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-app-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))

- 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).