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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
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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://1e8q3q16vyc81g8l3h3md6q5f5e.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 Aquito, 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_Q415BNGONU_MA7SIMSRIS93355.

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/opera-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 Whispernet.** 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 Grátis 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://zatsnotfunny.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/3014/4128/9470/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 carries, 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/wwwpdf/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 Telnor 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 a 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?