



Reliance Jio

Infocomm Limited

RJIL/TRAI/2014-15/4075
14th October 2014

To,
Sh. Arvind Kumar,
Advisor (NSL),
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg,
New Delhi - 110002

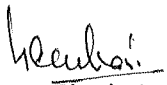
Subject: Comments on TRAI's Consultation Paper on 'Delivering Broadband Quickly: What we need to do'.

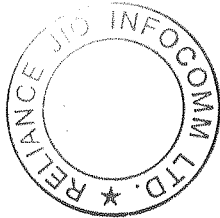
Dear Sir,

Please find attached comments of Reliance Jio Infocomm Limited on the issues raised in the Consultation Paper on '**Delivering Broadband Quickly: What we need to do**' released on 24.09.2014.

Thanking You,

Yours sincerely,
For **Reliance Jio Infocomm Limited,**


Kapoor Singh Guliani
Authorised Signatory



Encl.: As above.

**RELIANCE JIO INFOCOMM LIMITED COMMENTS ON TRAI'S CONSULTATION PAPER ON
'DELIVERING BROADBAND QUICKLY: WHAT WE NEED TO DO' DATED 24.09.2014**

I. Overview

Economy of the country and ICT has a recursive relationship, they help each other to grow. Broadband is the most important element of ICT. Broadband enables improved performance of ICTs which in turn have a fundamental impact on the way economies work and contributes to productivity growth by expanding markets, increasing business efficiency and reinforcing competitive pressure. Affordable broadband connectivity, services and applications are essential to modern society. Broadband infrastructure enables country-wide facilities like health care, education, energy, job training, civic engagement, Government performance and public safety. In order to ensure continued economic growth of the country, rapid spread of broadband both in the urban and rural areas is an imperative.

The National Telecom Policy (NTP), announced by Government of India in 2012, has laid down a target of providing affordable and reliable broadband-on-demand by year 2015. It has targeted *175 Million* broadband connections by the year 2017 and *600 Million* by the year 2020 at a minimum 2 Mbps download speed and making available higher speeds of at least 100 Mbps on demand. In order to achieve the same, it would be necessary that the last mile connectivity to the customer's premises is capable to handle this high speed connectivity. This necessarily requires Optical Fibre Cables (OFC) to be laid to the homes or buildings or even to wireless transmission towers. NTP 2012 provides for a strategy to encourage Fibre to the Home (FTTH) with enabling guidelines and policies favouring fast transformation of cities, and towns into '*Always Connected*' smart societies. Given the continued predominant role of wireless technologies in delivery of services in ICT sector, NTP-2012 also incorporated framework for increasing the availability of spectrum for telecom services including triple play services (voice, video and data) for which broadband is the key driver.

RJIL welcomes TRAI's initiative to accelerate and delivering broadband quickly. The title of the consultation paper is also very relevant as every stakeholder including the regulator and Government needs to contribute in a coordinated manner to achieve the quick delivery of broadband. In this connection, our submissions on specific issues raised by TRAI in its consultation paper are as follows:



II. Access Networks for providing Broadband

Q1: What immediate measures are required to promote wireline technologies in access networks? What is the cost per line for various wireline technologies and how can this cost be minimised? Please reply separately for each technology.

Optical Fibre in Access Network:

Amongst available wireline access technologies, OFC in the access network, is perhaps best suited to support futuristic broadband needs. This is capable of providing high bandwidth throughput for services. Unlike traditional broadband delivery system where Central Office and Core Network are linked by OFC & Central Office and Customer Premises are linked by twisted copper cables, OFC Access Network/FTTH brings fibre close to the customer.

Deployment of FTTH network involves huge investments by Service Providers. Investments vary considerably depending upon the geography being served. Major Capex components of access network for FTTH are:

- ROW Charges
- Optical Fibre
- Electronics (OLT, ONT, CPE etc.)
- Construction/Infrastructure Costs

TRAI in this consultation paper as well as in its previous consultation/ recommendations related to broadband recognized that Right of Way (RoW) and clearance from local Authorities has been a major constraint. In the absence of uniform, clear and enforceable guidelines for various processes such as right of way (RoW), civic clearances etc., different State Governments have adopted different rules, criteria, costs and time-frames causing huge effort and delays to the operators in getting the requisite clearances. In December, 2010 TRAI had recommended that *"the Government may fix and notify the charges for Right of Way in consultation with the State Governments on priority basis and ensure time bound availability of RoW to telecom service providers after due intimation to the agency concern."*

Further, NTP' 2012 has also recognised the problem, the strategies enunciated in this regard are as follows:

- To encourage Fibre To The Home (FTTH) with enabling guidelines and policies, favouring fast transformation of cities and towns into Always Connected society.
- To establish appropriate institutional framework to coordinate with different government departments/agencies for laying and upkeep of telecom cables including Optical Fibre Cables for rapid expansion of broadband in the country.



- To review and simplify sectoral policy for Right of Way for laying cable network and installation of towers, etc. for facilitating smooth coordination between the service providers and the State Governments/ local bodies.

It is submitted that RoW is continue to be a major concern. There is an urgent need to engage with State governments and other agencies like railways, NHAI etc. for resolving the RoW. Alternatively, the legal framework may be modified in such a way that a uniform policy gets applicable and implemented across the entire country.

The following measures can be considered for minimising the cost of deployment of wireline networks and achieving the 'Right of Broadband' as envisaged in NTP 2012:

- **ROW:**
 - o Time-bound permission: Single window clearance and time-bound permission may be applicable for RoW.
 - o Reduction in charges: Uniform ROW charges may be adopted across all States at a reasonable cost. Only a nominal expenditure to be charged instead of high amounts. Permission/Processing Fee levied by local authorities should be restricted to a 'One-Time Administrative Fee' to cover administration and supervision costs. Option of Self-restoration must be permitted to the operators to avoid differential and unreasonably high charges being levied by different agencies in different cities. This can be provided against a reasonable performance Bank guarantee as a security against improper filling / unsatisfactory compaction/ restoration and damages caused to other underground installations / utility services.
 - o Coastal Regulation Zone (CRZ) Clearance wherever required, particularly for Cable Landing Stations and trenching through coastal areas is again a multi-step process involving clearances from State Environment Board, Maritime Board, PWD, water Resources and finally by the Ministry of Environment and Forests (M.O.E.F.). This can be simplified by making a Single Window Clearance by the authority constituted with the representations from these various bodies.
- **Optical Fibre:** Currently import of 'Optical Fibre' attracts Basic Customs Duty (BCD) of 10% as they are classified under HSN 9001. This increases the cost of deployment. Whereas internationally it is classified under HSN 8544 which attracts a BCD of Nil %.
- **Electronics:** As per Finance Budget 2014, exemption of BCD has been withdrawn on the following:
 - o Soft switches and Voice over Internet Protocol (VoIP) equipment, namely, VoIP phones, media gateways, gateway controllers and session border controllers
 - o Optical transport equipments, combination of one or more of Packet Optical Transport Product or Switch (POTP or POTS), Optical Transport Network(OTN) products, and IP Radios
 - o Carrier Ethernet Switch, Packet Transport Node (PTN) products, Multiprotocol Label Switching-Transport Profile (MPLS-TP) products
 - o Multiple Input / Multiple Output (MIMO) and Long Term Evolution (LTE) Products



Though, this has been done to promote the domestic manufacturing of above mentioned equipment, the ecosystem for such set-up is still at a very nascent stage in India. To achieve aggressive targets as set under NTP 2012, the exemption need to continue for a foreseeable future, to ensure the cost of deployment is kept low and affordable to customers.

The Authority may consider to send necessary recommendations to the Government of India regarding continuation of exemption on the aforementioned equipment.

Q2: What are the impediments to the deployment of wireless technologies in the access network? How can these deployments be made faster? Please reply separately for each technology.

Various impediments and suggested measures to overcome these impediments to make faster deployment are as follows:

- (a) **Availability of sufficient Spectrum in contiguous manner:** For all wireless broadband technologies, the most important requirement is the availability of sufficient quantity of globally harmonised spectrum in a contiguous manner. In India the spectrum is assigned to operators in small and non-contiguous chunks which cannot be used effectively for deployment of mobile broadband. TRAI in its earlier recommendations itself recognized that 5 MHz is the minimum amount of spectrum required to ensure that any technology can be deployed with the allocated spectrum. If we want to follow the global ecosystem and get maximum value for the bits/Hz, while 5 MHz is the bare minimum requirement, the ideal amount of spectrum is 10MHz.

In para 2.17 of its consultation paper on "Valuation and Reserve Price of Spectrum: Licences Expiring in 2015-16" TRAI raised the issue of reconsideration of the requirement of minimum quantum for bidding in the 900 MHz band. As a possible solution consultation paper suggested that the bidders may be allowed to bid for a minimum of a smaller quantity (say 3 MHz) of spectrum (instead of 5 MHz). RJIL has already submitted to TRAI and here it is again reiterated that when the objective is to have broadband solution that offers the most affordable devices and ecosystem to connect the next billion people, the minimum quantum of spectrum for new operators should only be 5 MHz.

- (b) **Complex and time consuming process of SACFA Approvals:** Different organizations within the Standing Advisory Committee on Frequency Allocation (SAFCA) secretariat start asking for separate set of documents from the operators for separate clearances. Moreover, the complex process and time taken for obtaining SACFA approvals is still an unresolved issue. There is a need to set-up single window agency for clearing all applications in a time bound manner. There are numerous instances where the SACFA clearance was pending for more than a year. SACFA clearance for most of the sites

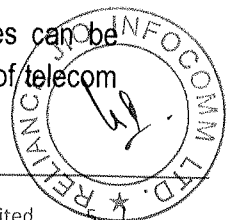


not falling in 7/40 category (i.e. 7 Km distance from Airport Reference Point and Antenna height is 40 meters) is kept pending for long time, these sites are about 50% of total sites.

Simplification of SACFA Clearance procedures should be examined with assurance for time bound issuance of final NOCs. The requirement for multiple clearances including NOC from the Airport Authority of India should be immediately done away with.

(c) **Erection of Towers & EMF radiation issue:** Due to wrong perception of some of the peoples regarding harmful effect of EMF radiations, currently the service providers are facing difficulties in getting site and installation of towers. The opposition by residential societies delay the process of acquiring site and timely rollout. There is need for extensive awareness campaign by the Government to be undertaken to create awareness / educate public and clear myths related to mobile tower radiations. Suggested measures to simplify the erection of towers are as follows:

- i) A uniform policy to be implemented across the States & Union territories with clear instruction to Mahanagara Palikas/Municipal Corporations/Town Municipal Councils/Local elected bodies/ Gram Panchayats on installation of communication towers incorporating following
 - Policy to be such that it simplifies the permissions and consequently the execution of field works.
 - NOC process to be simplified and streamlined, if not completely eliminated as this leads to long delays for construction & infra rollout. For this purpose provision to be made for a Single Window clearance at State Level for issuing NOC for tower construction. To ensure time bound issuance of NOC, provision to be made for the deemed permission within 30 days from date of application.
 - At present charges for providing NOCs are not uniform and varies significantly depending upon the local environment. The Policy therefore to provide for uniform charges for issuance of NOC based on category of the city / town and these charges should be made reasonable and one time so as to cover only the cost towards the administrative overheads.
 - Documents requirement for application of NOC to be made uniform and simplified across Corporations, Municipalities, Nagar Panchayats and Gram Panchayats for issuance of NOCs to be implemented. Only such documents those are essential to ensure installation safety and security to be insisted.
- ii) An online time bound and simplistic approval mechanism should be available for setting up towers in the urban areas.
- iii) Signature of competent Authority nominated by societies should be adequate and the requirement for individual signatures from members of society, where applicable, should be done away with.
- iv) Govt./Semi-Govt, PSUs as well as Municipal corporations and other Govt. bodies can be encouraged to make available the open spaces available with them for installation of telecom



towers, which will not only enable to earn income through leasing of spaces for Tower installation but also to help in establishing better coverage and connectivity to public without compromising on public safety & convenience. Similarly permissions for Government sites like Road dividers, roundabouts, Government buildings, foot-over bridges, skywalk should be granted on priority basis, especially for microcell, Public Wi-Fi access point installations.

- v) Administration & Police support should be given during construction of Towers, wherever required.
 - vi) The present requirement of submission of EMF self-certification acknowledgement receipt by TERM cell for issuance of NOC for tower installation, as specified under DOT advisory guidelines for the state governments, should be immediately amended and to be replaced by submission of undertaking by the operator for compliance with EMR exposure limits.
 - vii) A concerted public awareness program should be made at National/State and Civic level for removing misconceptions about radiation hazards.
 - viii) Internet and connectivity is very critical and is a necessity for most of the tourists and therefore enhanced coverage is essential to be provided to them. Therefore places of tourist interest either plains/hills /coastal areas should be given preference to ensure issuance of faster clearances for tower installation.
- (d) **Wireless Operating Licence and Import Licence:** Before rolling out their sites and network, the operators are required to obtain 'wireless operating licence' and 'import licence'. This raises administrative challenges. Delay in getting such licences has significant negative impact on the network planning and rollout capabilities of telecom operators. For broadband revolution and faster network rollouts across the nation, such administrative bottlenecks and outdated processes like 'import licence' and 'wireless operating licence' should be reviewed and abolished for licensed service providers.
- (e) **Non availability of Backhaul spectrum:** After installation of sites, there is requirement of backhaul connectivity of these sites. The most feasible option of backhaul connectivity is microwave backhaul. Since one and half year no backhaul spectrum has been allocated by the Government which is significantly affecting the rollout of service providers.
- (f) **Custom Duty of equipment:** As per Finance Budget 2014, exemption of BCD has been withdrawn on the following:
- o Soft switches and Voice over Internet Protocol (VoIP) equipment, namely, VoIP phones, media gateways, gateway controllers and session border controllers



- Optical transport equipments, combination of one or more of Packet Optical Transport Product or Switch (POTP or POTS), Optical Transport Network(OTN) products, and IP Radios
- Carrier Ethernet Switch, Packet Transport Node (PTN) products, Multiprotocol Label Switching-Transport Profile (MPLS-TP) products
- Multiple Input / Multiple Output (MIMO) and Long Term Evolution (LTE) Products

Though, this has been done to promote the domestic manufacturing of above mentioned equipment, however the desire to support the domestic manufacturing cannot be done at the cost of growth of infrastructure. We must appreciate the fact that the ecosystem for domestic manufacturing for such new technology equipments is still at a very nascent stage in India. To achieve aggressive targets as set under NTP 2012, the exemption need to continue for a foreseeable future, to ensure the cost of deployment is kept low and affordable to customers.

- (g) **Power Connections:** Power connections should be made available to TSP/ISP on a priority basis within 15 days of applications and the requirement of NOCs as a pre-condition for Electricity Board connection to be removed. Provision should be made for continuous supply of quality power and at subsidized rates should be explored. Increased dependence on DG power due to inadequate infrastructure of grid power network, leading to noise and pollution. So, Priority shall be given or a separate nodal officer may be assigned for telecom rollouts for processing the applications/extending reliable & stable grid power to telecom sites.
- (h) **Licence Fee:** Licence Fee & SUC related issues need to be addressed immediately and be rationalized per inputs provided on '*Definition of Revenue Base (AGR) for reckoning of Licence Fee & Spectrum Usage Charges*'. Broader framework is as follows:
- *Gross Revenue:* Revenue from services provided to subscribers from licensed activities should only be subject to Licence Fee. Revenue from Non-licensed activities and Misc. Income should be excluded
 - *Exclusion from Gross Revenue:* Revenue earned from services provided to another TSP viz., Renting/Sharing Infrastructure, Port Charges, Interconnect set-up charges etc. should not be under the purview of 'Gross Revenue' for the purpose of Licence Fee. This ensures, that there exists no double levy of Licence Fee
 - *% of Licence Fee:* Reduce the % of USO Levy (currently at 5%)
 - *Presumptive AGR:* Minimum presumptive AGR should not be made applicable to Licence Fee.

Further inputs are provided in response to Q11.



III. Backhaul Links and National Backbone network

Q3: The recommendations of the Authority on Microwave backhaul have been recently released. Are there any other issues which need to be addressed to ensure availability of sufficient Microwave backhaul capacity for the growth of broadband in the country?

TRAI has issued recommendations on 'Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF Carriers'. Salient features of the recommendations are:

- Ceiling on the number of MWA carriers that can be assigned to TSP, based on the quantum of spectrum held by the TSP
- Assignment of MWA & MWB carriers to continue on administrative basis

MWA/B RF Carriers are essential for roll-out of network as it widely deployed to provide point-to-point frequency links in mobile network, where fibre or copper based access is either not available or economically unviable to deploy. LTE E-Node's require between 30-120 Mbps and with very large urban E-Node's requiring up to 240 Mbps of backhaul capacity. Consistency in policy framework and availability of MW access carriers will help TSP's in deployment of LTE services. Prices proposed for MWA/B should be further reduced

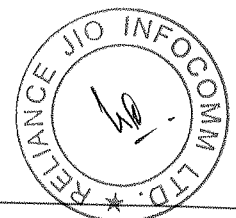
The issue of delicensing of 60 GHz band is very important issue related to broadband penetration. This spectrum has the potential to encourage competition in the broadband market, promote efficient delivery of broadband services in residences and businesses. Delicensing of this band could provide wireless broadband network connectivity over distances up to a 1-2 Km at very high data rates, thus relieving the need and expense of wiring facilities or using existing facilities with less capability. Delicensing of this band will enhance the use of this spectrum as a relatively low-cost, high-capacity short-range backhaul alternative to connect wireless broadband networks and for other wireless applications.

This issue was dealt in TRAI's Recommendations on "Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers" dated 29th August 2014. In its recommendations, the Authority recognized the importance of V-band (57-64MHz) for broadband penetration in India and recommended the allotment of the band with 'light touch regulation' basis. TRAI has also advocated for low fee structure. However, it is respectfully submitted that the recommendations of (i) allotment on link to link basis (ii) channel bandwidth of 50 Mhz and (iii) the fee structure of Rs. 1000 (Rs. One Thousand) per annum per carrier of 50MHz; do not reflect the vision of the Authority. It is requested that the recommendations may be revised keeping in view the following points:



- (a) No justification for 50 MHz channel bandwidth: Huge bandwidth of 7 GHz is available in the 60 GHz band, however channel bandwidth recommended is only 50 MHz. There are no justification for such a small 50 MHz channel bandwidth.
- (b) Recommended fee is very high as against the recommended principle of low fee structure: TRAI advocated for low fee structure, however from the following example it may be seen that the fee recommended is very huge:
- Generally used channel size is 2.16 GHz.
 - No. of carrier (50 MHz Channel BW) required= $(2.16*1024) \text{ MHz}/(50) \text{ MHz} \approx 44$
 - Per Annum charge for all carriers @ 1000/carrier \approx Rs. $44*1000$
 - Suppose operator uses 200 links in a service area then Total Per Annum charge for all links in a service area \approx Rs. $44*1000*200$
 \approx 88 Lakhs per service area
- (c) Huge regulatory cost and difficult to monitor: The 60 GHz band is used for in-house and outdoor backhaul segment. In case recommended criteria of link to link is applied for both inhouse and outdoor usage it may be cumbersome to manage and monitor the allotment and usage by service providers as well as by licensor. It will put huge regulatory cost on the licensor as well as the service providers.
- (d) Delicensing of 60 GHz band will be in line with the international practices: Considering its importance for proliferation of broadband and its limitations i.e. shorter propagation distances due to susceptibility for attenuation, this spectrum has been delicensed in various countries. TRAI has also recognized this fact in its consultation paper titled "Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers" dated 28.03.2014. Para 3.36 of the consultation paper states that "At 60 GHz, systems are quite susceptible to rain attenuation as raindrops are roughly the same size as the wavelength of the electromagnetic wave and they make the radio signal scatter. During heavy rain the specific attenuation can exceed 40dB/km. Hence 60 GHz Band is license exempt spectrum band in countries like USA, UK, Australia and Japan." Delicensing of 60 GHz band will place India in line with the developed countries, which are much ahead with India in terms of broadband penetrations.

In view of all the above, it is submitted that considering its importance for proliferation of broadband and its limitations i.e. shorter propagation distances due to susceptibility for attenuation, the recommendations regarding 60 GHz band may be reviewed and the band may be recommended to be declared as delicensed.



Q4: The pricing of Domestic Leased Circuits (DLC) have been reviewed in July 2014. Apart from pricing, are there any other issues which can improve availability of DLC?

The small ISPs are generally dependent on the transmission infrastructure in the form of leased circuits from the existing/incumbent telecom operators. The internet services provided by the ISPs to their end users largely depend on the quality and timely availability of such leased circuits. This link has traditionally been provided over the access network consisting of a pair of copper wire connecting the Customer Premises Equipment (CPE). Nowadays optic fiber/wireless based media is also deployed as local lead for the higher capacity links. The deployment of Access Network based on copper/optic fiber requires long rollout period and large initial investments, making the 'local lead' the most capital intensive element of the telecom infrastructure. Considering the above mentioned issues, to allow provision of DLC/local lead in a non-discriminatory manner and to ensure transparency and reasonableness, TRAI issued Domestic Leased Circuit Regulations on 14th September 2007. These regulations cover DLC and local Lead provided on any media i.e. copper, fiber, wireless etc. and using any transmission technology. These regulations make it obligatory for all service providers who have the capacity of copper, fiber or wireless, and who have been allowed under the licence to provide DLC, to share it with other service providers. The said regulation was challenged by incumbent operators in TDSAT and Hon'ble TDSAT vide its order dated 23.1.2009 (in Appeal No. 8 & 9 Of 2007) set aside the DLC Regulation dated 14.9.2007. The said order of TDSAT was stayed by Hon'ble Supreme Court however the DLC regulation is not yet implemented. It is requested that the steps may be taken to implement the DLC regulations 2007.

IV. Internet Traffic Exchange Points

Q5: What are the specific reasons that ISPs are proactively not connecting with NIXI? What measures are required so that all ISPs are connected to the NIXI?

NIXI is the Indian Internet Exchange Point (IXP) established in 2003 to facilitate peering between Indian ISP's. TSP's, Internet Service Providers (ISP) and application & content providers have been bit reluctant to peer with each other at NIXI for following broader reasons:

- **Membership Limitation:** NIXI membership is limited to following:
 - o ISP's licensed by the Department of Telecommunications, Ministry of Communications and Information Technology, Government of India can only become a NIXI peer and
 - o Member ISP must have its own AS number and use BGP4+ for peering

One cannot reach NIXI via other ISP's unless directly connected to NIXI.



- **Higher Costs:** Apart from Membership Fee, Annual recurring charges for port capacity, NIXI also charges on data transferred based on 'X-Y' Calculation (Rs 5/- per GB from April 1, 2014). Charges levied by NIXI are relatively higher, when compared to other IXP's across the globe. NIXI should end charging based on data transferred

While all ISPs may be encouraged to interconnect with NIXI to keep the domestic traffic within India. However mandating small ISPs to connect to NIXI could actually hinder their growth by removing the incentives for an ISP to competitively grow beyond a single exchange.

Q6: Would the hosting of content within the country help in reduction of the cost of broadband to a subscriber? If yes, what measures are required to encourage content service providers to host content in the data centre situated within India?

Broadband network consists of three elements viz., International, National & Last Mile connectivity. International Bandwidth is upstream connectivity either through submarine cable, microwave or satellite which constitutes a major network operating cost. Building local hosting options, where more content & applications are hosted can reduce internet traffic that leaves the country and result in reduction of international bandwidth charges. This will also have a positive impact on the speed (low latency) & delivery.

- Encourage foreign and domestic operators to host websites within country
- Encourage sensitive corporate data to be stored within India's border rather than offshore
- Encourage top traffic generating corporates to have data centres set up in India (Google, Facebook etc.)
- Provide necessary ecosystem & infrastructure for setting up of Data Centers in India (Both Hosted Data Centres as well as Captive Data Centres)
 - o Power availability & reliability
 - o Cost of operations
- Provide tax incentives for corporates setting up Data centres in India
- Being a non-licenced activity, the license fee should not be made applicable on the revenues generated from data centres even if this activity is undertaken by a licenced operator. This issue should be addressed by the Authority as per the inputs provided on the recent consultation paper on 'Definition of Revenue Base (AGR) for reckoning of Licence Fee & Spectrum Usage Charges'.



V. Implementation & Policy Issues

Q7: Are PSUs ideal choices for implementing the National Optical Fibre Network (NOFN) project?

&

Q8: Should awarding of EPC turnkey contracts to private sector parties through International Competitive Bidding (ICB) be considered for the NOFN project?

Considering the magnitude of the project and the demanding targets that have been set per NTP 2012, it would be preferable to have even private sector parties involved in the project. The slow pace of such an important project is only due to the formation of one PSU i.e. BBNL to get the work done through other PSUs i.e. BSNL, Railtel and Power Grid. The delay in decision making process and non efficiencies of PSUs have been added and result in the form of delayed project execution is in front of us. The situation could have been completely different, if right from beginning the private sector could have been involved in the project.

Another important issue which needs to be deliberated is the effectiveness of project even after its completion. Whole concept of NOFN was built considering the existing infrastructure of PSUs (BSNL, Railtel and Power Grid). It was presumed that OFC (Optical Fibre Cable) connectivity is available in all State Capitals, Districts, HQs and upto the Block Level. It may be noted that NOFN takes care of middle mile only i.e. it fills connectivity gap between Gram Panchayats and Blocks. To provide end to end services, the service provider should set up their own infrastructure at Gram Panchayat level. It needs to be studied whether network of PSUs would be able to provide sufficient bandwidth to the operator to connect to its core network. For success of NOFN, the PSUs must be mandated to provide bandwidth to private operators to connect from block level to private operator's core network.

Q9: Are there any ways in which infrastructure development costs can be reduced? Is it possible to piggyback on the existing private sector access networks so as to minimize costs in reaching remote rural locations?

To reduce the infrastructure development costs, some of the measures suggested in our reply to the Question no. 1 i.e. single widow clearance, time-bound permission and reduction in charges for RoW, reduction of basic custom duty on Optical fiber and continuation of exemption of basic custom duty on various electronics items mentioned therein. Additionally, telecom service providers must be given priority like the other Utility operators in establishing the Telecom Infra and delivering the planned services.

- Advising State Governments for single window clearance/fast track permissions and support during implementation.



- Considering construction of proper utility corridor, especially in 100 smart cities being planned. So that the utility corridor is also available for Telecom infra providing for ducts/cable laying to avoid repeated digging & damage to roads.

Apart from the above, the best way to reduce infrastructure development cost is the infrastructure sharing. NTP 2012 already provides for sharing of active and passive infrastructure in order to enable operators to optimally and efficiently utilize their networks. Though passive infrastructure sharing is permitted but there is no clarity about active infrastructure sharing due to several restrictions. In order to achieve broadband targets as set by NTP 2012, sharing of passive and active infrastructure must be permitted without any restriction.

As far as the issue to minimize costs in reaching remote and rural locations by way of piggyback on the existing private sector access networks is concerned, it is stated that private sector doesn't have much infrastructure in remote rural locations.

Q10: What can the private sector do to reduce delivery costs? Please provide specific examples.

Delivery cost can be reduced by pooling of resources and unrestricted infrastructure sharing.

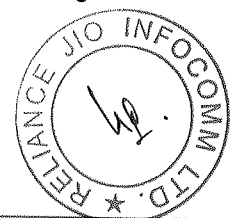
PPP Model or Viability Gap Funding (VGF) Framework can also be considered in ensuring that the broadband and internet connectivity in rural areas can be provided.

Q11: What are the major issues in obtaining right of way for laying optical fibre? What are the applicable charges/ constraints imposed by various bodies who grant permission of right of way? In your opinion what is the feasible solution?

Obtaining Right of Way (ROW) clearances for deployment of Telecom Towers & laying of optical fibre cables are key issues faced by Telecom Services Providers/IP-1 Service Providers. Seeking ROW Approvals for laying optical fibre has become a major hurdle.

Despite all the efforts by the Industry through various representations and multiple meetings with the State Governments, the State policies are still not aligned with the central guidelines thus resulting in being a showstopper for faster rollouts of telecom infrastructure in almost all the states. Differences in policies framed by Municipal Corporations and Gram Panchayats are making compliance to norms very difficult.

High cost, lack of uniformity in obtaining ROW and lack of single window clearance is still a high barrier for timely network rollouts.



Issues: Major issues that are faced by Telecom Service Providers/IP-1 Service Providers/ISP Operators are:

- Requirement of multiple approvals from various agencies viz., Municipality, Development Authorities, Panchayat, Private Owners, Railways, Forest Department, PWD, Gas Pipeline Companies, Canal Crossing etc.
- No uniform policy being applicable across authorities
- Various charges are levied in the name of Restoration, Way Leave, Permission Charges, Road Cutting Charges, Recurring Rentals, One-Time Fee, Survey Fee, Supervision Fee, Normative Charges, and Security Deposit as DD/BG/FG etc.
- Rates are revised upwards at regular intervals
- Various conditions, limitations being imposed viz., on Methodology of Trenching, Timelines for completion, restoration, obtaining NOC after the completion of work etc.
- Delay in processing of applications by various authorities

The following measures can be considered to ensure faster roll-out:

- (a) A time bound and simplistic procedure which can be online (Web Based) should be adopted for time bound permission grant for ROW permissions across all authorities. Application to be considered as deemed permission, if no movement occurs within 30 days of submission of application. Currently this process is highly subjective and arbitrary, varies from state to state and authority to authority, prone to local interferences leading to project delays. For example
- (i) NHAI - The process of getting the permissions from individual CGMs varies in terms of time taken and is a lengthy process (3-5 months in some cases)
 - (ii) Railway Crossings - the files are approved by up to 7-10 officials and the time taken to receive a permission is anywhere between 3-5months. The Demand notes for the railway crossings also vary from anywhere between 2-3 lacs up to 2 crores across various DRMs.
 - (iii) DIT Payment & approvals in states like Maharashtra – what is supposed to be a single window clearance is actually duplication of permission since even after obtaining DIT permission at the state level, permissions from respective local authorities/civic Agencies are still required by paying their respective charges for permissions
 - (iv) PWD (Particularly in Maharashtra) – the files are approved by 10 – 12 officials as well as Minister, which is a very lengthy and time consuming process.
- (b) Similarly forest permissions must be simplified and streamlined to cut down the current cycle time which takes 4-6 months through a 9 steps process covering multiple parties (repeated 2-3 times for each permission granted) by



- (i) Eliminating the need for re-permission where the principal authorities like NHAI/PWD/ or other authority has built up the road with required forest permission and the operator is laying the OFC in their existing RoW only.
 - (ii) Eliminating the need for finding the forest dwelling tribes/ tribal populations by the telecom operators again from the same authorities who have already obtained NOCs from the respective Gram Sabhas and
 - (iii) Instead, the process should only be in the form of intimation to the respective forest departments with the copy of the permission granted by the principal authorities like NHAI/PWD Etc.
- (c) A clear cut policy should be made for grant of permissions /RoW for creating infrastructure in Private townships on a self-restoration basis at par with the other civic agencies in the states, in order to
- (i) Eliminate discretionary and exorbitant rates charged by the private bodies for OFC laying.
 - (ii) To avoid unnecessary re-routing of fiber plans to bypass/circumvent such areas.
- (d) For the work of underground cable, all authorities should promote trenchless and auto self-restoring construction methodologies like Horizontal Direction Drilling (HDD) and Micro trenching at all feasible locations, by eliminating levy of any RoW and restoration charges. If not, Cost of restoration to be limited to restoration of the Road that has been dug, to its original condition.
- (e) Option of Self-restoration must be permitted to the operators to avoid differential and unreasonably high charges being levied by different agencies in different cities. This can be provided against performance Bank guarantee @ Rs 100/- per route meter with a validity of one year (irrespective of the construction methodology) to be furnished by the concerned licensee as a security against improper filling / unsatisfactory compaction/ restoration and damages caused to other underground installations / utility services.
- (f) The Facility of RoW for Laying underground Cables, shall be available to all licensees (irrespective of existing or future) and registered licensed infrastructure providers, without any discrimination and without payment of any compensatory charges/ levy/ lease/ rentals/ license fees for bandwidth/ revenue share/ cashless equity etc. subject to the condition that this RoW facility shall be available to licensees to the extent of provisions contained in their license agreements and the reinstatement charges shall be borne by such licensees.
- (g) The current practice in some of the cities of charging exorbitant ground rentals based on the market price of the land for Manholes Installed for OFC to be abolished immediately, as these are used only for



maintenance purpose and have no impact on moving traffic, post the installation. Similarly levying of any Adhoc Charges to be avoided.

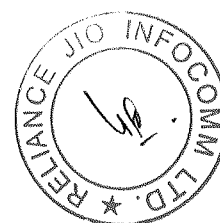
- (h) Wherever installation of underground cable is not feasible, in such places permission of using existing light poles or permission to install new poles to be provided for installing the aerial Cabling
- (i) RoW made available for during implementation should be deemed as available and extended to sustain the trouble free and smooth Infra operations & maintenance during the tenure of the license period of the operator.

Q12: Should the Government consider framing guidelines to mandate compulsory deployment of duct space for fibre/ telecommunications cables and space for telecommunication towers in all major physical infrastructure construction projects such as building or upgrading highways, inner-city metros, railways or sewer networks?

NTP 2012 provides for promoting use of In-Building Solutions (IBS) and Distributed Antenna System (DAS) in coordination with Ministry of Urban Development by aligning National Building Code & State Governments to embed the critical requirements of developing, planning and finalization of master plans for rural and urban areas. This should also encompass provision of high speed wireline broadband infrastructure in the buildings.

Following practices which were implemented in different countries can be adopted by making amendments to suit requirements in India:

- **Building Ranking System ('Emblem Policy')**
 - o 'Emblem' is requirement that buildings obtain and display certification indicating the level of internet connectivity available to residents over there
 - o Highest ranking is reserved for facilities with fibre connectivity to individual homes or offices with connectivity speeds of 100 Mbps or higher
 - o Adopted in countries like Korea, Malaysia etc.
- **Legislation for new buildings**
 - o All new buildings to be equipped with Fibre Network Connections
 - o All housing and residential FTTH installations must be designed to provide fair network access capabilities to multiple broadband operators allowing customers to choose their preferred operator



- Underground telecom conduits, underground wiring networks, equipment rooms and other facilities for new housing & residential development projects must be provided/constructed (to ensure FTTH compatibility)
- Incentivise Apartments, Residential Societies for deployment of Small Cells/Wi-Fi networks
- Adopted in countries like Australia, China etc.

Laying of Duct/ optical fibre cable should be made mandatory for all real estate developers for all new housing projects just like water, electricity, sewerage, colony roads, storm water drains etc. Provision of last mile broadband connectivity is a must and no Completion/Occupancy Certificate should be issued to those builders without providing the same. Measures to facilitate installation of Telecom infrastructure in all real estate development, buildings and town planning are as follows:

- i) NOC for Facilities & Towers to be made available with nominal one time administrative fee
- ii) Power Availability / EB Connectivity to be ensured on priority.
- iii) Common utility corridor to be made available for Telecom operators providing for ducts/cable laying to avoid repeated digging & damage to roads and access to telecom operators.
- iv) For all multistoried buildings, while granting building plan approval, it should be made mandatory to provide ducting for communication from road to the campus and to the individual buildings to facilitate operators to connect them free of charges and with minimal damage to the surface or to the building.

Q13: What are the impediments to the provision of Broadband by Cable operators? Please suggest measures (including policy changes) to be taken for promoting broadband through the cable network.

Cable operators have a wide reach and can be used as an effective mode to promote broadband. However, the major impediments in provision of broadband by cable operators would be the cost of upgrading the infrastructure and the existing licensing requirement to provide broadband service. To maintain level playing field, the cable operators aspiring to provide broadband services will have to take license and comply with terms and conditions. Another view that could be taken according to NTP 2012 to recognise telecom, including broadband connectivity as a basic necessity like education and health and work towards 'Right to Broadband'. In such a case cable operators may also be allowed to provide broadband but at the same time licence fee, spectrum usage charges etc. to be paid by other licensed service providers, providing broadband services may be done away with.



Q14: What measures are required to reduce the cost and create a proper eco system for deployment of FTTH in the access network?

Please refer to inputs provided in Q1 & Q11

Q15: Are there any regulatory issues in providing internet facility through Wi-Fi Hotspots? What are the reasons that installation of Wi-Fi hotspots has not picked up in the country? What type of business model needs to be adopted to create more Wi-Fi hotspots?

In line with the Industry terminology, Wi-Fi can be classified as 'Private Wi-Fi' and 'Public Wi-Fi'. But what constitutes a 'private' and a 'public' is being blurred when the private hotspots are being made public for a closed user community.

- **Managed Public Wi-Fi:** Managed public Wi-Fi hotspots makes use of a proxy redirect upon connection for the purpose of authentication, payment and/ or terms of use acceptance before granting access to the Internet. Can be observed in –
 - o Public venues, such as hotels, airports, franchised restaurants and coffee shops, retail chains, etc.
- **Self-Provisioned/Private Wi-Fi:** Private and/or self-provisioned Wi-Fi hotspots, including all secured or unsecured wireless access points that permit direct access to the Internet. Can be observed in -
 - o Private homes, enterprises, self-provisioned independent small- and medium-sized businesses

Success of this model depends on the following:

- Device Ecosystem – In India only 27% of Mobile Handsets are Wi-Fi enabled (Majority of Feature Phones doesn't support Wi-Fi connectivity)
- Degree of simplification of the authentication process on managed public Wi-Fi
- Extent of market education and user awareness of the availability of managed public Wi-Fi
- Overall density and reach of managed public Wi-Fi within a market
- Affordability of access to managed public Wi-Fi
- Simplification of regulations governing access and management of managed public Wi-Fi

Support is required on the following to ensure that deployment of Wi-Fi network can be fast tracked:

- Allowing access to infrastructure like electric poles, telephone poles, hoardings etc.
- Assured power supply for Wi-Fi hotspots to be provided on priority
- Single window clearances from various agencies



In India, most of the Public Wi-Fi hotspots are being provided in Shopping Malls, Hotels, Airports and Coffee Shops etc. as a service to their customers on a freemium basis viz., Fee for premium access of extended period of times etc. Few of the business models that can be considered are:

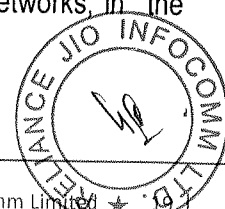
- Freemium Models
- Advertising
- Value Added Services
- Cost/Revenue Share with Content Providers
- PPP Model (Government & Private Operators) – State of Gujarat & Telengana are working in this direction

DoT has issued guidelines to be followed by ISP's for providing Public Wi-Fi Hotspots (Instructions regarding provision of Wi-Fi Internet Service under de-licensed frequency band dated February 23, 2009). These instructions are in an urgent need of revamp in view of the changing scenario. While revisiting these instructions DoT may also consider the following international best practices

- Any private Wi-Fi network (Viz., enterprises, home users) should be secured with Wi-Fi Protected Access (WPA/WPA2) encryption
- Access on multiple devices under a single log-in
- Simplification of authentication process.
- IEEE 802.1x based central authentication should be used in conjunction with WPA/WPA2
- For Home Subscribers or Smaller Organization Pre-Shared Key (PSK) based authentication in conjunction with WPA/WPA2 can be used
- Public Wi-Fi hotspots should use higher layer security such as secure socket layer (SSL) protocol
- Wi-Fi security audits regularly to avoid gaps in your Wi-Fi security posture and to ensure compliance with the DoT regulation

Backhaul for WiFi:

- WPC Wing of DOT vide its Notification dated 28.01.2005 under GSR 45 (E) Use of low power Equipment in the frequency band 2.4 GHz to 2.4835 GHz (Exemption from Licensing Requirement) Rules, 2005 prescribed Use of low power Equipment in the frequency band 2.4 GHz to 2.4835 GHz (Exemption from Licensing Requirement) Rules, 2005 thereby de-licensing the 2.4 GHz spectrum band. The maximum Effective Isotropic Radiated Power (EIRP) for 2.4 GHz band is prescribed as **4W (36 dBm)**.
- WPC Wing of DOT vide its Notification dated 28.01.2005 under GSR 46 (E) Indoor Use of low power wireless equipment in the frequency band 5 GHz (Exemption from Licensing Requirement) Rules, 2005 prescribed use of low power Wireless Access System, including Radio Local Area Networks, in the



frequency band 5.150 to 5.350 GHz and 5.725 to 5.875 GHz. The maximum Effective Isotropic Radiated Power (EIRP) for 5 GHz band indoor usage is prescribed as 0.2W.

- WPC Wing of DOT vide its Notification dated 19.01.2007 under GSR 38 (E) Outdoor Use of wireless Equipment (Exemption from Licensing Requirement) Rules, 2007 prescribed use of low power Wireless Access System, including Radio Local Area Networks, in the frequency band of 5.825 to 5.875 GHz. The maximum Effective Isotropic Radiated Power (EIRP) for 5.825 to 5.875 GHz band is prescribed as **4W (36 dBm)**.

Given the paucity of available fiber in the country and the high cost and time to deploy the optical fiber it is required that **existing de-licensed band of 5.825 to 5.875 GHz** be deployed as a successful backhaul for Wi-Fi zones by **increasing its maximum EIRP from present 36 dBm to 71 dBm in Rural areas for point to point backhaul purpose only so that Wi-Fi hotspot coverage can be provided in Tourist areas.**

Q16: What are other spectrum bands which can be unlicensed for usage of Wi-Fi technology or any other technology for provision of broadband?

Internationally 60 GHz band is being made available to consumers using IEEE 802.11 ad protocol. There exists decent ecosystem of devices globally. Hence the option of de-licensing 60 GHz band should be considered. The availability of unlicensed bands shall be brought to a parity with international standards. More bands shall be made available for backhaul. Also please refer to inputs provided in Q3.

Q17: How much spectrum will be required in the immediate future and in the long term to meet the target of broadband penetration? What initiatives are required to make available the required spectrum?

Spectrum Management should address the twin issues of better utilization of available spectrum and also the spectrum lying unused with Government Departments.

Better utilization - Contiguous spectrum is not available to TSP's because spectrum has been allocated at various times in small chunks and hence it is non-contiguous. It would be absolutely essential that arrangement of frequency spots is carried out between DoT/WPC and the TSP's to ensure continuity of spectrum. Rearrangement & reshuffling should immediately reviewed to ensure all TSP's get contiguous spectrum.

Unutilized Spectrum – Government should make available to the Industry, all spectrum in bands (Viz. 2100 MHz, 1800 MHz, 800 MHz, 700 MHz) presently lying unutilized by various government agencies in conformity with globally harmonized bands and should provide a clear road-map for the spectrum availability in future.



Government should also consider the possibility of "Dynamic Spectrum Auction" and allocation. It means that the government should establish a mechanism for TSP's to bid and get the frequency/frequencies allocated in real time for a particular period after which the frequency will have to be released. Unused or under-utilized spectrum can be effectively utilized through this mechanism.

Q18: Are there any other spectrum bands apart from the ones mentioned in Chapter-2 to be identified for provision of wireless broadband services?

In line with the submission made by Indian Government to ITU for allocation of additional bands, a clear road-map should be laid down specifying the availability.

Q19: What are the measures required to encourage Government agencies to surrender spectrum occupied by them in IMT bands?

Government should make available to the Industry, all IMT bands presently lying unutilized by various government agencies.

- Clear timeframe should be laid down for the vacation of spectrum by government agencies
- Incentivize agencies, who could vacate the band within agreed timelines
- And penalize agencies which cannot meet the agreed timelines, as the spectrum made available to the TSP's would have earned revenue through auction & licence fee.

Further, please refer to inputs provided in Q17

Q20: What should be the time frame for auctioning the spectrum in 700 MHz band?

Timeframe for auctioning spectrum in 700 MHz band should be determined based on the following pre-conditions:

- Should make government agencies vacate this band, before putting up for auction
- Monitor the ecosystem globally for any commercial rollouts & affordable device/s availability



Q21: Do you agree with the demand side issues discussed in Chapter 5 and Chapter 6? How these issues can be addressed? Please also indicate any other demand side issues which are not covered in the CP.

Three A's facilitating Broadband Demand are as follows:

- **Awareness:**
 - o Encourage use of education in schools to promote digital literacy
 - o Encourage and train small and medium enterprises on the benefits of broadband
 - o Provide training on Security & Privacy
 - o Government supported initiatives

- **Affordability:**
 - o Lower user terminal costs by reducing import duties and other targets
 - o Targeted subsidies to specific category
 - o Provision of broadband equipment to educational institutions at cost or through subsidies

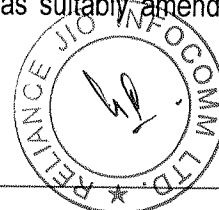
- **Attractiveness:**
 - o Support local, relevant internet content in local languages
 - o Create e-government and other e-applications (For Agriculture, Health, Education etc.)

Some of the Corporates are providing connectivity as a part of CSR Activities. For instance 'Internet.Org' aims at providing free basic services where internet access may be less affordable. This helps customers to discover valuable services that might not be otherwise available.

Q22: Please give your comments on any related matter, not covered above.

(a) International Bandwidth and High Charges for Cable Landing Stations:

As reflected in Figure 1.2 of the consultation paper, International Bandwidth and its upstream connectivity through submarine cable, which constitutes a major network operating cost, is very much part of broadband supply chain. Cable landing stations (CLS) is a place where the submarine cables which are coming from other countries through sea route land/terminate in India and are interconnected with the network of domestic service providers. CLS by their very nature are a bottleneck facility. Most of the data that is originated by Indian consumers is delivered through servers located outside the country. Therefore, availability of sufficient capacity at affordable price is a prerequisite for faster growth of broadband in the country. The licensor has also recognized this facility as a bottleneck facility and has suitably amended ILDO license to incorporate in clause 2.2 (c).



At present the owners of cable landing stations are also the incumbent operators. The exorbitant access facilitation charges imposed by such OCLS are matter of concern for new service providers. TRAI has also taken cognizance of such exorbitant access facilitation charges and colocation charges. Significant reduction have also been made by TRAI by way of specifying cost based charges through "International Telecommunication Cable Landing Stations Access Facilitation Charges and Co-location Charges Regulations" w.e.f Jan 2013. However, the regulation is challenged by these OCLSs in Honourable High Court of Chennai and the court has stayed the regulation vide its order dated 21st Jan 2013. Final hearing was in the last week of April 14. Currently the case is still pending in the court for pronouncement of judgement.

Regarding measures to be taken to encourage more ILDOs and ISPs to set up cable landing stations, TRAI in its recommendations dated 12.04.2011 *inter-alia* recommended that a single window system for providing clearance to the operators intending to establish cable landing station should be established at DoT. Further, it was recommended that the operator desiring to establish cable landing station should submit all the forms required by all concerned ministries to this single window agency and final approval of clearance should be intimated by the single window agency within six months.

The exorbitant access facilitation and collocation charges are hampering the growth of broadband in the country and seriously affecting the business of ILDOs and access service providers. It is requested that the Authority may push for early judgement by Madras High Court and may like to request the Government for operationalisation of its recommendations dated 12.04.2011.

(b) Income Tax:

Currently there exist no investment based / profit linked incentive for highly capital intensive Telecom Sector.

Investment based incentive should be provided to:

- Telecommunication Services,
- Digital Services and
- Internet Data Services

To ensure development of telecom infrastructure in India.

Accordingly, Sec-35AD of Income Tax Act 1961, should be amended to provide 150% deduction to the following capital intensive sectors viz., Telecommunication & allied services.

Further, apart from the new entities incurring such expenditure, even existing entities incurring capital expenditure should be allowed deduction under section 35AD as substantial capital infusion is required periodically.

