Response to
TRAI Consultation Paper
On
'Proliferation of Broadband through Public Wi-Fi Networks'

I. Preamble

At the outset, we welcome the Authority's intention of enabling the spread of Broadband in the country as various studies have established the positive effects of broadband penetration on the economy, public welfare and for realizing the dream of Digital India. However, in doing so it must be ensured that any steps taken in this direction conform to the Indian Telegraph Act so that there is no bypass of Regulatory and licensing framework and above all security of the country and citizens is not compromised at any cost.

We sincerely submit that in the current licensing regime, the internet services in the country, through any access technology, be it Wi-Fi, Cellular networks or any wired technology, can be provided only by licensed TSPs/ISPs who have their own network to extend the last mile access. Further, it is also submitted that the purpose for which Wi-Fi technology was conceived, to provide means of communication over a short range over an unlicensed band cannot be extended for providing commercial ubiquitous citywide networks as envisaged in the consultation paper by Authority. Wi-Fi technology at the most can be used only to provision Wi-Fi hotspots for Internet access. The same will become clear in our following submissions on this Consultation Paper.

A. Evolution of Wi-Fi Technology

1. The Wi-Fi technology was conceived in order to fulfill the requirement for short range wireless communication (just like other technologies such as Bluetooth) either directly between the devices or by creating a Wireless Local area network (WLAN) for personal or closed groups. The objective of the same was to facilitate the users to let their devices communicate with each other on a wireless medium instead of wired medium for the ease of deployment. Therefore, Wi-Fi technology is used over an unlicensed band on a very low power for providing short range or indoor communication to avoid interference between the various users using the same band.

2. Over time, Wi-Fi technology was also used for accessing internet as well (by connecting the Wireless access point to the internet gateway at a particular place) to serve the restricted group of users.

3. The purpose of assigning unlicensed bands for Wi-Fi was to enable communication between devices for indoor communication or over a short range and not on a city-wide basis. On the other hand, cellular networks were conceived and deployed as Public Networks i.e. Public Land Mobile Network (PLMN) for providing voice and internet access to the masses on a commercial scale on city-wide or LSA basis.

4. Therefore, the notion of **"Public Wi-Fi networks for providing ubiquitous citywide coverage" is not valid** as traced from the evolution of Wi-Fi technology and the cellular networks are the only commercial public networks to provide seamless city-wide or LSA wide wireless internet and broadband access.

5. At the most **Wi-Fi technology can be used to create only hotspots** in order to offload the macro cellular network sites just like small cells or in-building solutions.

B. Wi-Fi Service Providers

1. The internet access under the current licensing regime is provided by licensed access service and internet service providers. Therefore, any entity which wants to provide internet access through Wi-Fi technology or for the matter of fact any other technology to masses or end consumers on a commercial scale has to obtain Unified License with Access service or ISP authorization. Needless to say, they have to abide by the licensing conditions as well.

2. Present models of providing internet access through Wi-Fi technology are compliant to the above and have the following arrangements:

   a. Wi-Fi hotspots created by licensed TSPs/ISPs at public places and services sold to the consumer through coupons and online payments options

   b. Wi-Fi hotspots created by consumers at their home, work places or any other places for own consumption or for sharing it with others on a non-commercial basis.

   c. Wi-Fi hotspots created by commercial or non-commercial entities such as hotels after taking Internet services from licensed TSPs/ISPs. These services are being offered free of charge or on payment basis **only to close group of people** (such as guests staying at hotels etc.) **not for open public use**. Under this model, the entity deploying the Wi-Fi hotspot such as hotel etc. is the customer for TSP/ISP who is extending the service to closed group of people only.

3. Thus, only Licensed TSPs/ISPs having their own networks to enable access up to the last mile are allowed to provide Internet Access in the current Licensing Regime. Any reselling of data can happen only through MVNO route, for which, the framework has already been laid down.

4. Therefore, it is amply clear that **there is no separate category of Wi-Fi service providers in the licensing regime**. Wi-Fi is just an access technology for internet access (**only by creating hotspots**) just like any other access technology viz. GSM, HSPA, LTE or any wired technology such as DSL.

C. Challenges faced by Licensed Service Operators

While commenting about the affordability of the Wi-Fi service, the Authority has brought about the comparatively higher costs of delivering the services on the Cellular networks at 23 paise per MB. The comparatively higher cost for providing the services over the cellular networks can be attributed to the following factors:

1. **High Spectrum acquisition costs:** The licensed TSPs acquire spectrum though auction process. This resulted into very high spectrum acquisition costs mainly due to the lack of adequate supply of licensed spectrum in all the previous auctions coupled with the pressure to re-acquire spectrum in license extension/expiry cases. In the upcoming auctions additional will be put to auction. However, the affordability of the spectrum is still a challenge as the reserve prices are very high, especially for 700MHz.

2. **Right of Way:** To enable the setting up of the sites and infrastructure in the cellular networks, a reliable backhaul network is required. The same is enabled via microwave links or the fiber network. The microwave links have limited capacity therefore a fiber network is required for enabling the backhaul network in case of broadband network. But TSPs have been facing challenges in establishing the fiber network as various local authorities charge exorbitant prices for providing the right of way to TSPs. The challenge is not limited to the payment of charges for obtaining Right of Way; even obtaining permission is a challenge.

3. **Burden of Regulatory levies**: High burden of Regulatory levies on licensed TSPs has further increased the challenges for TSPs.

It is submitted that the high costs are a result of government and regulatory levies and not due to any inherent costs of the technology. Therefore, the need of the hour is to promote the spread of broadband in the country by reducing the burden of Regulatory Levies on licensed TSPs.

D. Payment options for Wi-Fi hotspots

1. The licensed TSPs/ISPs are selling the Wi-Fi services through the prepaid coupons and various other online payment solutions.

2. **Distribution Network:** TSPs have invested heavily in building a distribution network of their own. This network of distributors and retailers has contributed significantly in the spread of telecom services. The consumers can easily access this wide retail network to buy telecom services. Without extensive distribution network of our member TSPs it would not have been possible to achieve the mobile penetration as deep as what has been achieved.

3. Further, the payment solutions for Wi-Fi services have emerged as a result of the market forces considering the demand and ease of the consumers.

4. TSPs are providing Prepaid Payment Instruments (PPI), that is mobile wallets. In case required TSPs can tie-up as the merchants of semi closed wallets available in the market on mutually agreed terms and conditions.

5. **Hence, there is no requirement for any sort of Regulatory intervention to take any special measures for payment solutions for Wi-Fi service.**

E. Spectrum availability

1. **The need of the hour is to increase the supply of licensed access spectrum**. Until now, only around 114 MHz (average paired spectrum per circle including 2.3 GHz band) of spectrum has been made available to TSPs for access services in every service area. This spectrum is being used to serve over a billion cellular customers in the country.

2. As pointed earlier, the licensed TSPs acquire spectrum though auction process. This has resulted into very high spectrum acquisition costs mainly due to the lack of supply of spectrum in all the previous auctions. In the upcoming auctions, additional spectrum will be put to auction. However, affordability of the spectrum still remains a challenge in India. TSPs have already committed Rs. 2.78 lakh crores since 2010 for acquiring the spectrum till now.

3. At present access spectrum is not a bottleneck for the spread of Wi-Fi service. Hence, there is no immediate need to de-license any additional spectrum for Wi-Fi. This can be reviewed after sometime as and when need arises. Regarding the Sub-1 GHz band, DoT has already stated that it will not be delicensed and any decision regarding methodology of allocation and pricing shall be taken by the Government. In light of this, we re-emphasize that Sub-1 GHz band should not be delicensed.

Summary Submission:

1. We believe that the notion of 'Public Wi-Fi Networks for providing ubiquitous citywide coverage' is incorrect; Cellular Networks are the only wireless networks which can provide seamless Broadband service on a commercial scale for a citywide or LSA wide coverage area.

2. Wi-Fi technology which works on unlicensed bands on low power can be used only for creating hotspots locally.

3. Wi-Fi can be provided only by licensed TSPs/ISPs who have their own network to extend the last mile access.

4. "Public Wi-Fi Hotspots" can only be set-up by licensed TSPs/ISPs directly or by adopting models which are consistent with Unified Licensing conditions.

5. At present access spectrum is not a bottleneck for the spread of Wi-Fi service. Hence, there is no immediate need to de-license any additional spectrum for Wi-Fi. This can be reviewed after sometime as and when need arises. Regarding the Sub-1 GHz band, DoT has already stated that it will not be delicensed and any decision regarding methodology of allocation and pricing shall be taken by the Government. In light of this, we re-emphasize that Sub-1 GHz band should not be delicensed.

6. Any new Authentication mechanism for Wi-Fi should be cleared by the Ministry of Home Affairs; further, TSPs/ISPs should be free to adopt from amongst the options available and there should be no mandate in this regard.

7. Interoperability between Wi-Fi networks can emerge as a result of market forces and there is no need for any Regulatory intervention.

II. Issue wise response to the Consultation:

Q1. Are there any regulatory issues, licensing restrictions or other factors that are hampering the growth of public Wi-Fi services in the country?

COAI Submission:

No, currently there are no impediments posed by Regulatory and Licensing restrictions for the spread of broadband services through Public Wi-Fi hotspots in the country. The licensed TSPs/ISPs are deploying the public hotspots as per the feasibility. On the other hand there is an urgent requirement to enable the spread of broadband in the country through mobile cellular networks which provide the seamless connectivity to users.

Q2. What regulatory/licensing or policy measures are required to encourage the deployment of commercial models for ubiquitous city-wide Wi-Fi networks as well as expansion of Wi-Fi networks in remote or rural areas?

COAI Submission:

1. Wi-Fi technology works on the unlicensed band and therefore power levels are kept low in order to avoid interference between the hotspots at the same place. Therefore, Wi-Fi cannot be used as technology to build ubiquitous citywide networks on unlicensed bands. It can only be used to create hotspots to provide the internet access with the models as described earlier.

2. The cellular networks are the only wireless networks which can be used to provide the ubiquitous citywide coverage.

3. Cellular networks use licensed spectrum which is used to radiate at a power which is suitable to provide coverage as they are not prone to interference like Wi-Fi hotspots.

4. Therefore, there is an urgent need to promote the spread of Broadband only through cellular networks on a commercial scale for providing ubiquitous city-wide coverage and in rural and remote areas.

Q3. What measures are required to encourage interoperability between the Wi-Fi networks of different service providers, both within the country and internationally?

&

Q4. What measures are required to encourage interoperability between cellular and Wi-Fi networks?

COAI Submission:

1. As submitted earlier, Wi-Fi technology can be used/deployed for creating the Public hotspots therefore the notion of Public Wi-Fi Network for providing ubiquitous citywide coverage is incorrect.

2. Further, no Regulatory measures are required for the interoperability of the Wi-Fi hotspots of different service providers i.e. licensed TSPs and ISPs. Such an arrangement can evolve through market forces through bilateral arrangements between the service providers. Interoperability between Wi-Fi networks of different service providers is akin to roaming of one service provider's customer onto another, which is subject to commercial arrangements as decided by licensees, as per the licensing conditions.

3. To serve the purpose of providing seamless connectivity, the use of mobile cellular technology should be encouraged as cellular mobile technology is meant for the purpose of providing ubiquitous citywide to country wide coverage.

Q5. Apart from frequency bands already recommended by TRAI to DoT, are there additional bands which need to be de-licensed in order to expedite the penetration of broadband using Wi-Fi technology? Please provide international examples, if any, in support of your answer.

COAI Submission:

1. The need of the hour is to increase the supply of licensed access spectrum. Until now, only around 114 MHz (average paired spectrum per circle including 2.3 GHz band) of spectrum has been made available to TSPs for access services in every service areas. This spectrum is being used to serve over a billion cellular customers in the country.

2. As pointed earlier, the licensed TSPs acquire spectrum though auction process. This has resulted into very high spectrum acquisition costs mainly due to the lack of supply of spectrum in all the previous auctions. In the upcoming auctions, additional spectrum will be put to auction. However, affordability of the spectrum still remains a challenge in India. TSPs have already committed Rs. 2.78 lakh crores since 2010 for acquiring the spectrum till now.

3. In addition to spectrum acquisition costs, TSPs pay spectrum usage charges and other levies on the acquired spectrum to the exchequer. Needless to say, any provision of a commercial service without a license, would not only have security implications, but also cause a huge loss to exchequer.

4. The spectrum is a scarce resource; the same is required to be used judiciously in the interest of nation. Additional delicensing of spectrum would be an inefficient utilization of this scarce national resource as de-licensing of a band makes it prone to interference.

5. Further, as we have already stated that Wi-Fi technology can only be used to create hotspots by radiating at low power whereas cellular networks can provide citywide coverage both outdoors and indoors.

6. RoW issues are a challenge for spread of Wi-Fi and at present access spectrum is not a bottleneck for the spread of Wi-Fi service. Hence, there is no immediate need to de-license any additional spectrum for Wi-Fi. This can be reviewed after sometime as and when need arises. Regarding the Sub-1 GHz band, DoT has already stated that it will not be delicensed and any decision regarding methodology of allocation and pricing shall be taken by the Government. In light of this, we re-emphasize that Sub-1 GHz band should not be delicensed.

Q6. Are there any challenges being faced in the login/authentication procedure for access to Wi-Fi hotspots? In what ways can the process be simplified to provide frictionless access to public Wi-Fi hotspots, for domestic users as well as foreign tourists?

COAI Submission:

1. The current requirements or arrangements of OTP based logins for accessing Wi-Fi hotspots at public places have been formulated by DoT after discussion with Ministry of Home affairs.

2. OTP based logins are sufficiently convenient for people to attach to the Wi-Fi network and the same may be continued.

3. For the Foreign nationals travelling to India, the access is enabled through the roaming arrangements between TSPs if they are carrying their SIMs else through the new subscriptions as per subscriber verification norms prescribed by DoT for foreign nationals/tourists.

4. Therefore, we sincerely believe that there is no need for the introduction of new authentication mechanism for access to Wi-Fi services.

5. However, if Authority still feels the requirement for the introduction of new authentication mechanism for the ease of access to Wi-Fi services then the same can be introduced after consulting the Ministry of Home Affairs if the same conforms to the security requirements/standards to ensure the safety of the nation and citizens.

6. **Further, the TSPs/ISPs may adopt authentication procedure from amongst the alternatives available and there should not be any mandate in this regard.**

Q7. Are there any challenges being faced in making payments for access to Wi-Fi hotspots? Please elaborate and suggest a payment arrangement which will offer frictionless and secured payment for the access of Wi-Fi services.

COAI Submission:

Please refer to our response to Q9.

Q8. Is there a need to adopt a hub-based model along the lines suggested by the WBA, where a central third party AAA (Authentication, Authorization and Accounting) hub will facilitate interconnection, authentication and payments? Who should own and control the hub? Should the hub operator be subject to any regulations to ensure service standards, data protection, etc?

COAI Submission:

1. **Hub:** We believe that there is no need to adopt any hub based model and certainly not by any regulatory intervention. Such approaches will, in our view, only add an additional layer of cost and complexity into the system and may also lead to competition concerns**.**

2. A similar proposal was also mooted by the TRAI in the context of a different consultation – where also, we have voiced our concerns on introducing unlicensed entities into the system. We firmly believe that any such arrangements, if at all feasible, should be left to market forces and mutual commercial agreements.

3. **Authentication, Authorization and Accounting** : We believe that the current methods of authentication such as OTP based method or photo ID method have been devised after consultation with Ministry of Home affairs as this is related to the security of the country. TRAI may propose new method of Authentication if it conforms to the security requirements of the country. However, it should be left to a TSP to decide if it chooses or chooses not to adopt such method considering the feasibility and cost benefit analysis of the same.

4. **Therefore, there is no requirement to adopt any hub based model for facilitating Wi-Fi services.**

Q9. Is there a need for ISPs/ the proposed hub operator to adopt the Unified Payment Interface (UPI) or other similar payment platforms for easy subscription of Wi-Fi access? Who should own and control such payment platforms? Please give full details in support of your answer.

COAI Submission:

1. First, it is reiterated that there is no requirement to adopt any hub based model for facilitating Wi-Fi services.

2. In the current scenario, TSPs and ISPs are selling their Wi-Fi services either through prepaid coupons or through online payment solutions.

3. Distribution Network: TSPs have invested heavily in building a distribution network of their own. This network of distributors and retailers has contributed significantly in the spread of telecom services. The consumers can easily access this wide retail network to buy telecom services. Without extensive distribution network of our member TSPs it would not have been possible to achieve the mobile penetration as deep as what has been achieved.

4. Further, the payment solutions for Wi-Fi services have emerged as a result of the market forces considering the demand and ease of the consumers.

5. TSPs are providing Prepaid Payment Instruments (PPI), that is mobile wallets. In case required TSPs can tie-up as the merchants of semi closed wallets available in the market on mutually agreed terms and conditions.

6. No mandating from the Authority is required and should be left to the market forces.

7. **Hence, there is no requirement for any sort of Regulatory intervention to take any special measures for payment solutions for Wi-Fi service.**

Q10. Is it feasible to have an architecture wherein a common grid can be created through which any small entity can become a data service provider and able to share its available data to any consumer or user?

COAI Submission:

As stated by us earlier, only Licensed TSPs/ISPs are authorized to provide internet services in the country. If any entity obtains Unified License with Access service Authorization or Internet Service Provider authorization then only it can provide Internet Service.

Q11. What regulatory/licensing measures are required to develop such architecture? Is this a right time to allow such reselling of data to ensure affordable data tariff to public, ensure ubiquitous presence of Wi-Fi Network and allow innovation in the market?

COAI Submission:

1. Only licensed operators can offer Internet services on commercial basis. The TSPs provide seamless broadband experience to users either through cellular networks or Wi-Fi hotspots

2. The priority at this stage should be to promote the broadband services through cellular networks by reduction of Regulatory Levies on Telecom Sector, facilitating Right of Way and making more licensed spectrum available to TSPs.

3. **Any reselling of data can happen only through the MVNO route, for which, the framework has already been laid down.**

Q12. What measures are required to promote hosting of data of community interest at local level to reduce cost of data to the consumers?

COAI Submission:

This is being done even today wherein local caching of the frequently accessed content on Internet is done in order to increase the speed to access to the consumer.

Q13. Any other issue related to the matter of Consultation.

COAI Submission:

1. As submitted above, it is reiterated that there is no need for regulatory intervention and that the evolution of WiFi should be left to market forces. We believe that market based solutions are likely to be more effective and superior to imposed regulatory solutions, because regulatory solutions necessarily cannot react to market signals and hence likely to be less effective.

2. All the relevant issues have been highlighted by us in the preamble for the Authority's consideration.

****