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Shri. Robert J. Ravi
Advisor (QOS), TRAI
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg, (Old Minto Road)
New Delhi - 110002

Dear Sir

**Sub: COAI inputs to Amendment to the Standards of Quality of Service
for Wireless Data Services Regulations, 2012**

This is with reference to TRAI's Consultation Paper on "Amendment to the Standards of Quality of Service for Wireless Data Services Regulations, 2012" dated 21st April 2014.

In this regard, please find enclosed the detailed industry inputs on the same.

We sincerely hope that our submissions will merit your kind consideration.

Regards,

Rajan S. Mathews
Director General-COAI

**CC : Dr. Rahul Khullar, Chairman, TRAI
: Shri R. K Arnold, Member, TRAI
: Dr. Vijayalakshmy K Gupta, Member, TRAI
: Shri Sudhir Gupta, Secretary, TRAI
: Shri Suresh Kumar Gupta, Principal Advisor (TD, CA & QoS), TRAI**



**COAI comments on TRAI Consultation paper
on**

**Amendment to the Standards of Quality of Service
for Wireless Data Services Regulations, 2012**

- 1) The mobile sector in India is characterized by intense competition. As compared to other parts of the world, the number of service providers in a service area is the highest and the tariffs are the lowest. Affordability of mobile and data services and the same is driving the take-up and usage even in rural areas.
- 2) With low PC penetration and high wireless tele-density, mobile phone has become an alternative/best medium to provide data services to the masses. The increasing adoption of smart phones and availability of content such as Facebook, Twitter, YouTube, etc. on mobile has kindled the curiosity of the wireless subscribers to use data services. However, the market is yet to reach a quantum to plan widespread networks. Thus, the data services over mobile phones have a promise for future growth in India.
- 3) Moreover, the Indian operators face a major spectrum constraint. The average spectrum with an operator in India is much below the international average. The operators just have only one carrier to provide 3G services, which takes care of both the R99 and HSPA handsets. This forces them to plan their networks in a much different manner than compared to their counterparts globally.
- 4) India is a fledgling market from the data perspective and its utility. Applications, utilities, content, proliferation of smart phones and access are still to develop. Despite the introduction of 3G and BWA, the demand beyond some top cities still is meagre and has yet to take off. The networks for mobile data are still to evolve and usage patterns still to emerge to determine where the demand exists. Thus, it can be said that data services are still in the initial stages in our country as compared to other mature markets internationally, and we are hopeful that the TRAI will help facilitate the enhancement in pace of growth of data services.
- 5) In light of the above facts, our submissions are as follows:



- Q1. What are your views on prescribing benchmarks for minimum download speed as above? Please give your comments with justification.**
- Q2. Should the service provider be mandated to inform the minimum download speed to customers along with each tariff plan? Please give your comments with justification.**

COAI Comments

- a. The speed of the packet data is dependent on various factors such as:
- i. Number of subscribers browsing the data services,
 - ii. Low coverage area,
 - iii. Location of the customer,
 - iv. Peak/ off peak time,
 - v. Kind of device being used,
 - vi. Transmission Bandwidth
 - vii. External Interference
 - viii. Spectrum / carrier limitation
 - ix. QOS based bill plan
 - x. External factors like availability of link between web server and the telecom network,
 - xi. Availability of web server,
 - xii. Website behavior, etc.,

It is to be noted that these factors are dynamic in nature and service provider does not have any control on these.

- b. It is to be noted that the concept of “minimum download speed” cannot be there in a multiple access scenario due to the technical problems of clutter, interference, fading, path losses etc.
- c. Further, the test results are taken from the controlled environment of a test/FTP server (Part of OPCOs network) by downloading/uploading a file, whereas the customer accesses the internet/http server which is completely in an uncontrolled environment (No QoS guarantee). Since, the experience by the user, due to the intrinsic dependence on mobility which cannot be restricted in a mobile scenario, it is technically not feasible for the TSPs to commit any pre-specified download speed to the customer.
- d. In addition, there are various bill plans being offered to the customers in the market, where fixed data payload is being provided to the customer and once that data limit is exhausted, there are fair usage policy terms and conditions, which will also have an impact on minimum download speed as well.
- e. The Authority itself in the Paper in para 2.1 has noted the variation in the speed amongst the TSPs even for the same technology. It is to be noted that this is the speed that was



reported by the TSPs for their bill plans to the TRAI, which is taken in an ideal test scenario (i.e. data upload/download on/from FTP server from drive test kit, near site and in stationery mode). In addition, it can be seen from the table that not even a single operator can offer a uniform speed constantly. Therefore, the method being considered by TRAI for averaging this speed to come to a common “minimum download speed”, which can be made applicable across all operators is technically not feasible.

- f. The Authority has analyzed the data for three quarters and it is evident from the data that there is wide variation in the speeds being provided by different operators and hence, it is not possible for the operators to specify a particular minimum download speed to all the customers. As it can be seen from the table 1.1 on Page 5 of the Consultation Paper that even a single operator does not have a uniform speed constantly, thus, applying an average uniform speed across all operators across the country will not be feasible.
- g. Thus it is technically not feasible to specify any minimum download speed for Wireless data services across all wireless networks covering all service providers as data speed is being determined basis various factors which by themselves are variable and are beyond service provider’s control at any point of time.
- h. Technically, 2G/3G do not support to have assured minimum download speeds for subscribers. GSM and UMTS do not have technological concept of Guaranteed Bit Rate. The capacity on Radio Access medium in 2G/3G is shared on best effort basis between all subscribers camped on a site.
- i. The 2G network has been designed mainly to meet the voice service requirements exclusively where after initial signalling handshake a traffic channel is dedicatedly allotted to a subscriber till end of a voice call. Thus, a QoS can be ensured. Whereas, in a data session several subscribers are latched to the same IP address and multiple PDP sessions are initiated simultaneously. This is dependent on variables, like time of the day, location, specific event. For lower Carrier to Interference Ratio (C/I) while this might not have an impact on the voice transmission, there is every possibility in the case of data transmission a lower coding rate is adopted and retransmission of packets is restored in that location itself, thus degrades the data speed, hence any guarantee on QoS for data services in 2G network is not technically feasible.
- j. In addition to propagation condition being one of the principle factor, data throughput is also a function of the user end device, if GPRS or EDGE technology / device is being used. EDGE service is also sensitive to signal strength and type of coding used. In case of EDGE at the cell fringe region (low coverage area or deep indoor region) the signal strength is low and higher coding scheme is not feasible - hence lower throughput.
- k. It is to be understood that practically, it is not possible to provide minimum download speeds. There are too many variable factors that contribute to have bandwidth changing across subscribers on time/location basis etc. These are categorized broadly into:



i. Network Related

- a) Limited Spectrum availability in 2G/3G bands per operator: this limits maximum site capacity to serve. Large simultaneous use by subscribers per site would lower per subscriber capacity, beyond TRAI suggestion.
- b) Capacity and coverage of Sites: the challenges faced by TSPs in growing capacity and coverage of sites due to EMF, site acquisition challenges in certain areas.
- c) Backhaul availability: Limitation with the backhaul capacity due to low penetration of fibers and limited microwave spots.

ii. User Related

- a) Coverage: Subscribers present in low coverage zones such as basements or cell boundaries cannot be assured a minimum download speed.
- b) Device: Subscribers device quality and type also impose a limitation on maximum supported speed, as well maximum data rate which can be used by explorer/browser on device.

- I. Based on all these factors, it is to be noted that the minimum download speed that operators report to TRAI is in ideal and controlled test conditions and the same cannot be provided to the customer in practical conditions. It is also pertinent to note that this information cannot be provided to the customer as it may be construed as misleading information since the same is dependent on various factors which are dynamic in nature and service provider does not have any control on the same.

m. **International Practices:**

- i. Due to inherent Practical and Technological limitations, such a regulation is not prevalent in any country. With regard to prescribing benchmark for minimum download speed for wireless data access, **internationally, majority of the regulators have not prescribed/set such benchmarks and has left it to the operator's discretion to adopt a measurement methodology that best reflect their operating environment and conditions.** Countries don't have any specific regulation on communication of mobile data speed to the customers considering the fact that Service providers have no realistic ability to control in advance what minimum speed can be obtained by an end user at a specific location and for transparency purposes, customer is to be informed of various factors which impact the data browsing speed at the user end.
- ii. The regulators of United Kingdom ("UK") and Hong Kong have introduced some measures to enhance information transparency on typical broadband Internet access speeds. The UK's Office of Communications ("OFCOM") and Hong Kong's Office of the Telecommunications Authority ("OFTA") have introduced voluntary codes of practice for their ISPs to disclose the typical broadband Internet access speeds that they provide and the surfing conditions under which such speeds are



likely to be achieved.

- iii. The IDA (Info-communication Development Authority) of Singapore has not prescribed any methodology that ISPs should use for measuring and compute typical download speeds. It is up to the ISP to adopt a measurement methodology that best reflect their operating environment and conditions. However, it is mandated that the adopted measurement methodology should be clearly explained and published for the information to end users. Similarly in Hungary, TSPs are communicating peak data download speed as disclaimer to their customers through advertisements & website.
- n. **International Practices on publishing data download measurement on Regulator's website:** In some of the countries, Telecom regulator itself is publishing the results of data download measurement on their website periodically for the information to customers. Some of them are listed below for reference:
 - i. In Brazil, the regulator, Anatel, started publishing the results of its measurements in August 2013 on monthly basis.
 - ii. IDA Singapore is publishing average peak download throughput on their website for all the service providers basis the test carried out by them following their own test procedures and methodology.
 - iii. Italian regulator, AGCOM, published their first results in October 2013.
- o. **Our Submissions**
 - i. Based on the above we submit that there cannot be a guaranteed "minimum download speed" that can be communicated to subscribers. Moreover, communication of such minimum download speed, if advertised, will create confusion in the market leading to customer dissatisfaction. We believe that there is no need for further regulations on this subject, as this is ensured by strong competition in the markets and wide selection of offers in the market, which is already prevalent in India.
 - ii. Basis the above, we may suggest as an alternative approach to TRAI to publish the minimum download data speed of all TSPs basis the Quarterly data submitted to TRAI vide their Wireless QoS data report with the following disclaimer and TSPs to put TRAI website reference in their customer facing communications:

"The above average values displayed for minimum download speed are indicative and measured by the respective service provider in a test environment as per the methodology defined by TRAI. Actual customer experience may differ due to various factors such as number of subscribers browsing the data services, low coverage area, location of



the customer, peak/ off peak time, kind of device is being used, type of application consuming data, external factors like website behaviour etc.”

This approach will meet the compliance requirement of TRAI as well as allow TSPs to provide data services in a transparent manner so as to avoid any misunderstanding.