Whizz WiFi offers public WiFi solution. Users can access the Free WiFi with their social media accounts like Facebook, Twitter & Instagram in addition to SMS verification to access Free WiFi. This generates value to brands as the users are connected socially and additional public information is available about the user which can be analyzed to generate actionable conclusions.

We would like to submit our recommendations to the Consultation Paper No. 14/2016 as follows:

Q1. Are there any regulatory issues, licensing restrictions or other factors that are hampering the growth of public Wi-Fi services in the country?
A1. We understand that TRAI is in the process of de-licensing the entire 5GHz band and this is utmost necessary as the new 802.11 IEE ac standard operates only on 5 Ghz and most of the modern devices are already supporting 5 GHz

TRAI should allow third party vendors to make their custom hardware which may not certified the Wi-Fi alliance but adheres to the technical requirements. These boards should be allowed to be imported freely in India without excessive duties. There are open source boards in the eco-system like the Arduino, Rasberry-Pi, etc which can be customized at a very low cost to develop high-end solutions without the need for certification of the hardware as along as it meets the specifications required by TRAI in India. This will significantly improve and accelerate the hardware eco-system at an affordable cost.

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?
A2. The first requirement for offering public WiFi is a high speed Fibre or Leased Line in rural areas which is absent even in certain cities or exorbitantly priced by some ISPs. Countries like Singapore have an easy access to 100 Mbps to 10 Gbps Fibre Optic line at affordable rates (Source:http://www1.singtel.com/personal/internet/broadband-at-home/fibre-broadband-plans.html) . Without an affordable bandwidth, it is difficult for a non-network third party solution provider to offer public WiFi services in rural India

Secondly, there are right of way issues in setting up the required WiFi infrastructure at public places including the laying of fibre optic cables. Also the cables from the access point to the authentication server should be allowed. WiFi infrastructure should come at par with the telecom infrastructure as an essential commodity.

Q3. What measures are required to encourage interoperability between the Wi-Fi networks of different service providers, both within the country and internationally?
A3. A standard protocol should be followed by all public WiFi solution providers like central radius server authentication. ISP's offering WiFi should have an API (Application programming interface) access which can be made available to the partner hostpot companies to allow inter-operability**.** Such an API access will allow both national and international inter-operability and also allow aggregators to aggregate the WiFi hotspot in one app or service.

Q4. What measures are required to encourage interoperability between cellular and Wi-Fi networks?
A4. We should adhere and enforce the international standard currently in use for mobile data offloading and should be adopted by the telecom service providers in India. Examples include 3GPPbased Enhanced Generic Access Network, Interworking Wireless LAN (IWLAN), etc.

The most easiest and fastest way is the user switching the mobile data to a partner WiFi data of the telecom company. He is then automatically identified by the authentication server and granted immediate access without verification. This can be done through API access of the telecom for user verification.

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.
A5. All bands which are internationally de-licensed (viz. ISM, WiFI, etc.) should be de-licensed in India as the hardware eco-system is readily available for these bands.

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?
A6.
The current circular of TRAI enforces SMS verification with OTP sent to the user device with no mention of the mobile number domicile or the frequency of verification.

We believe that the method to verify the users phone number should be left to the public WiFi software provider who can use multiple verification methods like SMS, missed call, voice call, etc. to verify both national and International numbers so that it helps foreign tourists too.

Login methods over the OAuth protocol via third party apps like Facebook, Twitter, Instagram, Google, Linkedin, etc. should be recognizedindependently which remove the need for user id and passwords**.** In such cases a temporary access to the social websites is allowed over the internet to complete the authentication process. These apps already have user data which is passed on while authentication and proves useful for identification and analytics. Once the phone number is verified along with the social profile of the user, the user should be allowed to login subsequently without verifying his phone number again.

TRAI should refrain from defining the technology to be used in the authentication process as the technology keeps changing dynamically; newer and better methods of login emerges which significantly increases the user experience. TRAI should only define what should be verified during login - Like a phone number, either national or international along with the time-stamp of access.

TRAI should also recognize the need for re-login of the same user without phone number verification so that the user can be seamlessly connected for multiple times during the day / week / month without the need to re-verify his credentials. TRAI can deliberate upon the maximum period of seamless re-login which can be allowed for the user without re-verification of the users phone number.

TRAI should keep the existing requirement of ID proof as optional, especially for foreign tourists who may not have an active mobile number.

TRAI can further explore the possibility of verifying the user through a digital API to the Aadhar database (UIDAI)

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.
A7. We understand that any payment method can be integrated into the login process. However, this only increases the login time and hampers the user experience. We believe that public WiFi should be available for Free to the user and the providers should adopt different models for monetisation rather than charging the user. If the user has to pay for its data over WiFi, the user may prefer a 4G service on phone than a temporary WiFi connection.

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?
A8. This is a good idea. However the implementation of the hub-based model is equivalent of implementing an entire telecom system.

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.
A9. TRAI should regulate the pricing of the data service over WiFi the way it is done for mobile service.

For payment platforms, the platform should support the widest possible payment networks like Visa, Master, Rupay, Amex, All Debit, Credit Cards, Net Banking, IMPS, UPI, Wallets etc. It should not be restricted to one payment platform and ideally an aggregator of all platforms should be used.

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?
A10. Yes. It is feasible to have a common grid of Fibre Optic like electricity grid and access should be given to any small entity which can become the service provider. The Fibre optic grid even at the distribution level to the consumers should be futuristic and support transmission of higher bandwidths in GBPS

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?
A11. The architecture should define the minimum bandwidth speed to be provided and the maximum price at which it can be resold.

Q12. What measures are required to promote hosting of data of community interest at local level to reduce cost of data to the consumers?
A12. This can be done using a Media server. However this technology is ideally redundant in today's world as people prefer live, real-time and updated content over high speed internet. Certain static content like movies, songs, encyclopedia, educational content, etc. which do not change over time can be hosted on such servers.

Q13. Any other issue related to the matter of Consultation.
A13. **Education:** TRAI should educate consumers about the WiFi hotspot technology and how to access a public WiFi, how to login to the hotspot networks so that they will be prepared to connect to the WiFi hotspot.

Channels: Increase in no. of channels within the 2.4 GHz & 5 GHz band to reduce interference. India has only 11 channels which can be increased to 14. Singapore has 14 channels.

Customer Acquisition Form: In consultation paper point 3.14 clause C, TRAI has proposed to create a digital form for acquisition (CAF) of Wi-Fi customers. We believe that such a system is redundant in today's world and TRAI should refrain from allotting any new user id or password to WiFi customers. Once the phone number of user is verified, it can be either liked to any existing id, like his social account, Aadhar number, etc. for re-login and no new id & password should be allotted.

Wi-Fi aware: WBA has released a new protocol - WiFi aware (Source: http://www.wi-fi.org/discover-wi-fi/wi-fi-aware) which allows proximity based social networking over WiFi. WiFi aware allows bidirectional sharing of small pieces of information, e.g. location data, sensor readings, and services in proximity. This bi-directional sharing of data sometimes happens anonymously and without the requirement of the user to interact with the location service. Such services though work on the same unlicensed spectrum, they should be specifically excluded from any authentication requirement as followed in other countries.

Walled Garden: Similar to the media server, certain online curated content can also be made available in a controlled environment without granting the user entire access to the internet. Such content would be curated by service provider and may include movies, songs, videos, ads, social media etc. which can be viewed without access to the entire internet and hence should be exempt from any user verification requirement.