Re: Comments on the Consultation Paper 06/2020, dated 20th August 2020 on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed"

From: Dua Consulting

Date: 9th November 2020

I. Issues for Consideration

The following issues with respect to broadband may be relevant to frame a Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed.

1.   Broadband: Definition and Speed
Technology is continually evolving, and with that is conjunct the speed of data requirement. This change may depend in the evolution of optical and radio access/ mobile technologies and user demand. There should be a review process every three or five years and as per the industry standards from time to time. Since Broadband service also requires speed in up linking of data, with the advent of Ed-Tech platforms, work from home setups, cloud storage networks and social media platforms, Therefore there is a need to define up linking and downlinking speed ranges for broadband services across various media. This definition will be most relevant in the case of WFH&A

The prevailing definition of broadband in India as notified by DoT on 18th July 2013 is as follows:

"Broadband is a data connection that is able to support interactive services including Internet access and has the capability of the minimum download speed of 512 kbps(The stipulated download speed of 2 Mbps was effective from 1st January 2015) to an individual subscriber from the point of presence (POP) of the service provider intending to provide Broadband service."

Further, one of the main objectives of NDCP-2018 relating to definition of broadband has been to provide Universal Broadband connectivity at 50 Mbps to every citizen by 2022.

While there may be no harm in mentioning a desired speed of connectivity, at the same time speed should not be the sole factor in the definition of Broadband. Speed and bandwidth requirements of each user are interdependent on their specific needs, devices, applications, and volume of content. Furthermore, speed and bandwidth will also evolve with time and technology, hence the definition should not be limited with such fixed parameters. These definitions don't mention the upload speeds at all, therefore could be misleading in the present scenario.

With higher contention ratio, a service provider may accommodate a greater number of subscribers, which may eventually bring down the quality and speed of the broadband and may result in network congestion. The most important factor hence is defining the Quality of Service parameters for end users. Anyone number of speed is a flawed approach.

2. Devices

    With the proliferation of technology, there has also been the growth in the variety and features of the devices which use the data of broadband providers. An important factor would then be considering and re-defining the limit of data and capacity of data utilisation, and would depend on the devices used. The entire broadband utility/ environment/ scene is hugely dependent on the devices used. The devices need to have features of interest to vulnerable groups, including senior citizens, people with challenges of income, literacy, education and mobility. The real growth in Data consumption took place when affordable smart phones became available.

3. Infrastructure

    Another important aspect would be the creation of infrastructure for the proposed bandwidth. Apart from laying new infrastructure, an assessment should be made to understand the existing inventory and capacity in grids. Penetration of broadband may be done in association with, PSUs such as MTNL, BSNL, RailTel, PowerGrid and GAI, and taking into account their inventories of fibre route kms. Further, other ways of infrastructure planning should be done with NHAI, State highway Authorities, Gas pipelines. In the situation of road expansions, lane expansions, the duct bank should be created and updated in the records for other TSPs to avail the services as and when required.

4. Usage of broadband

    Statistically measured, the growth of broadband is still much behind the growth of wireless data connectivity. As per the TRAI annual report of 2018-19, wireline broadband saw an increase of 2.07 percent whereas wireless services saw a rise of 29.96 percent. US uses a combination of fibre, fixed wireless access and Wi-Fi hotspots, and the cellular part is being dealt with separately. All technologies must be explored and utilised for real proliferation of Broadband. This would require a holistic approach towards Policy and Regulation. A balance would require to be struck between implementation and cost, giving consumer the choice to opt or not to opt.

5. ROW

    Right Of Way (ROW) or "Way Leave" remains a big row. Giving right of way is a national priority. There are certain states streamlining the right of way through various policies in creating projects in isolation. We need to synergise these projects into creation of fibre bank. We are in favour of fibrisation, Fixed Wireless Access and building hotspots for distribution of data to make them as reliable and accessible as the data on

cellular activities. A suggestion is to constitute a ROW or Way Leave Council, modelled on the GST Council to ensure speedy approvals for ROW. ROW must become National Priority to Digital India. Connectivity for all. ROW attains additional importance in the WFH&A environment. WFH&A, if implemented seriously, would deurbanise cities, improve quality of life, and reduce stress on infrastructure. .

II.   Responses to Consultation Paper

Q. No.	Question	Responses by Dua Consulting
1	Should the existing definition of broadband be reviewed? If yes, then what should be the alternate approach to define broadband? Should the definition of broadband be: A- Common or separate for fixed and mobile broadband? B- Dependent or independent of speed and/or technology? C- Based on download as well as upload threshold speed, or threshold download speed alone is sufficient? D- Based on actual speed delivered, or on capability of the underlying medium and technology to deliver the defined threshold speed, as is being done presently? Kindly suggest the complete text for revised definition of the broadband along with the threshold download and upload speeds, if required for defining broadband. Kindly provide the reasons and justifications for the same.	Yes, the existing definition of broadband needs to be reviewed. A. A separate speed may be implemented for broadband and mobile data. While there may be no harm in mentioning a desired speed of connectivity, Speed should not be the sole factor in the definition of Broadband. B. Technology is continually evolving, and with that that is the speed of data requirement. It is suggested that the scope of broadband may have two parts, a static part and a part which may be revised periodically. This change may depend in the evolution of optical and radio access/ mobile technologies and user demand. There should be a review process every three or five years. C. Since Broadband service also requires speed in up linking of data, with the advent of Ed-Tech platforms, work from home setups, Cloud storage networks and social media platforms, therefore there is a need to define up-linking and down-linking speed ranges for broadband services across various media. D. Should be as per the industry standards from time to time. There is no one definition of Broadband. Broadband is situational circumstantial, utility dependent, device dependent, and possessing capability to carry data for various applications. As an example, IOT definition, m to m definitions might not be applicable to Robotics or machine floors of say

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		car manufacturers. Yes, we could set limits on situational basis, but one size fits all is not an answer. Nonetheless, all definitions henceforth must sate uplink and downlink capabilities.
2	If you believe that the existing definition of broadband should not be reviewed, then also justify your comments.	The existing definition of broadband has to be reviewed and from time to time. These definitions are not static.
3	Depending on the speed, is there a need to define different categories of broadband? If yes, then kindly suggest the categories along with the reasons and justifications for the same. If no, then also justify your comments.	The varied speed of broadband may be categorised as per speed so as to address the types of customers Type 1- Large enterprises- 1 GE/10GE 2- Mid enterprises- 500M / 1GE 3- SME/Home customers- 100M/200M/500M
4	Is there a need to introduce the speed measurement program in the country? If yes, please elaborate the methodology to be implemented for measuring the speed of a customer's broadband connection. Please reply with respect to fixed line and mobile broadband separately.	There is a need to introduce the speed measurement program in the country. These programmes must include measurements of both uplink and down link speeds. Such measurements are essential to grade Quality of Service (QoS). There are various online tools available to check broadband speeds, however, service providers should be directed to make customers aware, as well as, to have the speed measurement tools on their website/ app for customer self-help. The TRAI may also develop a common speed checking platform (website and on various app based stores). These measurements should be Technology agnostic
5	Whether the Indian Telegraph Right of Way (RoW) Rules 2016 have enabled grant of RoW permissions in time at reasonable prices in a non-discriminatory manner? If not, then please suggest further changes required in the Rules to make them more effective.	The Indian Telegraph Right of Way (RoW) Rules 2016 have been ineffective. An approach could be on the basis of an empowered GST Council look alike. This council should coordinate amongst various bodies involved in giving clearances. Their decision should be respected. Framing rules, without a commitment or penalties for not adhering to is meaningless. Giving right of way is a national priority. There are certain states streamlining the right of way through various policies in creating projects in

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		isolation. We need to synergise these projects into creation of fibre. We are in favour of fibrisation, FWA and building hotspots for distribution of data to make them as reliable and accessible as the data on cellular activities.
6	Is there any alternate way to address the issues relating to RoW? If yes, kindly elucidate.	A suggestion may be, to constitute a ROW or Way Leave Council, modelled on the GST Council to ensure speedy approvals. ROW remains a serious concern, along with approvals for Tower spaces. ROW approvals are complicated by the involvement of multiple authorities, line municipalities', state PWDs, NHAI, Panchayats etc. Let there be a nodal agency. ROW approval is disruptive, causing damage to the Roads etc. If not done properly, it can cause harm to human beings and those using roads. While ROW is beneficial in the long run, but in the short run it could be disturbing. Therefore a commercial approach of disruption caused and damage done, should be evaluated and compensated for plus some additional levies. It is strange that even after so many years there is no consistent institutionalised approach, except arbitrariness.
7	Whether all the appropriate authorities, as defined under the Rules, have reviewed their own procedures and align them with the Rules? If no, then kindly provide the details of such appropriate authorities.	Create one as suggested
8	Whether the RoW disputes under the Rules are getting resolved objectively and in a time-bound manner? If not, then kindly suggest further changes required in the Rules to make them more effective.	Unless ROW is given a status of national importance, the disputes. Approvals will be dictated by some babu here and there.
9	What could be the most appropriate collaborative institutional mechanism between Centre, States, and Local Bodies for common Rights of Way, standardisation of costs and timelines, and removal of barriers to approvals? Justify your	GST like Body, commercial details as suggested elsewhere in our response.

Q. No.	Question	Responses by Dua Consulting
	comments with reasoning.	
10	Should this be a standing coordination-committee at Licensed Service Area (LSA) level to address the common issues relating to RoW permissions? If yes, then what should be the composition and terms of reference of this committee? Justify your comments with reasons.	ROW approvals are being treated as cash cows by various agencies. Let there be a standardisation of the cost of reinstatement plus some 15 to 20% incentive on top. The arbitrary demands for providing clearances have to be avoided.
11	Is there a need to develop common ducts along the roads and streets for laying OFC? If yes, then justify your comments.	Yes, there is a need to develop common ducts along the roads and streets for laying OFC, especially where road works are going on. The NHAI code book should contain a mandatory requirement to place ducts either along the road or in the median as situation demands. It is better codified, then being an exception.

Access to such ducts should be controlled by a passive infrastructure provider and should be made available to UL providers on non-discretionary, non-discriminatory basis. The database of such ducts should be available and the capacity should be known.

In the situation of road expansions, lane expansions, etc. are happening, such duct bank should be created and updated in the records for other TSPs to avail the services as and when required. |
| 12 | How the development of common ducts infrastructure by private sector entities for laying OFC can be encouraged? Justify your comments with reasoning. | The development of common ducts infrastructure by private sector entities for laying OFC can be encouraged by all means. Let authority carry out an exercise to tariff the sharing or amortising the costs. By making ROW permissions and charges affordable, and regulation to share infrastructure attractive. In addition, there must not be burden of unnecessary levies on revenues they earn. |
| 13 | Is there a need to specify particular model for development of common ducts infrastructure or it should be | There is a need to specify particular model for development of common ducts infrastructure not to be left to the landowning agencies, or those |

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	left to the landowning agencies? Should exclusive rights for the construction of common ducts be considered? Justify your comments with reasoning.	having exclusive ROW. Perhaps, a separate consultation paper may be constituted by such rail and road infrastructure authorities for creation of such duct banks to be utilised by TSPs/Power distribution companies.
14	How to ensure that while compensating the land-owning agencies optimally for RoW permissions, the duct implementing agency does not take advantage of the exclusivity? Justify your comments with reasoning.	ROW approvals are being treated as cash cows by various agencies. Let there be a standardisation of the cost of reinstatement plus some 15 to 20% incentive on top. The arbitrary demands for providing clearances have to be avoided. An economic study as suggested above is necessary to arrive at costing and tariffing. .
15	What could be the cross-sector infrastructure development and sharing possibilities in India? Justify your comments with examples.	Immense possibilities, but needs detailed studies all around. Such infrastructure sharing among telecom infra providers, power transmission providers, city gas/ long distance pipeline owners must be encouraged.
16	Whether voluntary joint trenching or coordinated trenching is feasible in India? If yes, is any policy or regulatory support required for reaping the benefits of voluntary joint trenching and coordinated trenching? Please provide the complete details.	Yes, voluntary joint trenching or coordinated trenching may be possible in India. A support from the respective regulators, like TRAI for telecom providers, and road and rail ministries, pipeline gas authorities, and power corporations. Anything and everything is possible, where there is a will to help and execute. Adequate economic compensation is the key. Let these assets be treated at par with say spectrum. They are as valuable and essential as a spectrum.
17	Is it advisable to lay ducts for OFC networks from coordination, commercial agreement, and maintenance point of view along with any other utility networks being constructed?	Yes.
18	What kind of policy or regulatory support is required to facilitate cross-sector infrastructure sharing? If yes, kindly provide the necessary details.	Inter-ministerial coordination group across telecom power, Gas/ hydrocarbon distribution ministries ant their respective regulations should be constituted. These initiatives could be led by TRAI based on its own, as well as stakeholder's expertise of executing such projects for such longer time, as well as these organisations would

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		be the largest users of such common passive infrastructure if created across such multiple ministries/ entities.
19	In what other ways the existing assets of the broadcasting and power sector could be leveraged to improve connectivity, affordability. and sustainability.	Sharing space in the Power Stations, Sub-stations/ transmission hubs for creating small telecom facilities, typically one to few rack footprints (600/600 mm) should be catered for which will enable the long distance fibre providers to deploy the ILA(in line amplifiers)/Optical regeneration terminals. These Telco facilities could also provide out of band DCN connectivity to such power control/ SCADA control systems of the power utilities. Similar arrangements may also be explored with city-gas/ long distance gas pipelines.
20	For efficient market operations, is there a need of a marketplace supported by GIS platform for sharing, leasing, and trading of Duct space, Dark Fibre, and Mobile Towers? If yes, then who should establish, operate, and maintain the same? Also, provide the details of suitable business model for establishment, operations, and maintenance of the same. If no, then provide the alternate solution for making passive infrastructure market efficient.	Yes, as mentioned in the above answers, all such infrastructure created should be GIS enabled for the benefit of all such service providers as well as future service seekers.
21	Even though mobile broadband services are easily available and accessible, what could be the probable reasons that approximately 40% of total mobile subscribers do not access data services? Kindly suggest the policy and regulatory measures, which could facilitate increase in mobile broadband penetration.	A considerable number of users still use feature phones, besides a significant number accesses data from Fixed lines at their residence due to better reliability and lower costs. Let us be clear that it is a misnomer and misplaced thinking that mobile services are panacea for broadband, they are not. Stop chasing the mobile mirage for broadband. Data usage is more for fixed locations. No need to promote mobile data, unless absolutely unavoidable.
22	Even though fixed broadband services are more reliable and capable of delivering higher speeds,	The advent of mobile and portable data devices, and shift of people away from wire line services, such as landline has led to a decline in fixed line

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	why its subscription rate is so poor in India?	usage for telephone services, improvement of these services must be taken care by FTTH services in future by a mix of FWA, Wi-Fi hotspots etc.
23	What could be the factors attributable to the slower growth of FTTH subscribers in India? What policy measures should be taken to improve availability and affordability of fixed broadband services? Justify your comments.	One factor attributing to the slower growth could be affordability and inadequate coverage of the infrastructure of fibre especially in the last mile, besides insufficient investments by the government or private companies in the fixed network line is also responsible for the same.
24	What is holding back Local Cable Operators (LCOs) from providing broadband services? Please suggest the policy and regulatory measures that could facilitate use of existing HFC networks for delivery of fixed broadband services	Lack of technical capabilities of the LCOs to handle the required reliability and quality required for a broadband business. The small entities handled by individuals are mostly just connection providers who collect revenue for the distributors.
25	When many developing countries are using FWA technology for provisioning of fixed broadband, why this technology has not become popular in India? Please suggest the policy and regulatory measures that could facilitate the use of FWA technology for delivery of fixed broadband services in India.	Our fixation of Mobility, Mobility and mobility. There is no application of mind, either in what is required and when required and how to service that requirement except mobility mobility, mobility. Study the fixed bandwidth requirements vis-à-vis mobile requirements. By TRAIs own admissions the fixed and mobile data requirement is about 85:15, why this wolf cry for mobility.
26	What could be the probable reasons for slower fixed broadband speeds, which largely depend upon the core networks only? Is it due to the core network design and capacity? Please provide the complete details.	With higher contention ratio, a service provider may accommodate a greater number of subscribers, which may eventually bring down the quality and speed of the broadband and may result in network congestion. Access Router Contention Ratio is a probable reason for slower fixed broad band speeds.
27	Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to contention ratio, latency, and bandwidth utilisation in the core network? If yes, please suggest the details. If no, then specify the reasons and other ways to increase the	Yes, QoS parameters need to have checks. The current guarantee of speed between PoP and CPE doesn't suffice. Currently the broadband doesn't guarantee QoS, a users' perspective of end-to-end QoS assurance is required. Soft problems such as speed variations, intermittent outages are difficult to establish and quantify, this is in addition to the downtime. A test set up to measure actual speed, bandwidth utilisation,

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	performance of the core networks.	latency, and contention ratio and error rates is required.
28	Should it be mandated for TSPs and ISPs to declare actual contention ratio, latency, and bandwidth utilisation achieved in their core networks during the previous month to their customers while communicating with them or offering tariff plans? If no, state the reasons.	Declaring the contention ratio, latency and bandwidth utilisation ratio is certainly advisable from transparency point of view, The parameters contribute to the QoS leading to troubleshooting of soft problems experienced by the users such as speed variations and intermittent outages.
29	What could be the probable reasons for slower mobile broadband speeds in India, especially when the underlying technology and equipment being used for mobile networks are similar across the world? Is it due to the RAN design and capacity? Please provide the complete details.	the probable reasons for slower mobile broadband speeds in India could be higher contention ratios and low signal strengths and its insufficient coverage especially inside buildings.
30	Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to RAN user plane congestion? What should be such checks? If yes, then suggest the details, including the parameters and their values. If no, then specify the reasons and other ways to increase performance of RANs.	There is a need of policy and regulatory intervention by way of mandating certain checks relating to RAN user plane congestion, because RAN is the heart or core. .
31	Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons. Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons.	
32	Is there a need of any policy or	Questions 29 to 32 need further considered

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	regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons.	studies.
33	To improve the consumer experience, should minimum standards for consumer devices available in the open market be specified? Will any such policy or regulatory intervention have potential of affecting affordability or accessibility or both for consumers? Please justify your comments.	With the proliferation of technology, there has also been the growth in the variety and features of the devices which use the data of broadband providers. An important factor then considering and re-defining the limit of data and capacity of data utilisation would depend on the devices used. The entire broadband utility/ environment/ scene is hugely dependent on the devices used. As mentioned elsewhere, devices is the core as much as the infrastructure. Without proper devices, all investment in infrastructure are a wash. Therefore, a proper ecosystem of standardisation of devices and their utility must be properly understood.