

## Annexure A

### **Idea Cellular Response to TRAI Consultation Paper On “Nation-wide Interoperable and Scalable Public Wi-Fi networks”**

#### **Preamble:**

Idea Cellular welcomes the opportunity to contribute to the consultation on “Nation-wide Interoperable and Scalable Public Wi-Fi networks”.

Idea Cellular reiterates that the Indian Data market is at a nascent stage of its evolution and Regulatory flexibility has to be available to all stakeholders – Telecom service providers, content and application providers to ensure massive uptake and usage of data. Cellular Operators, through their investments, robust network roll-outs and tariffing innovations have been important pillars of telecom growth journey and hence the Authority needs to ensure that these strengths are fully leveraged to attain broadband data growth.

We would also like to submit that under the current licensing regime, the internet services in the country, through any of the available access technologies (Cellular/Wired) are being provided only by licensed TSPs/ISPs who have their own network that extends to provide last mile access. **The TRAI is aware that reselling of internet services is only permissible under the UL (VNO) framework, guidelines for which have already been notified by the DoT based on the TRAI’s Recommendations of 1<sup>st</sup> May 2015 on “Introducing Virtual Network Operators in Telecom Sector”.**

The current consultation document on “Nation-wide Interoperable and Scalable Public Wi-Fi networks” seems to erroneously envisage possible ubiquitous seamless internet connectivity as one of the possible uses of public Wi-Fi networks. In that context, it is pertinent to mention that Wi-Fi is only technologically developed primarily for hotspot coverage and as a capacity augmentation solution for delivery of broadband services and is not a technology platform for offering of commercial ubiquitous city wide and rural area coverage networks as is being envisaged in the Consultation Document. Wi-Fi is based on low power usage and uses unlicensed spectrum which is susceptible to interference impacting QoS delivery over such networks which get deployed in uncontrolled environment.

**Wi-Fi is at the most a complementary technology with limited area hotspot applicability. Thus, Cellular networks will continue to evolve and be the basis for laying the foundation for ubiquitous coverage and capacity for wireless based broadband, and not Wi-Fi as is being envisaged at various places in the current consultation paper by the Authority.**

**We suggest that the focus for regulatory/licensing or policy measures needs to be on enabling spread of broadband through addressing deployment challenges and regulatory costs associated with mainstream technologies (wireless: 3G/4G, wireline: Copper/Fibre) with Wi-Fi as a complementary capacity augmentation medium in select areas based on its techno-commercial viability in that environment.**

In the above context, we have the following additional submissions:

#### **A. Evolution of Wi-Fi Technology**

1. The Wi-Fi technology was originally conceived to fulfil 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. Technology standards and eco-system development globally for Wi-Fi are based around such hotspot capacity augmentations for cellular networks. Wi Fi is also used by Enterprises and individuals in a closed environment for their device connectivity needs for intranet and access to internet through a common broadband pipe.
3. Wi-Fi is only a complementary technology with limited area applicability and can only be used for extending internet access (by creating hotspots) just like any other access technology viz. GSM, HSPA, LTE or any wired technology such as DSL.

4. **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.** Further, being based on unlicensed spectrum, such networks have repeatedly been found to be susceptible to interference thereby impacting QoS delivery over such networks that often get deployed in an uncontrolled environment. On the other hand, cellular networks have traditionally been conceived and deployed as Public Networks for offering voice and internet connectivity to the masses on a commercial scale on city-wide or LSA basis.
5. **Therefore, the notion of “Public Wi-Fi networks”, as borne out by the Consultation Document, is an incorrect assumption considering the evolution and general usage of Wi-Fi technology.**
6. It is submitted that cellular networks are the only commercial public networks that can provide seamless city-wide or LSA wide wireless internet and broadband access and capacity. Further, It needs to be noted that telecom standards, products and services are continuously evolving and operators have an ongoing need to respond fast to stay competitive by bringing the best services to the market.
7. It needs to be also kept in consideration that the core element of ubiquitous wireless broadband coverage has to be 3GPP based access on licensed spectrum (3G/4G & beyond). In that context, the consultation exercise should look at addressing issues connected with spread of both wireless and wire line broadband access, as growth of both are critical for a digital India. The yet-to-be-addressed issues related to Right of Way, sufficient spectrum availability at an optimum cost, optimization of TSPs/ISPs compliance costs, etc. need to be addressed. It is to be noted that good quality high speed wireless access (cellular & Wi-Fi) will require a very high bandwidth connectivity wire line pipe (fiber) feeding the wireless access medium.
8. At the most Wi-Fi technology can be used to create hotspots to offload the macro cellular network sites similar to small cells or in-building solutions. Cellular networks will continue to evolve and be the basis for laying the foundation for ubiquitous coverage and capacity for wireless based broadband.

## **B. Licensing Regime for Offering Internet Services**

- 1. Under the current licensing regime, the internet services in the country, through any of the available access technologies (Cellular/Wired) are being provided only by licensed TSPs/ISPs who have their own network that extends to provide last mile access. Reselling of internet services is permitted only under the UL (VNO) framework, guidelines for which have already been notified by the DoT based on the TRAI's Recommendations of 1<sup>st</sup> May 2015 on "Introducing Virtual Network Operators in Telecom Sector".**
- 2. Therefore, any entity which wants to provide internet access through Wi-Fi technology or any other technology to masses or end consumers by setting up "Public Wi-Fi Hotspots" on a commercial scale has to necessarily obtain a Unified License with Access service or ISP authorization, or UL (VNO) to be able to resell the service.**
3. Needless to say, the said entity needs to also comply with the Licensing terms and conditions including quality of service, payment of license fee / spectrum usage charges / other levies, customer life-cycle management, security, usage data storage & retrieval and lawful interception.
4. The currently prevailing models of offering internet access through Wi-Fi technology are compliant to the above licensing conditions and display the following different kinds of arrangements:
  - a. Such Wi-Fi hotspots are created by licensed TSPs/ISPs at public places and the services are sold to the consumers through various payments options (online & voucher).
  - b. Such Wi-Fi hotspots are created by consumers at their home, work places or any other places for their own consumption or for sharing it with others on non-commercial terms.
  - c. Such Wi-Fi hotspots are created by commercial or non-commercial entities such as hotels, Malls, Cafes, etc. after subscribing to Internet services from licensed TSPs/ISPs. These services are then either offered complementary or on a usage basis to a closed group of users (such as guests staying at hotels, etc.) but are not available for unrestricted public use. Under such a model, the entity deploying the Wi-Fi hotspot such as the hotel, Mall, etc. becomes the customer for TSP/ISP providing the connectivity.

5. It is critical that any entity wishing to resell capacity and bandwidth to end users should be governed by the same licensing and regulatory framework in order to ensure level playing field among the market players.
6. It is also pertinent to point out here that the Unified License Authorization for Internet services provides that even if de-licensed spectrum is used, the licensee is bound by the Directions / Instructions of DoT.

### C. Challenges faced by Licensed Service Operators

1. In the context of Proliferation of Broadband, it is also important to highlight the following:
  - a. **High Costs of Spectrum Acquisition:** It is well acknowledged now that the licensed TSPs have acquired spectrum at a very high cost in the past auctions, primarily because of the constrained supply of licensed spectrum.
  - b. **Difficulties in obtaining Right of Way:** A reliable backhaul is a must have for setting up of the sites and infrastructure in the cellular networks. The same is either enabled via microwave links or by using a fiber network. Since the microwave links have a limited capacity, therefore using a fiber backhaul becomes inevitable in case of establishment of broadband network. **While the DoT has already notified a National policy on “Right of Way” (Indian Telegraph Right of Way Rules, 2016), in the absence of prescription of an upper limit / ceiling on “Restoration charges” that form a major component of the ROW Charges, the net positive impact of the policy notification is expected to be limited.** This is because some of the Municipality/ Corporation are charging huge charges in name of Restoration charges, (Ranging from 5 Lacs per KM to 1 Cr per Km) even when restoration Charges should be minimal as per actual damage. Restoration Charges predefined based on City Category ( Metro, Class A, Class B etc.) could have also been a useful option as it would have ensured that there was uniformity across the same class of cities and authorities on their own should not fix this cost (*Currently there is huge variance from City to city and State to State*).

- c. **Burden of Regulatory levies:** High burden of Regulatory levies on licensed TSPs has further increased the financial challenge for TSPs.
2. In conclusion, it is submitted that the alleged high cost of provisioning services owes its origin to various government and regulatory levies including cost of acquiring the spectrum. Therefore, it is imperative that the spread of broadband be given a fillip through reduction of the burden of Regulatory Levies on licensed TSPs.

#### **D. Payment options for Wi-Fi hotspots**

1. As already submitted, the licensed TSPs/ISPs sell the Wi-Fi services through various payment solutions (coupons and online).
2. The consumers can easily access this wide retail network to buy Wi Fi services using the available payment options.
3. The prevailing payment solutions for Wi-Fi services have emerged as a result of the free play of market forces and we firmly believe that it is sufficient to meet the subscriber needs to access Wi-Fi services.
4. We further believe that adoption of these payment solutions and further innovation needs to be driven by market forces for the best solutions to evolve in future.
5. It is critical that the SPs have choice on the method(s) adopted by them, and hence there should not be any mandate in this regard

#### **E. Unlicensed Band availability**

1. It is recommended to release additional channels in 5.8GHz in line with global regulations of 14 Non overlapping channels. Currently India has only 2 non overlapping channels of 20MHz in 5.8GHz. (5.825-5.875). Additional channels to be allowed are 5.150-5.350 GHz and 5.725 – 5.825 which are currently allowed only for INDOOR usage.

2. It is suggested to study North America (FCC) and Europe (ETSI) spectrum allocations in 5GHz band.
3. Further, there is a need to increase the supply of licensed access spectrum. Until now, only around 114 MHz (average paired spectrum per circle) of spectrum has been made available to TSPs for access services in every service areas which needs to be augmented in line with the International best practices.
4. However, there is a need to ensure that the de-licensed spectrum is used judiciously and interference avoided.

**Considering our above submissions, below is our Issue wise response:**

**Q1. Is the architecture suggested in the consultation note for creating unified authentication and payment infrastructure will enable nationwide standard for authentication and payment interoperability?**

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**Q2. Would you like to suggest any alternate model?**

**Idea Response:**

**At the outset, it is submitted that the Licensed TSPs / ISPs are already carrying out deployment of Public Hot spots as per business viability, and should be allowed to continue doing so in the long term interest of the market. The TSPs understand the telecom ecosystem better than any other outside parties and have invested accordingly in sales & distribution efforts, marketing & promotions, customer service and spectrum to give users the best possible digital experience. They are also better equipped to understand consumers and market dynamics and have the capability to translate robust broadband proliferation plans to reality.**

It is further submitted that 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. In our view, the technical solutions available and implemented currently as well as their evolution roadmaps are sufficient. In that context, such methods are sufficiently convenient for people to attach to

the Wi-Fi network and hence the same may be continued - there is thus no need for the introduction of any new authentication mechanism for access to Wi-Fi services.

**It is further submitted that the architecture as proposed in the Consultation Note using UPI/Aadhaar would only lead to multiple complexities, security issues and increased cost of deployment of hotspots for all Telco's/ISP due to the following:**

- The amount of authentication traffic envisaged in Wi-Fi hotspot services is multi fold compared with eKYC or other enrollment procedures currently deployed using Aadhaar
- UPI/Mobile Wallet are still under proliferation and not fully evolved to cater to the masses/segments who would be using Wi-Fi in public places.

It is further submitted that both the mentioned needs for Authentication and Payment interoperability, can be easily addressed by deployment of Mobile Offload Solutions in all Wi-Fi Hotspots:

- Authentication using EAP-SIM, and ICR between various operators will enable faster deployment & reach to masses
- Converged billing platforms will allow seamless payments for both Prepaid and Postpaid subscribers
- For Walk-In customers, the OTP based model is easy and already has a precedence set in various deployments across many countries and hence does not require any change in method or regulatory guidelines.

**Hence, no guidelines are envisaged from TRAI on this issue and Operators should be free to choose either of the deployment models as applicable as the architecture as proposed in the Consultation Note using UPI/Aadhaar would only lead to multiple complexities, security issues and increased cost of deployment of hotspots for all Telco's/ISP.**

Instead, we request that the Authority direct its efforts in the direction of addressing the other various factors that are hampering deployment & growth of broadband services across all access technology platforms. Towards that end, we believe that facilitating policy decisions are required for the following:

- a. Enabling ease of acquisition of Right of Way and faster deployment of wireline connectivity infrastructure in the last mile to the associated wireless access base station/access point/ wireline aggregation node. Though RoW policies have been framed and notified by DoT, there is a need to address the huge variance in restoration charges across various cities and States as well as ensure



stringent and time-bound enforcement of these guidelines by relevant bodies so as to facilitate faster deployments.

- b. Facilitating acquisition, rentals, security and availability of 24x7 stable power at required locations for deployment of wireless access BTSs/APs for delivering broadband services.
- c. Facilitating access to all planned and under-construction buildings. Necessary infrastructure to fulfill this requirement needs to be created in all planned and under-construction buildings, even in semi-urban/rural areas.

**Q3. Can Public Wi-Fi access providers resell capacity and bandwidth to retail users? Is “light touch regulation” using methods such as “registration” instead of “licensing” preferred for them?**

**Idea Response:**

As already submitted, under the current licensing regime, the internet services in the country, through any of the available access technologies (Cellular/Wired) are being provided only by licensed TSPs/ISPs who have their own network that extends to provide last mile access. Reselling of internet services is permitted only under the UL (VNO) framework, guidelines for which have already been notified by the DoT based on the TRAI’s Recommendations of 1<sup>st</sup> May 2015 on “Introducing Virtual Network Operators in Telecom Sector”.

Therefore, any entity which wants to provide internet access through Wi-Fi technology or any other technology to masses or end consumers by setting up “Public Wi-Fi Hotspots” on a commercial scale has to necessarily obtain a Unified License with Access service or ISP authorization, or UL (VNO) to be able to resell the service.

Needless to say, the said entity needs to also comply with the Licensing terms and conditions including quality of service, payment of license fee / spectrum usage charges / other levies, customer life-cycle management, security, usage data storage & retrieval and lawful interception.

It is pertinent to mention here that the TRAI Recommendations on “**Introducing Virtual Network Operators in telecom sector**” dated the 1st May 2015 already take cognizance of such reselling of internet services within the context of upcoming greenfield smart cities, cities such as Delhi that aim to become fully Wi-Fi enabled, or the Indian Railways ambition to make all its stations Wi-Fi enabled for the benefit

of its passengers, etc.. Further, we would also like to draw the Authority's attention to the following statement from its afore-mentioned Recommendations:

*2.20 The Authority also recognizes the fact that there are 7 to 13 TSPs in various service areas. Hence mandating TSPs/NSOs to provide access to VNOs can adversely affect some NSOs in certain sectors. The Authority is of the opinion that it's best left to the market forces to determine the optimum business model with regards to VNOs and the congruence of interests of the NSOs and VNOs should be determined by stakeholders through mutual agreement.*

**It is thus submitted that licensed entities providing network should continue to be sole selling entity in all hotspots similar to current models of rollout and all necessary tariff plans can be customized/launched for Resellers as the need may be.** Further, it is critical to mandate licensing through VNO route for the resellers so that credible infrastructure for authentication, authorization, accounting, user data storage and legal intercept, etc. are maintained responsibly. Additionally, since regulatory requirements on user data reporting, QoS, SLAs on complaint resolutions, etc. need to be met by the entity offering data services to retail users, obtaining of a UL / ISP / UL (VNO) license should be mandatory to offer hotspot services and govern such entities. **Any concept of using "Registration" in place of "licensing" will be against the principle of level playing field, and will lead to unfair competition and a regulatory and revenue arbitrage over licensed players that are contributing to the building of telecom networks and connectivity across the nation.**

Alternatively, we propose development of a model wherein WiFi access providers become neutral host providers to ISPs/UL who can use this infrastructure for offering data services to public through these networks in return for a fee. Neutral host providers do not offer direct service to retail &/or enterprise unless they have the appropriate license for the same.

Allowing any entities (E.g., venue owners) other than TSPs/ISPs/VNOs to resell bandwidth would lead to an un-organized & un-regulated market segment with various security related issues.

Hence our recommendation is:

- a. **Any entity or hotspot provider who wishes to resell the capacity and bandwidth to retail user must obtain an ISP/UL/UL(VNO) License to ensure that all regulatory norms are followed.**

**Q4. What should be the regulatory guidelines on "unbundling" Wi-Fi at access and backhaul level?**

**Idea Response:**

It is submitted that the evolution and adoption of any unbundling decisions by TSPs/ISPs needs to be allowed only through the free play of market forces as there are mutual commercial considerations involved.

Further, we do not foresee the need for any regulatory guidelines from a commercial and business angle, however to facilitate proliferation of Wi-Fi and ensure Quality of Service over Wi-Fi Technology, below-mentioned should be considered for further action:

- a. Creation of Neutral Host Wi-Fi Access Network providers who can provide their access network to be used by ISPs, ULs to offer broadband services for a fee. However, the same should only be permitted under the VNO license.
- b. 5.8GHz Wi-Fi Backhauling – More spectrum should be released to ensure Non-Interference free band radio environment
- c. 2.4GHz Wi-Fi Access – Regular radio environment audits by TERM cell be conducted to ensure ISP/Telco's radiate within permissible limits and maintain a fair competitive environment for all players to thrive.
- d. Releasing policy guidelines for E-Band and V-Band spectrum will certainly help ISPs to expand network reach and ensure better quality of service than current Wi-Fi in backhaul

**Q5. Whether reselling of bandwidth should be allowed to venue owners such as shop keepers through Wi-Fi at premise? In such a scenario please suggest the mechanism for security compliance?**

**Idea Response:**

As already submitted under our response to Q3, under the current licensing regime, the internet services in the country through any of the available access technologies (Wi-Fi/Cellular/Wired) can be provided only by licensed TSPs/ISPs who have their own network that extends to provide last mile access

Therefore, any entity which wants to provide internet access through Wi-Fi technology or any other technology to masses or end consumers on a commercial scale has to necessarily obtain a Unified License with Access service or ISP authorization or UL (VNO). Needless to say, the said entity needs to also comply with the Licensing terms and conditions including quality of service, payment of license fee / spectrum

usage charges / other levies, customer life-cycle management, security, usage data storage & retrieval and lawful interception.

**We do not propose the model that allows reselling of bandwidth to venue owners such as shop keepers through Wi-Fi at their premise for the following reasons:**

- a. The various deployment models already prevalent across various segments are compliant to the Licensing conditions. E.g, Wi-Fi hotspots at Hotels, Universities, Public Malls/Parks, etc. Allowing re-selling of internet services to entities such as venue owners without a license would lead to creation of non-level playing field and would hamper the growth of investments in network and infrastructure. Further, it would lead to creation of an unregulated and unorganized market that is no appropriate for a critical national project such as spread of Wi-Fi.
- b. It is highly unlikely that venue owners such as shopkeepers would have the expertise and capital required to comply with existing policies set under the provision of “Providing Wi-Fi in Public Places” by DOT to ensure security compliance.
- c. Lastly, it needs to be considered that TSPs are already facing issues with gaining access for installing their equipment for Telecom and Wi-Fi access inside various buildings. This is because of the tendency of building owners to use telecom infra deployment on their premises as an opportunity for revenue maximization by charging exorbitant rentals. As per the scenario envisaged by the Authority in the Consultation note, wherein various building owners etc. would be allowed to set-up their own Wi-Fi hotspots, there is a strong likelihood that these entities will prevent the installation of Telecom equipment of TSPs inside their premises to be able to establish their monopoly in terms of provisioning the service. Under such an environment the TSPs would have to face issues with setting up their In-building solutions/Wi-Fi hotspots inside various buildings, as the building owner may charge high recurring price from them for deployment of such solutions. This would in turn lead to following:
  - a. Adverse impact on QoS of Telecom Services at various Public Places like hotels, malls, etc.
  - b. Lack of choice for consumers due to monopoly of building owners.

**Q6. What should be the guidelines regarding sharing of costs and revenue across all entities in the public Wi-Fi value chain? Is regulatory intervention required or it should be left to forbearance and individual contracting.**

**Idea Response:**

Idea Cellular believes that such decisions regarding sharing of costs and revenues across entities are best left to the market forces to allow them to determine the optimum business model after taking all commercial and business related aspects into consideration. .

As is widely acknowledged, the Indian Telecom market has convincingly demonstrated the capability to incorporate innovations and define how businesses access consumers and how consumers choose desired services. Hence, the incubation and growth of all types of market and pricing innovations should allowed to be addressed by the market forces rather than muddy the waters with dos and don'ts.

We recommend this should be left to forbearance and evolution through market and competitive dynamics. There will be huge variation in dynamics of each hotspot and multiple variables. Market dynamics and entrepreneurial innovation should evolve the most suitable solution for the underlying scenario. It should be mandated that all hotspots & partnerships be in full compliance to MVNO guidelines as set in UL-VNO license scheme.

**Thus Idea Summary Submissions are as follows:**

- 1. Idea Cellular reiterates that that the Indian Data market is at a nascent stage of its evolution and Regulatory flexibility has to be available to all stakeholders – Telecom service providers, content and application providers to ensure massive uptake and usage of data**
- 2. Wi-Fi is only technologically developed primarily for hotspot coverage and as a capacity augmentation solution for delivery of broadband services.**
- 3. Cellular networks are the only commercial public networks that can provide seamless city-wide or LSA wide wireless internet and broadband access and capacity.**
- 4. The notion of “Public Wi-Fi networks” is an incorrect assumption considering the evolution and usage of Wi-Fi technology.**
- 5. It is further re-iterated that Cellular networks will continue to evolve and be the basis for laying the foundation for ubiquitous coverage and capacity for wireless based broadband.**

6. Under the current licensing regime, the internet services in the country, through any of the available access technologies (Cellular/Wired) are being provided only by licensed TSPs/ISPs who have their own network that extends to provide last mile access. Reselling of internet services is permitted only under the UL (VNO) framework.
7. Therefore, any entity which wants to provide internet access through Wi-Fi technology or any other technology to masses or end consumers by setting up “Public Wi-Fi Hotspots” on a commercial scale has to necessarily obtain a Unified License with Access service or ISP authorization, or UL (VNO) to be able to resell the service.
8. Any concept of using “Registration” in place of “licensing” will be against the principle of level playing field, and will lead to unfair competition and a regulatory and revenue arbitrage over licensed players that are contributing to the building of telecom networks and connectivity across the nation.
9. The current arrangement of OTP based logins for accessing Wi-Fi hotspots at public places has been formulated by DoT after discussion with Ministry of Home affairs. In our view, the technical solutions available and implemented currently as well as their evolution roadmaps are sufficient. In that context, methods such as OTP based logins, etc. are sufficiently convenient for people to attach to the Wi-Fi network and the same may be continued.
10. The prevailing payment solutions for Wi-Fi services have emerged as a result of the free play of market forces and we firmly believe that it is sufficient to meet the subscriber needs to access Wi-Fi services. We further believe that adoption of these payment solutions and further innovation needs to be driven by market forces for the best solutions to evolve in future.
11. It is submitted that the architecture as proposed in the Consultation Note using UPI/Aadhaar would only lead to multiple complexities, security issues and increased cost of deployment of hotspots for all Telco’s/ISP in addition to concerns on maintenance of privacy and security of subscriber data.
12. Idea Cellular believes that decisions regarding sharing of costs and revenues across entities are best left to the market forces to allow them to determine the optimum business model after taking all commercial and business related aspects into consideration.

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