**Comments:**
**Consultation Paper on "Proliferation of Broadband through Public Wi-Fi Networks"**

Mobile broadband services are undergoing a period of dramatic growth causing a tremendous increase in data traffic. This rising tide of traffic is being driven by the growing number of mobile subscribers, particularly smartphone users, who are connecting to faster networks and consuming bandwidth-hungry video content. The rate at which mobile subscribers are consuming more data the new technologies alone cannot keep up. Mobile operators are continuously making their networks more efficient by investing in new generations of mobile technology (e.g. 4G) and rolling out ever increasing numbers of cellular base stations as well as public Wi-Fi.

Wi-Fi provides an invaluable complement to cellular in the delivery of high quality broadband services to smartphone users. Cellular offers high performance, wide area blanket coverage but does not always cover indoor locations well. Wi-Fi fills these gaps at venues where local owners and users need improved coverage and access speed. Qualitative and quantitative analysis of some of the most advanced markets reveals that the majority of today's Wi-Fi traffic is incremental or complementary to cellular traffic. Public Wi-Fi networks will play an important role in proliferation of broadband services.

Our specific comment on the issues raised in the consultation paper is as below:

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

- Allow all the channels in 5GHz Band for outdoor usage.

- Wi-Fi networks are being rolled out by TSPs/ISPs, back haul connectivity plays key role in proliferation of Wi-Fi based Broad band network. Fiber network rollout is time consuming as well as costly hence steps should be taken to allocate either certain E-Band spectrum or License band radio spectrum for backhaul services to TSPs/ISPs.

- Physical security and power availability for devices being deployed for public Wi-Fi network need to be addressed.

- All internationally/IEEE/WBA approved Wi-Fi spectrum should be allowed for Broadband use.

- All allowed channels should be allowed for outdoor Usage.

**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?**

- We understand that tier -1 cities would have heavy interference impacting quality of services of an outdoor Wi-Fi network , hence high foot fall indoor / campus are ideal for Wi – fi deployment .

- Since the service experience in wireless networks is on best effort basis so no SLAs should be re-enforced for public WiFi networks.

- Government should incentivize operators deploying Wi-Fi in rural / tier - 2 cities.

- As envisaged in consultation paper "Neutral network "can be a good business model where in operators / ISPs can lease SSID without duplicating the infrastructure hence IP-1 / tower companies may also be allowed for establishing infrastructure required for hot spot.

- Public Wi-Fi is generally considered free data services model hence monetization of investment done in provisioning services remains a challenge. Government must allow TSPs/ISPs to monetize through digital advertisements, location based services etc. using the personal data given by users at the time of log – in where services are on free data model.

- Further, Government or location owners may ask for certain URL category wise filtering rules to be implemented in Public Areas. Please see if blocking of access to certain parts of the Internet should be allowed in light of net neutrality.

- Integration with Aadhaar data base for customer authentication and subscriber profile creation.

- Policy guideline to enable TSPs/ISPs to advertise availability of its services in case of Public Wi-Fi and permission to set up kiosk which may act as contact center / space for voucher vending machines.

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

- WRIX implementation described in consultation paper may be considered as suitable solution to manage the roaming requirement under WiFi network within the country and internationally. But the development / subscription of such systems in not economically viable for local interconnects. For faster development of WiFi services; regulator may develop such systems and provide free access to WiFi operators. This will in turn help operators to get leverage from the LI requirement issues also.

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

- Government may standardize the agreement format towards the fulfillment of interoperability requirements; which may be signed by the interested parties before provisioning of services across the networks.

**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.**

- Considering the equipment eco-system all internationally/IEEE/WBA approved Wi-Fi spectrum should be allowed for broadband use. Beyond this additional bands may be de-licensed in line with global trends.

**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?**

- For local users OTP based log-in scheme is ok. However such users may be allowed for online registration by using the Aadhar identity. Government should facilitate the connectivity with aadhar systems for authentication. One time username and password based authentication system is to be implemented and OTP authentication for every session may not be required.

- For international tourist online registration by using their passport and current allocated visa number may be adopted. Government should ensure the connectivity of passport / visa systems with WiFi service providers for authentication.

**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.**

- Carrier billing is a good payment arrangement but agencies like Fortumo charges heavy premium for settlements which impacts viability of services. Government need to take steps / issue guidelines to make it cost effective.

- For faster deployment of WiFi network; currently operators should be allowed to operate using their specific re-charge vouchers instead of common voucher across multiple operators. Operators may choose to migrate on common voucher system in future.

**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?**

- The current low cost, low return business model for offering Wi-Fi services does not leave scope for payouts to third parties on per-subscriber or per-transaction basis. The access service provider needs to own the customer to effectively implement monetization schemes and centralized hub model may limit monetization innovation.

- However, Government may issue separate Licenses on the lines of WRIX to maintain such databases centrally on optional basis.

**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.**

- Such WRIX-cum-Centralized authentication hubs may be owned by the government, also need to provide open API's for integration either directly to Payment Portals or to profile updates submitted by Service Providers.

**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?**

- If the players can meet all the prevailing guidelines including security, net neutrality and LI requirements as currently required from ISPs/TSPs, they can be given go ahead.

- Further, it is seen that as in case of Cable MSO's, allowing small un-regulated players in access Infra creates market distortion due to local political interference.

- Thus, it is better to have a centralized Licensing Mechanism with certain entry restrictions in terms of minimum roll-out criteria, investment size,

and audit conditions etc. which would weed out non-serious players and root out unfair practices.

**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?**

- It is better to classify Content Distribution Networks (CDN) that host Data/Content closer to the users separately from access providers.

- CDN's enhance the Internet by significantly improving the end user Quality of Experience, while lowering the bandwidth cost.

- At the same time, small entity significantly distort the net neutrality view of a flat Internet and it's cost to new content players on the Internet.

- For such case govt. may draft the content filtering framework which is unilaterally applied to all such providers/ data re-sellers without negotiation to avoid related issues.

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

- CDN Caching and Hosting at community level will require significant relaxation on filtering methodology of LI requirements as the tendency of the LI agencies is to move towards Keywords based interception rather than user based interception.

- There should be very strict guidelines/review mechanism for local level hosting service providers to avoid misusing of subscriber confidential information, un-authorized access to user account etc.

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

- No Comments.