Endless Spotify a "stand alone service", meaning that purchase of the subscription is not tied to the purchase of a data package, therefore it does not violate net neutrality.⁸¹

It notes that such stand-alone services are by "allowed by the letter of the law, but runs counter to the intent of the law. Positive discrimination is discrimination. The ACM sees no problem." BoF continues, "We thought about whether other Internet areas must meet the same kind of neutrality values. Some claim that 'soft neutrality' is not enough and that efforts should be made for 'hard neutrality', including peering and transit. And what about search? Or application stores? Another response to the consultation argued that the rules should also apply to the provision of IPv4 and IPv6."

For the week of September 20, 2014 BoF notes on its blog,⁸² "We were visiting the ACM to discuss net neutrality and its enforcement. We began our analysis of the law in the Netherlands; very interesting in light of the upcoming European law⁸³ and the current debate in the US."⁸⁴

Some two years after the Dutch net neutrality law took effect, ACM fined two operators for violations. Vodafone had only 3200 customers on its HBO Go app, was fined €200,000, and was ordered to end the offer. It is likely that the fine is more than the company earned on the service.

⁷² "Netflix Signs On To New York Open Internet Exchange," *Amsterdam Internet Exchange*, December 2, 2013, <https://ams-ix.net/newsitems/124>.

⁷³ <http://www.iamsterdam.com/en/business/invest/business-news/netflix-officially-opens-european-headquarters-in-amsterdam>

⁷⁴ "Besluit van de Minister van Economische Zaken van 11 mei 2015, nr. WJZ/15062267, houdende beleidsregel inzake de toepassing door de Autoriteit Consument en Markt van artikel 7.4a van de Telecommunicatiewet (Beleidsregel netneutraliteit)," officiële publicatie, *officieelbekendmakingen*, (May 15, 2015), <https://zoek.officieelbekendmakingen.nl/stcrf-2015-13478.html>.

⁷⁵ <https://gigaom.com/2015/03/02/netflix-wont-count-against-iinet-broadband-caps-in-australia/>

⁷⁶ <http://www.iinet.net.au/about/mediacentre/releases/2015-03-03-quota-free-netflix.html>

⁷⁷ Floris Kreiken, "Netneutraliteit Blijft Work-in-Progress," *Bits Of Freedom*, June 5, 2014, <https://www.bof.nl/2014/06/05/netneutraliteit-blijft-work-in-progress/>.

⁷⁸ "Hi Introduceert Eindeloos Spotify: Onbeperkt Muziek Streamen Op Je Mobiel Zonder Dat Dit MB's Kost," KPN, (January 6, 2014), <http://corporate.kpn.com/pers/persberichten/hi-introduceert-eindeloos-spotify-onbeperkt-muziek-streamen-op-je-mobiel-zonder-dat-dit-mbs-kost.htm>.

⁷⁹ Arnoud Wokke, "Hi Haalt Verbruik Spotify-App Niet Meer van Databundel Af," *Tweakers*, January 6, 2014, <http://tweakers.net/nieuws/93502/hi-haalt-verbruik-spotify-app-niet-meer-van-databundel-af.html>.

⁸⁰ Andreas Udo de Haes, "Vodafone En T-Mobile Schenden Netneutraliteit," *Webwereld*, June 17, 2013, <http://webwereld.nl/netwerken/78147-vodafone-en-t-mobile-schenden-netneutraliteit>.

⁸¹ The price to the user is the same whether he buys the subscription from Spotify or Hi, but in the latter, the data use is not charged to the subscription.

⁸² Door Tim Toornvliet, "De Week in 417 Woorden," *Bits of Freedom*, September 20, 2014, <https://www.bof.nl/2014/09/20/de-week-in-417-woorden>.

⁸³ Link in article points to <https://www.bof.nl/2014/04/03/persbericht-netneutraliteit/>

⁸⁴ Link in article points to "ISPs Mislead Public, FCC About Protecting the Open Internet," *Electronic Frontier Foundation*, September 15, 2014, <https://www.eff.org/press/releases/isps-mislead-public-fcc-about-protecting-open-internet>.

KPN was fined €250,000 for what amounted to blocking on a free wifi network. The company admitted its mistake, a setting that had been in place its wifi networks, which it forgot to update once the net neutrality rules came into effect. About one third of the wifi traffic was at Schiphol Airport and the free service was designed as a convenience for travelers for a short and quick internet connection upon landing, for example to check messages and email. BitTorrent, FTP, SSHA, Telnet and VoIP were blocked to ensure the smooth functioning of the free service. The blocks are now removed but presumably the free basic internet service doesn't run as well. Interestingly a number of comments under the BoF blog mention that they have 4G services so wifi not important to them anyway.

In May 2015 KPN was ordered to end zero rated Spotify contracts, though the traffic generated by Spotify traffic is negligible on KPN networks. It is interesting to note that while zero rated offers of Spotify may be maligned by net neutrality advocates, for Spotify, one of only a handful of successful European startups, the partnership with telecom operators has proven important for its growth.⁸⁵ Not only can Spotify leverage an operator's billing system (avoid the cost of using its own system and give customers the benefit of not having to enter payment credentials into a new system), Spotify earns valuable paying customer. Most free users of Spotify never upgrade to the premium version, but in a telco partnership, subscribers who are already paying for a mobile subscription are more willing to take on an additional paid service because of the convenience of the bundle.

Not only is the sale of premium subscriptions essential for Spotify's survival, the revenue earned plays an important role to lessen music piracy and to help bring revenue to the music industry. Sweden's music industry was decimated by the rise of digital music on the Internet; revenues declined steadily from 2002 to 2009. With the introduction of Spotify, however, the industry has managed a 20% gain in the last three years.⁸⁶

The Netherlands fared even worse with its traditional music industry than Sweden, but Spotify helped to reduce piracy in the country, with 29% of the 1.8 million Dutch BitTorrent pirates taking just 1 music file in 2012. The top 10% of the pirates account for half of the content obtained illegally, some 16 files each or more.⁸⁷ Passive pirates don't bother to pirate material when then can get a reliable, quality music experience for a good price.

In Sweden, digital music revenues account for almost 60% of all music industry revenue. In Netherlands the amount is just 27%, but if it could increase to the level of Sweden, ideally with more uptake of services such as Spotify, there would be an additional \$124 million for the music industry and musicians. In any case, digital music sales grew by increased by 66% in the country in 2012, the highest of any country in Western Europe.⁸⁸

While music piracy may be on the wane as a number of viable music streaming alternatives have emerged, piracy of film is going strong. Having more Spotify-like solutions for film is preferable to criminalizing pirates. And yet HBO Go, one such solution, is maligned by net neutrality advocates.

In a statement on June 1, 2015, the ACM praised the state of Dutch 4G networks and increased mobile data consumption. They note,⁸⁹

⁸⁵ "Adventures in the Netherlands:" (Spotify, July 17, 2013), <https://press.spotify.com/dk/2013/07/17/adventures-in-netherlands/>.

⁸⁶ Ibid p. 9

⁸⁷ Ibid p. 1

⁸⁸ Ibid p. 24

⁸⁹ "Investeringen uitrol 4G bijna voltooid, apps besparen op dataverbruik," Nieuwsbericht, ACM, (June 1, 2015), <https://www.acm.nl/nl/publicaties/publicatie/14305/Investeringen-uitrol-4G-bijna-voltooid-apps-besparen-op-dataverbruik/>.

After Mobile operators' investment to roll out 4G is almost complete. After a peak of investment in 2013 of €2 billion, the investment in 2014 fell back to more than € 800 million. Henk Don, board ACM: "With the introduction of 4G has paved the way for fast internet on your smartphone. And there are many uses. The consumption of mobile data is doubled. "This is attributable to approximately 4 million consumers who are relatively common and many Internet via their phone. For example, to stream movies or music. The number of customers using 4G also doubled in a year to about 40 percent. What is evident from the Telecom Monitor is that the rapid growth of data consumption is leveling off.

The net neutrality law that was supposed to be a "silver bullet" has created new problems.⁹⁰ Instead of a flowering of local content and services, the Netherlands experiences the "Netflix effect"⁹¹ in which a single American company consumes twenty percent of the country's bandwidth with a small subset of users. Netflix is one of the most downloaded apps in the Dutch Google Play store. Its competitor HBO Go which was ultimately impacted in the net neutrality debate is far from a threat, sitting in the long tail distribution.

As for innovation in Dutch mobile services and applications in August 2015, only two Dutch apps feature in the top 25; Marktplaats, the second hand marketplace and Buienradar for the weather. In the Google Play Store they are #12 and #13 respectively and in the Apple App Store, #18 and #19. The flowering of Dutch content and innovation has not occurred since the implementation of the country's net neutrality law.

Slovenia

Zero rating, called free data transfer in Slovenia, was a common practice among operators and existed in country since 2007. Consumers could choose from a number of zero rating programs, including free access to music, online storage, and customer service applications to manage their mobile subscriptions. The net neutrality law in Slovenia was created primarily about concerns of theoretical harms and was the culmination of more than a year of public proceedings⁹², but did not include an official investigation of traffic management practices.⁹³ A line about price differentiation was removed in the final version of the law which was promulgated on December 31, 2012.⁹⁴ This omission appears to be a linchpin for the legal battle on zero rating going forward.

To understand the sequence of events, a personal interview⁹⁵ was conducted with Dr. Dusan Caf, a leading net neutrality advocate who has been instrumental to effecting a ban on zero rating in Slovenia.⁹⁶

⁹⁰ Ibid

⁹¹ van Eijk, Nico, *The Proof of the Pudding Is in the Eating: Net Neutrality in Practice, the Dutch Example*, SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, August 2, 2014), <http://papers.ssrn.com/abstract=2417933>.

⁹²"Posvet v Zvezi Z Osnutkom Predloga Novega Zakona O Elektronskih Komunikacijah," *Ministrstvo Za Visoko Šolstvo, Znanost in Tehnologijo*, November 10, 2011, http://www.arhiv.mvvt.gov.si/si/delovna_področja/informacijska_družba/elektronske_komunikacije_in_posta/javne_obravnave_predlogi/arhiv/.

⁹³ "I am afraid that there wasn't any comprehensive analysis carried out (related to net neutrality) prior to the adoption of the current electronic communications law and net neutrality provisions - neither by the NRA nor the ministry," notes Dusan Caf in an email August 9, 2015.

⁹⁴ Article 203 of the Electronic Communications Act (Official Gazette of the Republic of Slovenia, Nr. 109/12, 110/13, 40/14 – ZIN-B and 54/14 – CC dec.)

⁹⁵ Telephone Interview August 7, 2015

⁹⁶"Priporabe Na Osnutek Predlog Zakona O Elektronskih Komunikacijah," *Svet ZA Elektronske Komunikacije*, July 5, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/3/Priporabe-na-osnutek-predlog-Zakona-o-elektronskih-komunikacij-ZEKom-1.aspx#.Vc4MNa1J24B>.

"Priporabe Na Predlog Zakona O Elektronskih Komunikacijah (ZEKom-1) - EPA: 667 - VI > SEK," *Svet ZA Elektronske Komunikacije*, November 18, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/275/Priporabe-na-predlog-Zakona-o-elektronskih-komunikacijah-ZEKom-1--EPA-667--VI.aspx#.Vc4MnK1J24B>.

"Predlog Amandmajev K Predlogu Zakona O Elektronskih Komunikacijah (ZEKom-1, Druga Obravnava, EPA 667 - VI) > SEK," *Svet ZA Elektronske Komunikacije*, December 20, 2012, <http://www.sek-rs.si/1/Aktualno/tabid/107/ID/274/Predlog-amandmajev-k-predlogu-Zakona-o-elektronskih-komunikacijah-ZEKom-1-druga-obravnava-EPA-667--VI.aspx#.Vc4M8a1J24B>.

Caf holds two key positions⁹⁷ in telecommunications, one as Chair of the Electronic Communications Council (a body appointed by the National Assembly) and another as Chair of the Council of the Agency for Communications Networks and services of the Republic of Slovenia (AKOS, the telecom regulator).⁹⁸ An engineer by training, Caf has been a consultant to a number of telecom and IT companies in Slovenia, though he assures that his honorary positions are not a conflict of interest, and if they were, he would exclude himself from voting.⁹⁹

In a blog¹⁰⁰ on December 9, 2013 Caf decried the state of the Slovenian telecom market 15 years after liberalization. The media is a poor observer, and the debate as lacking depth, he wrote. "Professional analysis" is needed to explain the gap, and "Captured regulators" are the root of the problem, he declared. To address these problems, he proposed increasing the transparency of the regulatory process, strengthening the efficiency and effectiveness of regulation, strengthening the development of electronic communications, and improving the wellbeing of citizens.

Caf called Slovenia's net neutrality law strict, but not being implemented prior to 2015. The problem with zero rating emerged with mobile broadband prices being too low. He cited the offer of €25 for 1 GB of data and €30 for 100 GB. Caf called these offers "good for consumers in the short run, but not sustainable in the long run" and believed that they needed to be stopped. "This is not a two-sided market," he said.

Caf does not know whether consumers complained about the offers to the regulator. His organization is not privy to such complaints. They only learn what is published by the telecom regulator or the competition authority. However one person did complain to the SEK, that he wanted to use his account balance to choose which sites should be zero rated.

One June 22, 2014 Caf published a blog¹⁰¹ titled "Free download mobile content jeopardizes the neutrality of the Internet" critiquing the zero rating offers of Telekom Slovenia and Si.mobil which "unduly encourage (users) to procure their services or applications and their partners, because of the high price of data transfer but they complicate the selection and use of competing products." Caf also notes, "Mere legal protection of net neutrality is not enough. It is important that AKOS enforce the regulatory principles" and that the SEK discusses the situation at its June meeting, he notes. Caf said that he made a point to write in English to bring international attention to the issue in Slovenia

On behalf of SEK on July 17, 2014, Caf made a formal complaint about zero rating to the telecom regulator, but did not receive a response. He believed that the regulator was reluctant to make a ruling on zero rating.

⁹⁷ "Dusan Caf to Head Slovenian Regulator - Report," *Telecompaper*, January 14, 2014, <http://www.telecompaper.com/news/dusan-caf-to-head-slovenian-regulator-report--993155>.

⁹⁸ The Agency Council is authorised to give opinions to the programme of work, the financial plan and the annual report of AKOS; approve the statute adopted by the Agency Director; propose the appointment or dismissal of the Agency Director; propose a temporary prohibition on the performance of functions by the Director; propose the early dismissal of members of the Agency Council. The Members of the Agency Council or persons authorised by the Agency Council may inspect the business accounts as defined in the Slovenian Accounting Standards and the AKOS' accounting documents. Upon every such request by the Agency, the Agency director must submit to the Council a report on the operations of the Agency and any other information that the Agency Council requires in order to carry out its functions. The Agency Council may suggest improvements in the operation of the Agency to the Agency director, as well as point out to him any irregularities in the AKOS operations and notify the competent bodies of these irregularities. "Profile of AKOS," February 6, 2014, http://epra3-production.s3.amazonaws.com/organisations/documents/30/original/Profile_AKOS_SI_02_2014_final.pdf?1391706889.

⁹⁹ Ales Percic, "Neuradno: Na Čelo Sveta Akosa Dušan Caf," *Finance.si*, January 29, 2014, <http://www.finance.si/8355990/Neuradno-Na-%C4%8Delo-svetna-Akosa-Du%C5%A1an-Caf>.

¹⁰⁰ "Competitive Analysis & Foresight: Ugrabljeni Regulatorji," CAF, December 9, 2013, <http://blog.caf.si/2013/12/ugrabljeni-regulatorji.html>.

¹⁰¹ "Competitive Analysis & Foresight: Brezplačen Prenos Vsebine Ogroža Nevtralnost Mobilnega Interneta," Competitive Analysis & Foresight, (June 22, 2014), <http://blog.caf.si/2014/06/brezplacen-prenos-vsebine-ogroza-nevtralnost-mobilnega-interneta.html>.

Caf said he made a point to mention only Telekom Slovenia and Si.Mobil in his complaint. He did not want to implicate the smaller providers Tusmobil and Amis because they need zero rating offers to differentiate themselves in the marketplace. The complaint describes that Telecom Slovenia's unlimited data transfer offers the ability to view the matches of the UEFA Champions League, watch films HBO GO, and access proprietary online storage. Telecom's own service "discriminates against end users using competing products", notes the complaint.

The complaint is critical of Si.Mobil's unrestricted offer to view the World Cup and unlimited access to the VOYO content over a two year period. It claims that free video data is problematic because it is a fastest growing category of service and makes up the bulk of internet traffic, and that offers with unmetered traffic exceed the amount of data used on basic packages. Moreover operators are offering unmetered service to the exclusive content they have licensed but not giving the same conditions to competing content. It is described as discriminatory to users because they have to use metered access to enjoy competing services on the same platform. The letter states that operators are violating Slovenia's net neutrality rules and that Telecom Slovenia is abusing its dominant position in the marketplace.

Caf regrets that, in the end, the regulator punished the smaller providers by ordering them to stop all their zero rated practices, while the incumbent received a lighter reprimand. Telekom Slovenia was required only to end the zero rated music service for Deezer, but was allowed to keep zero rating its proprietary video application. That the smaller operators received a tougher punishment supports Caf's assertion that the telecom regulator favors the state-owned Telecom Slovenia.

Concurrently Caf sent the complaint to the Slovenia Competition Protection Agency, which did reply on September 4, 2014.¹⁰² They recognized the concerns about discriminatory traffic management, but note that the risk is significantly lower in a transparent and competitive environment. Net neutrality puts emphasis on the requirement that operators transparently disclose their practices regarding managing internet traffic. In a transparent environment, consumers, if unhappy with traffic management practices, can switch providers. They observe that differentiated offerings are important because they are

. . . the fruit of competitive advantages and therefore increase efficiency and bring consumers the benefits (i.e. cheaper cinema tickets for students). Thus price discrimination increases the availability of the product to more cost-sensitive consumers and ensures an overall increase in sales volume, thereby lowering average the overall costs and increasing efficiency. The boundary between pro-competitive and anti-competitive conduct can be thin, so borderline cases should be assessed. But intervention is necessary only in cases where economic analysis shows that the injury to the consumers outweigh the benefits to consumers.

The competition authority notes that Telecom Slovenia has not abused its market power. It could be tested with an in-depth investigation that would begin with defining the relevant market, in this case the market for data transfer. It notes that Slovenia is a market with at least three mobile providers which will evolve significantly in the coming years. It notes that the market for mobile services is primarily characterized by call services, and with the different prices for calls on and off net, the effect of data transfer services is negligible. Moreover, even though Telecom Slovenia has a 50 percent market

¹⁰² A copy of the reply is not available on the authority's website, however it is referenced in the EU Scoreboard document on the link for Slovenia. "Scoreboard 2015 - Report on the Implementation of the Telecommunications Regulatory Package (per Country)," *Digital Agenda for Europe*, June 19, 2015, <http://digital-agenda/en/news/scoreboard-2015-report-implementation-telecommunications-regulatory-package-country>.

share and falling, it does not have the power to control the market for Internet applications, even with its zero rated offer. It notes,

Vertical relationships can bring benefits to consumers. For example, by offering free Internet encourages Telecom Slovenia to invest in expensive exclusive content such as UEFA Champions League. Si.mobil might not have invested EUR 60 million in the acquisition of spectrum if it expected that it would not be able to grow the market for newly built broadband 'highways' through various campaigns for free use of data transmission.

It notes further that sports rights and copyrighted content when licensed to a buyer (e.g. Telecom Slovenia) and offered in a zero rated program do not constitute a violation of competition. Moreover the operator's offer of Deezer and a proprietary cloud service does not harm the market for such services, as there are many choices worldwide from which users can access.

As for the price of the offer, the competition authority notes that the operator does not engage in either improving the quality of the zero rated products or degrading other applications, but rather in a form of discount or positive discrimination. To assess this, it is necessary to examine the price and costs of the offer and the services contained within. It observes that the voice is the largest cost driver and that the use of Deezer is negligible, amounting to a few cents out of an offer of €26 per month.

The competition authority notes that the emergence of zero rating reflects fierce competition in the mobile marketplace and even with current limits, consumers still have the freedom to decide what kind of content they want.

It notes further that the net neutrality rules are designed to protect competition for the purpose of the benefit of consumers. It is therefore necessary to determine the effect of zero rating on consumers. No intervention should be made if there is no evidence of consumer harm. The competition authority describes situations in which it considers extreme and necessary for intervention, for example the Microsoft browser case, but the zero rating issue in Slovenia is not one. The authority made a point as well that critics consider the Dutch net neutrality too extreme because operators are restricted from making offers.

Caf rejected the competition authority's conclusion, in particular because it made an analysis based on mobile prices from 2012. However if 2014 prices were used, the impact of zero rating would likely be even smaller because prices have fallen in the period.

Caf worked with the country's leading newspaper to bring attention to the issue. On November 12 an article¹⁰³ appeared in the newspaper *Delo* (English: Labour) by Matjaž Ropret¹⁰⁴ introducing the topic of zero rating as problematic and reporting on developments in the USA. The article concludes with a screen shot of Frank Underwood of Netflix's "House of Cards" with the caption "You need the gatekeeper." Underneath the photo is the caption "Providers such as Netflix in the US have paid operators for smooth transfer of content to subscribers."

The article links to another article that appeared in *Delo* from Slovenian correspondents in the US titled "Political cuisine on the future of the Internet: White House asks independent telecom commission for the Internet be declared a public service, which is

¹⁰³ Matjaz Ropret, "Izmuzljiva Interneta Nevralnost," *Infoteh*, November 12, 2014, <http://www.delo.si/mnenja/blogi/izmuzljiva-internetna-nevralnost.html>.

¹⁰⁴ Matjaz Ropret, "Tehnokamra – Interneta Nevralnost," *Delo*, November 14, 2014, <http://www.delo.si/multimedija/video/tehnokamra-internetna-nevralnost.html>.

controlled by the state.”¹⁰⁵ The article describes President Obama’s net neutrality announcement and some political background in the US. In a sidebar it notes that after ratifying its own net neutrality law two years earlier, Slovenia experienced its first complaint under the concept of zero rating.

On November 14, *Delo* published a short article¹⁰⁶ embedded with a video¹⁰⁷ highlighting Barack Obama’s previous net neutrality announcement¹⁰⁸ followed by a presentation by Dusan Caf and *Delo* tech journalists Matjaž Ropret and Lenart J. Kučić¹⁰⁹ discussing the situation of net neutrality in Slovenia. During the discussion Caf produces a tablet where he points to a copy of the Slovenia net neutrality law and how the section on zero rating was removed as part of the final rulemaking.

A blog¹¹⁰ by Caf on December 5 characterizes Slovenia as a country that has net neutrality rules but does not enforce them. It describes a country where “Net neutrality (is) weakened by industry lobbying and inactive regulator” and recounts how zero rating, originally included in the Slovenia rules was removed by “lobbying from the industry”. Caf also warns about the “spreading of discriminatory practices” and refers to a study of zero rated offers in the EU.¹¹¹ He notes that SEK sent a letter to AKOS describing the discriminatory practices of Telekom Slovenije but “based on the regulator’s strong pro-industry stance the outcome is uncertain.”

It is not clear whether from media pressure or international influence, but AKOS relented and commenced a review on zero rating on December 18. Soon after Caf appeared in an interview¹¹² in *Europolitics* in which the journalist questioned whether undue pressure has been put on the Slovenian telecom regulator. Caf notes that even though authorities pronounce zero rating beneficial to consumers, the practice is still problematic. “An efficient regulator is required in order that legislation adopted should really be implemented. However, I think it is important to resolve the matter of zero rating, and not to tie competition law on neutrality, since procedures and market analyses take too long,” he notes.

On January 10, 2015 *Delo* published an article¹¹³ of some 2500 words explaining net neutrality by comparing the internet to the road network where all drivers have the same rights. Telecom operators are characterized as deploying sneaky business models such as zero rating. Dusan Caf’s efforts to end the practice are described.

A blog¹¹⁴ from Caf appeared two days later in an attempt to increase the pressure on the telecom regulator to ban zero rating. He refers to the complaint SEK made to the regulator in July 2014 followed by “nearly three months of analysis, in which we analyzed the controversial business practice of mobile operators.” He notes that at the end of 2014 Telekom Slovenia had 50% market share and Si.Mobile 36%.

¹⁰⁵ Sebastijan Kopusar, “Politične Kuhinje O Prihodnosti Interneta,” *Delo*, November 12, 2014, <http://www.del.si/znanje/infoteh/politicne-kuhinje-o-prihodnosti-interneta.html>.

¹⁰⁶ Matjaž Ropret, “Tehnokamra – Interneta Nevrtnost,” *Delo*, (November 14, 2014), <http://www.del.si/multimedija/video/tehnokamra-interneta-nevralnost.html>.

¹⁰⁷ Tehnokamra - Interneta Nevrtnost, 2014, https://www.youtube.com/watch?v=_PBaeuvDC_w.

¹⁰⁸ Ezra Mehaber, “President Obama Urges FCC to Implement Stronger Net Neutrality Rules,” *The White House*, November 10, 2014, <http://www.whitehouse.gov/blog/2014/11/10/president-obama-urges-fcc-implement-stronger-net-neutrality-rules>.

¹⁰⁹ Lenart Kucic, “Lenart J. Kučić Blog,” accessed July 27, 2015, <http://www.lenartkucic.net/about/>. The journalist also writes books critiquing the media. Lenart Kucic, “Lenart J. Kučić’s Bibliography,” accessed July 27, 2015, <http://www.lenartkucic.net/bibliography/>.

¹¹⁰ “Competitive Analysis & Foresight: Zero-Rating Violates Slovenian Net Neutrality Law,” *Competitive Analysis & Foresight*, December 5, 2014, <http://blog.caf.si/2014/12/zero-rating-violates-slovenian-net-neutrality-law.html>.

¹¹¹ “List of 75 Zero-Rated, Potentially Anti-Competitive Mobile Applications/services, Violating Net Neutrality, in EU28,” *DF Monitor*, October 2014, http://dfmonitor.eu/insights/2014_oct_zerorate/.

¹¹² Nathalia Steiwer, “Zero Rating: Slovenian Regulator Exposed to Excessive Pressure,” *Europolitics*, January 5, 2015, <http://europolitics.info/tech/zero-rating-slovenian-regulator-exposed-excessive-pressure>.

¹¹³ Lenart Kucic, “Internet Nevrtnost Kot Javno Cestno Omrežje?,” *Delo*, January 10, 2015, <http://www.del.si/sobotna/internet-nevrtnost-kot-javno-cestno-omrezje.html>. See appendix for Google translated article

¹¹⁴ “Competitive Analysis & Foresight: Nevrtnost Interneta vse Bolj Vroča,” *CAF*, January 12, 2015, <http://blog.caf.si/2015/01/nevrtnost-interneta-vse-bolj-vroca.html>.

On January 23, 2015 AKOS announced its decision,¹¹⁵ finding Telecom Slovenia's zero rating of Deezer and Si.Mobil's zero rated offering of the cloud platform Hangar Mapa to be net neutrality violations. An announcement in English followed on January 26, the only news story on the English language section of its website.¹¹⁶ Telekom Slovenia's zero rating of UEFA Champions League, HBO GO, and the online storage TviN continues. In neither case did the regulator mention any evidence for harm to consumers or competition because of the offers.

On February 20, 2015 AKOS similarly found Amis Mobile with its proprietary TV service and Tusmobil with its customer service platform in violation of net neutrality.¹¹⁷ The operators were required to end the banned practices in 60 days.

In response Caf posted a blog¹¹⁸ celebrating the regulator's decision banning offers from Telekom Slovenia and Si.Mobil. He notes that SEK conducted an examination of the practices and that telecom regulators attended its meetings. He notes that the competition authority "issued the opinion after a consultation with AKOS in which regulators exchanged and shared views and information on net neutrality issues." He describes the competition authority opinion as "based on dubious facts and presumptions." He faults the competition protection authority for declining to begin an investigation.

Caf recounts his efforts to speed the regulatory process and enlighten senior officials whose views were "generalized and lacked thorough analysis". He recounts the steps that made the ban possible: his blogs and articles, his analysis indicating a potential breach of competition law, and the support of leading technology journalists. He reiterates his earlier blog of December 5 of why zero rating is a violation of the Slovenian net neutrality law. He notes that while the decisions only apply to music and cloud services, that they should also apply to video streaming. He notes that, "Consumers may shortly expect new data plans and enjoy open and non-discriminatory access to the internet."

Following the announcement of the banning of the zero rated services of Tusmobil and Amis, Caf penned another blog.¹¹⁹ While he was pleased with the action against the other operators, he called the allowance of zero rating by Telekom Slovenia "unacceptable and AKOS shall intervene as soon as possible. There is no legal ground in communications or media law for any exemption of internet streaming of sporting events or cloud storage traffic."

He notes that these "the decisions have already had a positive impact and, as we correctly predicted, consumers benefited from the regulator's net neutrality decisions. Telecom Slovenia and Si.mobile have both come up with special offers and packages with larger data caps or inexpensive data cap options. Consumers may shortly expect even more plans with larger data caps."

Caf describes the mobile market today as competitive, particularly because of price competition driven by American owned cable provider Telemach in their cross-selling of service from Tusmobil.

¹¹⁵ "Akos Ugotovil Kršitve Načela Nevralnosti Interneta," Akos, January 23, 2015, <http://www.akos-rs.si/akos-ugotovil-krsitve-nacela-nevralnosti-interneta>.

¹¹⁶ "AKOS Finds Violations of the Principle of Net Neutrality," Akos, January 26, 2015, <http://www.akos-rs.si/akos-finds-violations-of-the-principle-of-net-neutrality>.

¹¹⁷ "Akos Ugotovil Kršitve Načela Nevralnosti Interneta Tudi Pri Storitvah Amisa in Tušmobila," Akos, February 20, 2015, <http://www.akos-rs.si/akos-ugotovil-krsitve-nacela-nevralnosti-interneta-tudi-pri-storitvah-amisa-in-tusmobila>.

¹¹⁸ "Competitive Analysis & Foresight: Telekom Slovenije and Si.mobil Found in Breach of Net Neutrality," *Competitive Analysis & Foresight*, January 25, 2015, <http://blog.caf.si/2015/01/telekom-slovenije-and-simobil-found-in-breach-of-net-neutrality.html>.

¹¹⁹ "Competitive Analysis & Foresight: Another Win for Net Neutrality Advocates in Slovenia: AKOS Issues New Decisions Limiting Zero-Rating," *Competitive Analysis & Foresight*, February 22, 2015, <http://blog.caf.si/2015/02/another-win-for-net-neutrality-advocates-in-slovenia-akos-issues-new-decisions-limiting-zero-rating.html>.

On June 27, 2015 an article¹²⁰ explores Caf's evolution from professor and consultant to the telecom industry and Chamber of Commerce to his most recognizable position as the leader of the Council for Electronic Communications. The same day two additional articles^{121 122} appear on Caf and his accomplishments.

On July 1, 2015, the day after the EU's concluded agreement on net neutrality, Caf is interviewed¹²³ by Slovenian Radio and TV saying that Slovenia users are less protected, as the new EU rules "override" Slovenia's. The article notes a tweet from a Ministry of Education official who sees it differently, Slovenia "is (was) alone in demonstrating the principle is the wrong approach," he notes.

The European Union is the midst of an effort to create a Digital Single Market. One of goals of which is to strengthen European based small and medium enterprises (SME) on the Internet.¹²⁴ Once it took effect, AKOS's ban on zero rating caused traffic to certain Slovenian content and applications to fall by half. Operators' customer support centers saw a five-fold increase in telephone calls because subscribers could no longer top up their account balance online for free.¹²⁵ A Slovenian cloud provider experienced a marked, but not devastating, decline in traffic as a result of the ban.¹²⁶ To be sure, no content provider's marketing strategy relies entirely on zero rating.

Operators are appealing the regulator's decision on material and procedural grounds. They have also requested a constitutional review of the nation's communications law. Should the national court be unable to address the issue, it will be referred to the Court of Justice of the European Union. Operators argue that AKOS' decisión contravenes BEREC's and EU's view on zero rating, which they call "sponsored connectivity" and a competitive practice. They charge that AKOS acted prematurely, given that pan-EU rules were still be considered. The current regulatory framework prohibits regulation beyond the exhaustively listed authorizations, of which the ban is. Moreover Slovenia and Netherlands are the only two European countries with "fundamentalist interpretation" of net neutrality, and they cannot exceed EU norms.

Testing the alleged harms of zero rating

The case studies provide some information about zero rating in the specific countries. Together with market research on mobile applications, we attempt to find evidence for the claims of those opposed to zero rating. Given their specific arguments, we pose the following assertions and attempt to test them.

1. The operator that offers zero rating will win market share.
2. The zero rated service will win market share.
3. The presence of zero rating will preclude the emergence of new applications and services.
4. Users do not go to non- zero rated content. If Facebook is free, they don't venture beyond it.
5. Operators that are zero rating their own content foreclose other content.

¹²⁰ Ales Lednik, "Večer: Kršijo Zakon, Nihče Ne Trzne," *Vecer*, June 27, 2015, <http://www.vecer.com/clanek/201506276125307>.

¹²¹ "Dušan Caf: V Državni Lasti Bo Telekom Težko Konkurenčen," *Finance.si*, June 27, 2015, <http://www.finance.si/8824292/Du%C5%A1an-Caf-V-dr%dr%C5%BEavni-lastti-bo-Telekom-te%C5%BEko-konkuren%C4%8Dn>.

¹²² "STA: Caf Za Večer: V Državni Lasti Bo Telekom Težko Konkurenčen," *Sta*, June 27, 2015, <https://www.sta.si/2150491/caf-za-vecer-v-drzavni-lastti-bo-telekom-tezko-konkuren>.

¹²³ "Zvodeneli Kompromis Medmrežne Nevtralnosti Pustil Nezadovoljstvo," *Prvi Interaktivni Multimedijski Portal, MMC RTV Slovenija*, July 1, 2015, <http://www.rtvslo.si/znanost-in-tehnologija/zvodeneli-kompromis-medmrezne-nevtralnosti-pustil-nezadovoljstvo/368779>.

¹²⁴ <http://ec.europa.eu/priorities/digital-single-market/>

¹²⁵ Confidential interview

¹²⁶ Confidential interview

Additionally we want to know whether consumers experience harm. A consumer harm test¹²⁷ examines whether the following results from a particular activity: higher prices, lower output; or reduced product innovation. A related set of questions in competition analysis have to do with whether a firm possesses significant market power (SMP) and whether the firm exercises it. So for example, if a firm without market power employs zero rating, it need not be banned because it is not a threat to the marketplace. The Slovenian competition authority described this.

Testing the assertions is not necessarily easy because critics of zero rating don't provide specifics for their charges. For example, how is market share for operators defined, as subscribers or revenue? How is market share defined for services, by number of downloads, users, usage, or revenue per user? These are just a few of the relevant parameters to consider, but the market research data is limited to app store rank. It does not provide the specific number of downloads or revenue per application.

The market for mobile applications has some similarity to search engines and web traffic in that the most popular destinations gather a disproportionate amount of traffic. They have a typical power law distribution in which the top twenty destinations gather 80 percent or more of traffic. But while it is next to impossible to break into the top 10 or even 25 of the world's most popular websites, new applications emerge in the top 10 of mobile app stores every month. New apps tend to emerge by "viral" means (popularity in social networks). There is a notion that an app could get a shortcut to the top rank in the app store through zero rating, but our investigation could find no examples of such overnight success. In any event, we did observe that there are a number of mobile apps that are popular worldwide, regardless of the country or offer.

To understand the market for mobile applications we used the public version of AppAnnie.com, a leading market research tool for mobile applications which aggregates download and revenue data for app stores by country and app marketplace (Google Play, Apple App Store etc). The number of downloads per app is not given, but appearance in the top ten of the app store indicates high level of downloads, approximately 10,000 to 25,000 per day. While it will depend on the country and the category, the top 100-200 apps are significant for the market, assuming the depth of the particular category. After position 200 the significance falls precipitously and below 300 ceases to matter. One can understand the phenomena from Google's search engine that the first three results get the lion's share of clicks, followed by the remaining 7 on the first page, but generally users never go past the first page. Thus appearing in the top 10 for the category is important.

AppAnnie.com offers more than a dozen categories for apps including health, travel, kids, business and so on, but three key categories are messaging/social networking apps (WhatsApp, Facebook Messenger, Line, KakaoTalk, WeChat); Entertainment (Netflix, YouTube, HBO, Hulu), and Games (Clash of Clans, Candy Crush, Game of War). The platform also organizes the information for free and paid applications. This is significant because how an application earns revenue varies. For example, some apps earn a fee when a user downloads them in the store. In other cases, the app is free but revenue is earned inside the app either through advertising (itself a form of zero rating, free app subsidized by advertising) or in-app purchases, for example micro-transactions within game play. So, popularity does not necessarily translate to profitability.

Music streaming took off quickly on mobile phones, but video streaming has taken a longer time to take hold. This is due to in part to large file size (which been addressed through better content formatting and application design, more advanced devices, and

¹²⁷ *The Foundations of European Union Competition Law: The Objective and Principles of Article 102*
<http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199226153.001.0001/acprof-9780199226153-chapter-8>

new networks) and copyright. This is important from a net neutrality perspective because while one may want to access a particular mobile entertainment application, it may be blocked because of geographic or copyright restriction. As such, Netflix, HBO Now and Hulu are highly ranked apps and top revenue earners in the US where they have licensed content for the region.

However Netflix has licensed content for a number of geographies as is a popular app in many countries. The rise of video streaming via mobile is driving a trend for cord cutting.¹²⁸ It is important to note that, with the exception of certain copyright content, mobile app markets are essentially global. Users are able to access applications and services from around the world, as well as from their own country. However it brings attention to important issues for the European Union as they would like to see greater visibility and success for European-based innovation.

While Google and Facebook dominate a number of categories, games is one area where new players from a variety of countries have emerged with popular titles and sustainable business models. This includes of course publishers from the US, China, South Korea, and Japan, but a massive multiplayer game such as Agar.io from Miniclip in Switzerland has taken the world by storm, as have other titles from Vietnam and France.

While the web has been, and remains to a large extent, an American phenomenon, as measured by the proliferation of American websites dominating traffic and revenue, the mobile Internet is driven in large part by China, a country with large base of broadband-connected smartphone users and world class application providers. In fact Apple's App Store has more downloads in China than in the US.¹²⁹ China has a number of powerhouse video streaming providers including Tencent, Baidu's iQIYI, Sohu TV, Youku Tudou ,and LeTV. AppAnnie.com notes,

Over the past few years, these services evolved from YouTube-like user-generated content video platforms to Netflix-like providers of professional shows. They have successfully attracted audiences from traditional broadcasting TVs by offering the content on omni-platforms including desktop, mobile, set-top boxes and digital TV. They have also enticed users to their platforms by securing rights to a broad range of foreign and domestic premium content including drama series like House of Cards and The Wife's Lies, hit TV shows like Voice of China and Happy Camp, recent movies like Interstellar and Gone With the Bullets and live broadcasting of premium sports like the English Premier League and the NBA, as well as making their own exclusive content. Mobile video streaming delivers significant value to consumers by enabling them to consume content anytime and anywhere on devices that are more affordable than TVs and PCs. Recognizing this huge opportunity, traditional TV networks in China like Hunan Broadcasting System have also joined the competition for mobile audiences by launching their own apps like ImgoTV.¹³⁰

Our examination consisted of reviewing the performance of the various zero rated applications in the app stores amongst other mobile applications the period of January 2013 through July 2015 for Netherlands (Spotify, Sizz, HBO Go) and Slovenia (TViN, Deezer, and others). For Chile we began the observation from January 2012 through the present for WhatsApp. Data is offered on a monthly basis, so we developed annual averages to describe relevant movement year over year. We also examined the prevalence of local country applications, as this is seen as an important outcome for many policymakers. Market share data on the operators was found on the respective regulators' websites.

¹²⁸ "HBO NOW Pushing the Cord-Cutting Trend," *App Annie Blog*, August 4, 2015, <http://blog.appannie.com/hbo-now-pushes-the-cord-cutting-trend/>.

¹²⁹ "Report: China Surpasses United States by iOS Downloads," *App Annie Blog*, April 28, 2015, <http://blog.appannie.com/china-surpasses-united-states-ios-downloads/>.

¹³⁰ Ibid

	Chile	Netherlands	Slovenia
The operator that offers zero rating wins market share.	Since launch, Virgin Mobile has grown consistently since launch but has less than 1% of the Chilean mobile market. It is difficult therefore to attribute its success to zero rating because the rate is the same with or without the zero rated offer.	No. Between 2012-2014, market share amongst mobile operators in the Netherlands was relatively constant, within 5 percent. A modest gain for service providers and virtual providers has been recorded over the period. ¹³¹ KPN, which had a zero rated offer, experienced a modest decline.	No. The incumbent with two zero rated offers experienced a reduced market share.
The zero rated service wins market share.	Can't be definitively determined. WhatsApp was already a popular service in Chile before zero rating began. On Apple devices it actually lost market share while on Android it stayed relatively constant. Messenger, Twitter, Skype, Badoo, Google Hangouts, Emoji, LINE, Telegram, imo, Talking Tom and Viber are also popular messaging apps.	Vodafone's Sizz never entered the top 500 most downloaded apps for the period. HBO Go was #450 in 2012, #483 in 2013 and not in the top 500 in 2014-2015. There is no consistent offer for Spotify during the period, and it was frequently not zero rated. However its ranking increased from an average of 42 (Apple) and 30 (Android) in 2013 to from 12 and 8 respectively in 2015. Globally Spotify has increased ranking in all countries, whether zero rating is present or not.	No for Telecom Slovenia's TViN. The ranking falls from 67 to 85 between 2013 and 2015 in the Apple store. No for Deezer; it fell from 116 to 133 for the period. VOYO fell from 116 to 125. For Hangar Mapa, Tsukabina, and TV.Si, they either never appear or show briefly with a low rank. For HBO Go, it rises from 282 to 68. As of Aug 15, 2015, it ranks at 291 for Apple.
The presence of zero rating will preclude the emergence of new applications and services.	Can't be determined. Facebook's Messenger and WhatsApp, ranked closely. Twitter, Instagram and Snapchat are popular. For Chilean apps as of Aug 15, 2015 in Apple, The Voice TV show app #1; marketplace Yapo at 12 (14 in Google), and the government's "Youth Card" at 21, allows youth differentiated pricing for various activities in Chile.	No. New apps from a variety of countries appear each month in the ranking. However it does not appear that the Dutch net neutrality law stimulates new Dutch applications, as was hoped. Only two Dutch apps appear in the top 25 of top ranked apps in either Apple or Android.	No. New apps from a variety of countries appear each month in the ranking. As of Aug 15, 2015 for Slovenia apps in Google Play, the market Bohla appears at 48, and 24ur.com, Slovenian news at 76. For Apple, the ASfalt traffic app at 19, bohla.com at 30, BOX app by Telekom Slovenija to manage TV programs, and 24ur.com at 90.

¹³¹"Onderzoek Telecommunitor derde kwartaal 2014," Onderzoek, ACM.nl, (February 11, 2015), <https://www.acm.nl/nl/publicaties/publicatie/13838/Telecommunitor-derde-kwartaal-2014/>.

As for the assertion that users do not go beyond zero rated content, we could not find evidence for that assertion in any of the three countries. As for the assertion that operators which zero rate their own content foreclose other content, we could not find any evidence for that either. The only country with proprietary content was Slovenia. The operators' content was extremely niche-oriented competing in a large, global marketplace. The content appears to be non-rivalrous, that is its presence is appreciated by those who value it, but it does not detract from the experience of other users. In any event, its rank is so low that it does not "threaten" other content.

As pointed out by the competition authority in Slovenia, the zero rated offers in many cases consume only minimal data, and at best, may only impact price by a few cents per month. In other words, the data consumption for apps such as Spotify, WhatsApp, and Deezer is so small in relation to other services that it cannot be observed. If anything, purveyors of the most popular applications work to reduce the data consumption of their applications. Facebook re-engineered its mobile platform, decreasing average monthly data use from 14MB/mo to 2MB/mo.¹³²

Naturally video applications consume the most data, so these cases are interesting to review. Vodafone Netherlands only had 3200 subscribers for its zero rated HBO Go application when it was ordered to end the practice. That the application was zero rated did not deter other content in the marketplace. Vodafone did not gain an advantage over competitors by zero rating the app.

In the case of Slovenia, the zero rated offers actually increased output on the market, even though they were not the most widely demanded application. For example Telecom Slovenia purchased sports rights and extended that benefit to its customers doubly with its investment and by zero rating the application. But the zero rated TViN service actually suffered a loss in ranking in the app store during the period. VOYO was a content service that was zero rated for a two year period, and it suffered a decline in app store rank as well. It shows that not all content is valued equally if it is free. Zero rating is not the competitive advantage that detractors like to describe it. More likely, as Baumol described, it is just one of a range of offers that providers have to make to survive in the marketplace.

It cannot be observed that zero rating has reduced innovation in any of the countries. In anything bans on the practice have hurt users the most. This is particularly the case for the subscribers of Vodafone and Tuskabina. The bans against customer service applications such as Sizz (Vodafone Netherlands) and Tuskabina (Tuskabina Slovenia) were offered as courtesies, so that customers would not have to use data to top up their mobile subscription or minutes to call customer support. Neither of these operators hold dominant market positions anyway so punishing them for consumer-friendly activities seems harsh.

On balance for the three countries, it appears that the impact of zero rating is negligible but not negative.

¹³² See Mark Zuckerberg comments at Mobile World Congress in 2014 at 28:20
<https://www.youtube.com/watch?v=VHwkHZpXqWc>.

Zero Rating and Freedom of Speech

There is no doubt that zero rating is a potent policy issue. For advocates in many countries, zero rating and the larger net neutrality debate has become synonymous with free speech.

However it has been observed that making net neutrality laws in developing countries is premature because the majority of the population of these countries has never been online, and as such, cannot experience the Internet for themselves. Zero rating is perhaps the quickest, cheapest way to get the poor online, but that option is vigorously challenged.

It may be the case that people in developing countries could benefit from net neutrality, but the choice of how the Internet should be is made for them. The decision to make net neutrality rules has path dependencies with implications for more than just network access. Net neutrality rules across 20 countries have provisions related to copyright, data retention, pricing, surveillance, and more.¹³³

Compared to people who are not online, net neutrality advocates are elite, sophisticated, and well-educated. They probably have computers at home with wireline access as well as the latest smartphone. A low or no data cap plan is their preference. But people who have never been online do not have the same expectation of Internet access. For a Chinese, the Internet might be equated a non-branded smartphone, WeChat messaging, Baidu search, and Youku video. It need not conform to a gold standard of neutrality, but it still can be a thrilling experience.

For Westerners, concepts such as free speech and freedom of expression are established and enshrined in constitutions and case law. But for a number of developing countries, these concepts are still in the making. There is no doubt that Internet freedom is important in these countries, as it is everywhere. But where Internet penetration is low and television, radio and print are still the dominant media, the pursuit of freedom for all media may be more appropriate than just net neutrality.

In any case, the question may boil down to whether those not yet online have sufficient economic power. As mentioned, developing countries may have mobile networks but still lag on key indicators for quality of life. There is no doubt that zero rating offers an opportunity for poor people to access the Internet, become politically aware, and hold leaders more accountable. Such empowerment could be destabilizing for the status quo.

This paper has focused specifically on Chile, Netherlands, and Slovenia. The following section offers an American perspective on net neutrality, particularly in light of nine legal challenges to the FCC's net neutrality rules, the third time the telecom authority is in court for making rules. However even Slovenia has free enterprise laws. Such arguments may be important in a former communist and war-torn country where entrepreneurs and private enterprises try to build a market economy.

Critics contend that zero rating is "discriminatory", but in the United States, zero rating is likely a form of speech that is protected by the First Amendment of the Constitution.¹³⁴ Zero rating conforms to all aspects of the classic definition of marketing: product, price, place, and promotion.¹³⁵ Thus bans on zero rating may be bans on free speech. To be sure, "deception" and false advertising are not allowed, but the freedom to make an offer in the marketplace is a fundamental as speech itself.

¹³³ See forthcoming paper by Roslyn Layton for a comparison of net neutrality rules in 20 countries.

¹³⁴ "Advertising and the First Amendment," *LawPublish*, accessed August 5, 2015,

<http://www.lawpublish.com/amend1.html>.

¹³⁵ McCarthy, Jerome E. (1960). *Basic Marketing. A Managerial Approach*. Homewood, IL: Richard D. Irwin.

This argument¹³⁶ will soon have a test in court. It holds that a broadband provider is no different from a newspaper, printing press, or broadcaster from a constitutional perspective. Broadband access is speech just as print or broadcast.

The distinction between technical and commercial reasons is irrelevant for the First Amendment. Indeed for a network, technical and commercial concerns are one in the same. Thus some net neutrality rules against how operators price and manage their networks may be unconstitutional. Legal scholar Fred Campbell explains¹³⁷

It is constitutionally irrelevant that the content-related restrictions in the open Internet rules also implicate business concerns.¹³⁸ The Court has long held that the commercial nature of the press does not deprive it of First Amendment protection, because there is no constitutionally permissible way for the government to separate the business interests of the press from its editorial function.¹³⁹ The existence of “commercial activity, in itself, is no justification for narrowing the protection of expression secured by the First Amendment,”¹⁴⁰ in part because even early printers were capitalists who were regarded as innovators.¹⁴¹ The combination of the profit motive “with other motives that were self-serving and altruistic, and even evangelistic, at times,” played a role in the “rapid expansion of early printing industries.”¹⁴² The editorial and business interests of the press have always been inextricably intertwined,¹⁴³ and the Press Clause has always forbidden government attempts to unravel them.¹⁴⁴

While the court may recognize an argument for common carriage, this does mean free carriage. Thus an operator’s discretion of how to charge for delivery is protected as well. Price differentiation is enshrined in almost every country through the post, with priority, regular, and reduced rate postage. It is understood that there is social value to give mass media and books a lower price of delivery because it supports communication, expression and the exchange of ideas.

Moreover rather than declare such practices inherently harmful, however, the Supreme Court has upheld the government’s right to engage in paid prioritization of the mail for the purpose of subsidizing particular forms of speech.¹⁴⁵

In this way, it is no different for some Internet content to get the “book rate” or the zero rate. It supports overall expression.

In some respects the zero rated Internet.org, a platform for Facebook and locally relevant content for developing countries is not unlike the very original conception of zero rating, a term¹⁴⁶ that comes from the international trade and tax policy of the European Economic Community in the 1950s. When value added tax (VAT) was imposed on goods distributed in what is today the European Union, certain “essential” items such as food, medicines, books, equipment for the disabled and were “zero rated” and not taxed. While it probably makes net neutrality advocates wince, Facebook is an essential for the Internet.

¹³⁶ Fred Campbell, “CBIT Amicus Brief: FCC Net Neutrality Rules Violate First Amendment,” *Center for Boundless Innovation in Technology*, August 6, 2015, <http://cbit.org/blog/2015/08/cbit-files-amicus-brief-fcc-net-neutrality-rules-violate-first-amendment/>.

¹³⁷ Fred Campbell, *The First Amendment and the Internet: The Press Clause Protects the Internet Transmission of Mass Media Content from Common Carrier Regulation*, 94 NEB. L. REV. ____ (2016). See also <http://cbit.org/blog/2015/06/cbit-white-paper-how-net-neutrality-invites-the-feds-to-ignore-the-first-amendment-censor-the-internet> at p 32-33, 51

¹³⁸ *Bigelow*, 421 U.S. at 818, quoting *Ginzburg v. United States*, 383 U.S. 463, 474 (1966). (“The existence of ‘commercial activity, in itself, is no justification for narrowing the protection of expression secured by the First Amendment.’”).

¹³⁹ See *Tornillo*, 418 U.S. 241, 258.

¹⁴⁰ *Bigelow*, 421 U.S. at 818, quoting *Ginzburg v. United States*, 383 U.S. 463, 474 (1966).

¹⁴¹ Elizabeth L. Einstein, *The Printing Press as an Agent of Change*, p. 22 (Cambridge University Press, 14th printing, 2009).

¹⁴² See *id.* at p. 23.

¹⁴³ See *id.* (“It seems more accurate to describe many publishers as being *both* businessmen *and* literary dispensers of glory.”).

¹⁴⁴ The Press Clause has not been amended since its initial ratification.

¹⁴⁵ *Hannegan v. Esquire, Inc.*, 327 U.S. 146, 151 (1946).

¹⁴⁶ Harry Wallop, “General Election 2010: A Brief History of the Value Added Tax,” April 13, 2010, <http://www.telegraph.co.uk/news/election-2010/7582869/VAT-a-brief-history.html>.

But it is not the case that all expression must be treated equally. "The Supreme Court has rejected the notion that the government has an interest in equalizing the relative ability of individuals or groups to speak.¹⁴⁷ "[T]he concept that government may restrict the speech of some elements of our society in order to enhance the relative voice of others is wholly foreign to the First Amendment,"¹⁴⁸ notes Campbell.¹⁴⁹

Marketing and advertising to support the provision of service, content, access to users has been a quintessential part of every medium, whether radio, TV, print, search engine, social network, and music streaming. Classified advertisements, a forerunner to search advertising, supported Benjamin Franklin's *Pennsylvania Gazette* in 1728. The telephone newspaper of the 1890s, a forerunner of today's mobile broadband, was funded both by spoken ads and price differentiated subscriptions for different audiences.¹⁵⁰ Radio broadcasting would have been unknown in America had it not been for content providers' zero rated programming.

To stimulate purchase of receivers from the De Forest Radio Company, owner Lee De Forest negotiated the Metropolitan Opera and the Columbia Graphophone Co., to zero rated their music content. Free broadcasts helped introduce America to this new medium. Thereafter it became commonplace for consumer product companies to sponsor radio shows. This was a norm for American television. Revenues from advertisers were used to expand radio and television networks and technologies. Unsurprisingly Internet companies such as Google, Facebook, Yahoo and others have availed themselves to zero rating style business models, so that their users need not pay money for the service. Google zero-rates search and its other products. Facebook sponsors its platform with advertising.

Marketing is also important to promote devices. Imagine if AT&T had not been able to make an exclusive distribution agreement with Apple for the iPhone in 2007. Nokia, in fact, invented the smartphone in 1996 but never got the credit because it failed to communicate to customers in a compelling way.¹⁵¹ Consumers were able to take advantage of the iPhone in spite of its high price of \$399 because AT&T through its subsidy of the phone created a form of zero rating of the cost of the phone to the end user. Additionally Apple could leverage the marketing and distribution of its device in AT&T's subscriber network. Such a partnership was needed to launch the idea of the smartphone in the consumer imagination¹⁵²; it opened the door to other smartphones and fostered the development of mobile platforms on which WhatsApp, Spotify, Netflix, and other mobile applications have flourished. A zero rating like ban on partnerships between operators and device makers could have precluded significant mobile innovation.

Marketing is also essential for firms to differentiate themselves in the marketplace, and even more important for service based competitors which resell service on established networks. Consider the communication on the following two Chilean websites, one for Movistar and the other for WOM. Movistar, the market leader, features a bourgeois husband and wife in their properly appointed home with an offer of 150 voice minutes or 500 MB of data for a set price. WOM, an MVNO, features two girls at party sharing a lemon wedge by mouth with the offer is 30 GB of data for \$25. These are two different customer sets with different needs and budgets. Marketing is essential for each operator to acquire customers.

¹⁴⁷ See *Citizens United*, 558 U.S. at 350.

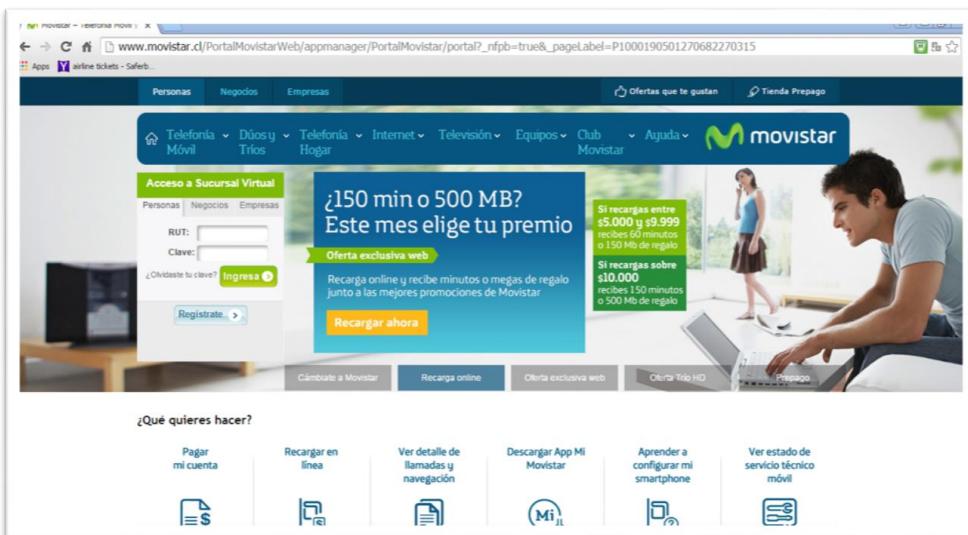
¹⁴⁸ *Buckley v. Valeo*, 424 U.S. 1, 48-49 (1976).

¹⁴⁹ Supra

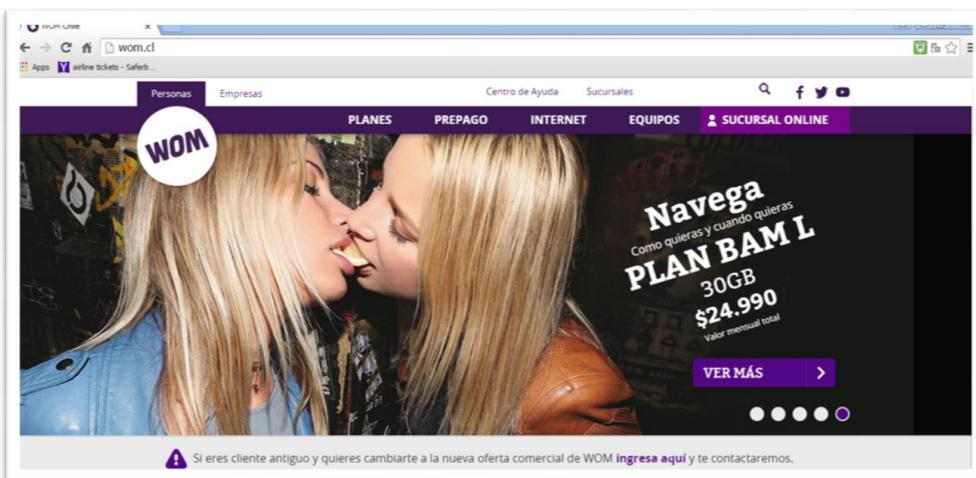
¹⁵⁰ Roslyn Layton. "What the 19th Century Telephone Newspaper Tells us about Today's Internet." August 13, 2015. <http://www.techpolicydaily.com/internet/telephone-newspaper-todays-internet/>

¹⁵¹ "Nokia 9000 Communicator Detailed Specs," *PDAdb.net*, accessed August 14, 2015, http://pdadb.net/index.php?m=specs&id=879&view=1&c=nokia_9000.communicator.

¹⁵² Strand Consult iPhone Report, 2009. <http://www.strandconsult.dk/sw3896.asp>



Movistar's Homepage



WOM's Homepage

Why the War on Zero Rating

This paper has examined the arguments for and against zero rating. It examines the key concerns about zero rating and attempts to find evidence for the claims. It reviewed the leading database of financial information for mobile operators and the leading database of application performance in mobile app stores. We conducted primary research in the three countries that ban zero rating. The case studies highlighted a number of similarities in the countries, including strong net neutrality laws, reluctant regulators, and the role of powerful advocacy organization to make zero rating illegal. While this demonstrates the success of these organizations to activate the media and policymakers, the case studies highlight the lack of analysis, evidence, and investigation in net neutrality policy, showing that each country is highly idiosyncratic in its rulemaking.

Through a variety of quantitative and qualitative techniques, we have attempted to find evidence for the harm that zero rating allegedly creates to consumers and competition.

In short, we cannot find evidence that shows that zero rating creates harm. We find that zero rating has a negligible but not negative impact on the marketplace.

Zero rating is one of a number of marketing techniques that mobile operators need to employ in competitive marketplace. For some operators in the study, their outcomes are the opposite predicted by critics. Some operators that deployed zero rating actually lost market share, and their zero rated applications were insignificant in terms of rank. We do not believe that this is a result of zero rating, but rather that zero rating is the result of the operator's competitive situation. To rephrase Baumol, operators don't deploy zero rating because they can, but because they must.

It is strange however that a service that has such a minimal impact should be so maligned. It is also an inconsistent that zero rating is rampant across Internet applications and services (e.g. advertising supported games, search, social networks, music streaming etc) but arbitrarily prohibited on mobile broadband services.

We noticed that in the three countries that advocates have a goal to make flat rate internet subscriptions and high data caps (preferably no data caps) the norm, if not the law. While such offers have appeal, they necessarily mean low volume users, whether by choice or budget constraint, are forced to pay more for internet access. Meanwhile high volume users, those who want to stream movies or play video games, pay proportionately less for their service. Such a situation would be a particular boon to companies such as Netflix, whose streaming service takes up a disproportionate share of mobile traffic. Thus it appears that campaigns against zero rating are waged as a way to pressure mobile operators to change their pricing in favor of users who consume high volume video and against those users who have never used the Internet but want an incentive to try.