# SUBMISSION OF COMMENTS ON TRAI CONSULTATION PAPER

## *Data Speeds under Wireless Broadband Plans*

**Q.1 Is the information on wireless broadband speeds currently being made available to consumers is transparent enough for making informed choices?**

Adequate level of transparency is ensured by telecom service providers (TSPs) and internet service providers (ISPs) while communicating information on data usage and billing. However, the Quality of Service (QoS) parameters are way too technical and overwhelming for consumers to comprehend and make sense of. It is also observed that use of certain terms such as 'up to' and 'unlimited' for data speeds and data limits are misleading and creates confusion and dissatisfaction among wireless broadband consumers.

In a 2016 study[1] by CUTS International and IIT Delhi it was reported that respondents were well aware of their data plans but had little information regarding the exact quantity of data being used every month. The level of awareness was significantly low in case of bandwidth usage. Most of the respondents clearly expressed a desire to know more about these issues.

Thus, information asymmetry needs to be dealt with by providing more information to consumers in a simplistic manner, so as to empower them to make an informed decision while purchasing or using a broadband service/plan.

**Q.2 If it is difficult to commit a minimum download speed, then could average speed be specified by the service providers? What should be the parameters for calculating average speed?**

Considering India's vast and varying topography, the dynamic environment of wireless data transfer mode and the very design of 2G/3G/4G standards, a minimum download speed for a wireless broadband consumer at any particular time may be a challenge for TSPs/ISPs to commit.

However, calculating an aggregate average download speed across consumers within a specific geographic region and at varying times is surely a feasible option. TSPs/ISPs would anyways be having these numbers so as to work on both adequate Backhaul and Radio Access Network (RAN) capacities and provide a certain predictable average speed to consumers based on the statistical multiplexing of connections. Two benchmark measurement sets may be explored to assess the speeds being offered:

a. Upper-Bound: TSPs/ISPs may conduct their own measurements by downloading data on a long-lived Transmission Control Protocol (TCP) connection as specified in the measurement methodology prescribed by the 2012 Wireless Data Service Regulations issued by TRAI. These speeds, observed over multiple tests and across multiple locations, will give an upper bound to the speeds offered because such measurements in controlled test environment ensure that server or user device are not

[1] CUTS (2016), IIT Delhi, Mobile Internet Services in India: Quality of Service, CUTS, Jaipur. The study covers two key points – (i) evidence from select States on the quality of mobile internet services (based on data); and (ii) perception and awareness of consumers in select States regarding the quality of mobile internet services and relevant policies and regulations. Accessible at <www.cse.iitd.ernet.in/~aseth/1615_QoS_Report_CUTS_IIT.pdf>

bottlenecks. Thus, speeds attainted are entirely dependent on the combined effect of Backhaul and RAN network capacity.

b. Lower-Bound: TSPs/ISPs may measure the speeds experienced by different consumers by instrumenting the data downloaded during active times of the connection. This information is already collected by them for billing and traffic shaping purposes as per the location-specific plans purchased by consumers. These speeds will give a lower bound to the speeds offered because user device, server bandwidth or application requirements may not utilize the network in full capacity, thus, projecting an estimate lower than what the network infrastructure may provide.

For both measurements, distribution may be considered in the form of deciles[2] or quartiles[3], rather than just the average. Difference between the two distributions will give some sense of a measure of unused capacity, which may ideally differ by more than a 50% ratio. With such a measurement technique, a reasonable commitment from providers may be taken to rationalise values. It may be noted that such commitments may not be evaluated on per-consumer or per-connection basis, but may be averaged-out across consumers and across times.

**Q.3 What changes can be brought about to the existing framework on wireless broadband tariff plans to encourage better transparency and comparison between plans offered by different service providers?**

a. Broadband Labels: Given the ever increasing share of services in the economy and the present Indian government's thrust towards the 'Digital India' mission – e-governance, digital payments, etc. the time is precise to focus on labelling broadband internet services offered to consumers today. Labelling will bridge the information gap between consumers and TSPs/ISPs, offer information in a simple and standard format, help educate consumers about the conditions of broadband services and making services more transparent, encouraging competition for better services among providers, modernisation and consumer welfare. Existing examples for mechanisms of labelling broadband services in other countries are already included as a chapter in the consultation paper.

b. Information Disclosure: TSPs/ISPs must disclose complete information to consumers on mobile internet services, at the time of sales as well as on their websites. Strict rules should be imposed against misleading advertisements by TSPs/ISPs and the reported performance must be compared with the performance that was originally advertised to understand the differences arising between promised and achieved performance. A disclosure code is being practiced in United Kingdom, which provides consumers a fair idea on the QoS. Singapore has also mandated a complete information disclosure by the operators, so as to equip consumers with sufficient information for an informed choice making and also to strengthen the Quality of Experience (QoE).

c. Performance Ranking: A system of ranking on QoS performance should be introduced for TSPs/ISPs to instil competition and enhance QoS efficiency and innovation. Ranking parameters may include reported QoS indicators, data usage and pricing slabs, specific performance enhancing methods deployed by different providers such as data compression and transcoding proxies, content delivery network linkages, fast DNS

[2] Decile - Each of ten equal groups into which a population can be divided according to the distribution of values of a particular variable.
[3] Quartile - Each of four equal groups into which a population can be divided according to the distribution of values of a particular variable.

servers, network capacity, backbone connectivity, etc. The parameter values may be displayed on labels and ranks may be presented as star ratings for each provider.

**Q.4 Is there a need to include/delete any of the QoS parameters and/or revise any of the benchmarks currently stipulated in the Regulations?**

There is no need to delete any of the existing QoS parameters been reported by TSPs/ISPs to TRAI.

Inter Radio Access Technologies (IRAT) Switching Reports: Several studies have shown that due to improper configurations, IRAT handovers occur extensively and impede performance by forcing devices to switch from 3G to 2G then back to 3G, etc. This must be considered as a parameter in the current reporting structure.

**Q.5 Should disclosure of average network performance over a period of time or at peak times including through broadband facts/labels be made mandatory?**

Information disclosure of QoS performance and other parameters through broadband labels must be mandatory, in the long run, as it will help consumers in making informed choice while purchasing a broadband service/plan, establish a formal contract between consumers & service providers as well as empower consumers to compare the advertised QoS with actuals.

However, a phased approach may be considered while implementing such a mechanism. A recent case study undertaken by CUTS regarding the Bureau of Energy Efficiency's (BEE) Energy Star Labelling Programme[4] explored the implementation process of energy efficient star labels for electrical appliances in India and highlighted the fact that BEE launched this programme on a voluntary basis for fewer appliances and gradually transited these to a mandatory phase as market preparedness and receptivity increased. For the same, voluntary labelled products were tracked with a view to assess the penetration of these products in the market. Once the market-share of voluntary labelled products became more than 50 percent, introduction of mandatory labelling for that product was considered.

Similarly, once a certain percentage of consumers are actively and consistently using these labels basis, TRAI may consider to mandate the mechanism. Moreover, introducing a new label would also mean that it may have certain limitations, which will be strengthened over time with constant improvisation and evolution. Thus, mandating it right away might not be the best option. Pilot projects may also be considered by TRAI and operators to assess the effectiveness and efficiency of such labels. It is extremely important to get a buy-in of all the relevant stakeholders i.e. industry and consumers. Pilot projects would provide TRAI with this opportunity to be able to receive their responses/concerns and accordingly, be able to finalise the strategy for implementation of the labels.

[4] BEE Energy Star Labelling Programme – Brief Overview on Implementation & Success Factors. Accessible at <http://cuts-ccier.org/broadbandlabel/pdf/Case_Study-Bee_Energy_Star_Labelling_Programme.pdf>

**Q.6 Should standard application/websites be identified for mandating comparable disclosures about network speeds?**

The following existing platforms must necessarily be enabled and utilised for mandating comparable disclosures about network speeds:

a. TRAI Website

b. TRAI MySpeed Mobile App

c. TSP/ISP Website

d. TSP/ISP Mobile App

e. Websites of Consumer Organisations/NGOs registered with TRAI

This will also help TRAI, TSPs/ISPs and Consumer Groups to reach out to consumers and send updates on new regulatory initiatives and changes, building trust in the information source.

Apart from these options, other platforms may also be used for such information disclosures, namely marketing collaterals displayed and provided at retail stores, brochure inserts within the sim-card packs, television and social media commercials of the operators, etc.

**Q.7 What are the products/technologies that can be used to measure actual end-user experience on mobile broadband networks? At what level should the measurements take place (e.g., on the device, network node)?**

a. Technology: Whitebox by SamKnows[5] is a prominent solution used by many regulators and consumers globally to capture QoS experienced by consumers and extrapolate the indices to measure the overall QoS in a particular geographical region. TRAI may explore this option to measure user experience.

b. Reporting Level: The spatial granularity for existing QoS reports must also be increased to allow for good comparisons. Currently these reports are prepared at circle-level and expanding them to district and city levels, categorically separated into rural/urban areas, should provide greater information to consumers specific to their geographies.

c. Crowd-Sourced Measurements: As outlined in this study[6], different aspects related to QoS should be measured in different ways:

- Crowd-sourced measurements for throughput and latency should be aggregated in large numbers given the variability that may arise due to short-term and long-term shadowing in wireless connections. The alternate to ask providers for reporting data aggregated across all user sessions is a more viable and may be measured from within the providers' networks.
- Metrics such as availability however, should be measured from an end-user perspective by capturing data from user device. Conducting such measurements via crowd-sourced applications, however, requires root permissions on the phone to access radio layer protocol information, and hence the same

[5] SamKnows - A global broadband measurement performance provider that allows consumers to measure and improve the quality of their Internet experience. Accessible at <https://samknows.com/products>
[6] A. Gember, et al, Obtaining In-Context Measurements of Cellular Network Performance, IMC 2012. Accessible at <http://pages.cs.wisc.edu/~akella/papers/cellmeas.pdf>

metrics should be monitored and reported from the provider's network such as number of attempts made, failed attempts, etc.

Therefore, crowd-sourced measurements through tools like TRAI's MySpeed app should serve the purpose of cross-checking values reported by providers, if obtained at very large scale. Their distribution should tally with the reported data as test methods of downloading large files, measuring IP packet latency, etc. are very similar. Crowd-sourced measurements should however not be the basis for labelling the performance of providers unless they can be obtained at very large scales.

**Q.8 Are there any legal, security, privacy or data sensitivity issues with collecting device level data? If so, how can these issues be addressed? Do these issues create a challenge for the adoption of any measurement tools?**

There are no security or privacy issues in reporting user performance in aggregate, measured through the network. Crowd-sourced information similarly has no liability attached as long as aggregate data is revealed for performance comparison, and data even at the backend is stored through anonymization. However, it should be ensured that consumer consent is taken into account while sourcing user-level information to protect privacy and maintain transparency in the system. However, there might be applications collecting sensitive data than required. Thus, there has be vigilance to ensure that such malign practices are not adopted by applications.

**Q.9 What measures can be taken to increase awareness among consumers about wireless broadband speeds, availability of various technological tools to monitor them and any potential concerns that may arise in the process?**

a. Capacity Building Programmes: Trainings, workshops and awareness programmes oriented towards importance, benefits and usage of broadband services, data speeds, broadband labels, various technological tools, etc. must be organised for consumers by TSPs/ISPs, TRAI, Department of Telecom (DoT), Consumer Action Groups as recognised TRAI and academia pan India. TSPs/ISPs may proactively incorporate labels at the point of sale, place detailed information on their websites, send regular alerts to users, etc. to not only bring transparency but also help consumers build an understanding about different performance parameters, billing details, etc.

b. Marketing Campaign & Promotions by TRAI: Taking ques from the successful 'Jago Grahak Jago' campaign driven by Department of Consumer Affairs and the Star Labelling Programme implemented by BEE, TRAI may strategise similar marketing and promotion campaigns to build consumer awareness and give thrust to all stakeholders to ensure smooth implementation. TRAI could consider launching a Slogan Contest at Pan India level to receive inputs from citizens for the title of the campaign for broadband labels.

c. e-Labelling: TRAI may explore pre-loading such information via websites and apps on all new computing devices that access wireless broadband services and are manufactured for Indian markets.

**Q.10 Any other issue related to the matter of Consultation.**

a. Speedy & Seamless Grievance Redressal: It has been repeatedly voiced by TRAI and consumer groups that the quantum of grievance related to data speeds and the time-effort taken to resolve the grievance is not cost-effective and unfavourable towards consumers as per current mechanism, leading to high dissatisfaction and negative experience. Hence, broadband labels may be provisioned and implemented in such a manner that speeds up the grievance redressal mechanism and consumers are able to transact seamlessly to resolve their complaints and concerns.

b. Periodic Review of Labels: It is also vital to maintain standards and quality once the label is introduced. It is important to note that technology is evolving rapidly. Thus, to keep pace with the changes, the labelled wireless broadband service should be regularly assessed to determine if an increase in efficiency criterion is required, along with monitoring quality features and evaluation of QoS parameters.

c. Data Provisioning for CAGs, Academia & Think-tanks: An issue remains of how to audit of existing data being reported by TSPs/ISPs is been conducted. Therefore, standardized log collection formats, anonymization and use of large scale analytics on this audited data (along with crowd-sourced data) may be enabled and made accessible to academic institutions, consumer groups registered with TRAI, global/domestic think-tanks so that periodic, independent and unbiased audit, research and data analytics are performed for consumer benefits.

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