To,

Shri Arvind Kumar

Subject: Comments on the Consultation Note on Model for Nation-wide Interoperable and scalable Public Wi-Fi Networks

Dear Sir,

We OptiTrans Solutions Private Limited offer public WiFi hotspot & analytics software, with our product Whizz WiFi (http://whizzwifi.com)

Whizz WiFi enable venues such as Restaurant's, Café's, Retail stores, Hotels, etc. for providing Free WiFi. Whizz WiFi is an unbundled, Plug-N-Play hotspot solution which can be setup instantly on any of the supported hardware. The venue owners offer Free WiFi to their customers and get actionable analytics, digital marketing benefits and integrate their social media strategy with Free WiFi offering.

We believe WiFi is more than just distribution of internet data. Modern WiFi can build analytics, provide surveillance and facilitate indoor navigation. These add-ons work in tandem with providing internet data over the same hardware.

We appreciate the initiative of TRAI to seek consultations from various stakeholders before making policy decisions and welcome the second "Consultation Note on Model for Nation-wide Interoperable and scalable Public Wi-Fi Networks". The second note is similar to the key note presentation made on the workshop held on 28th September 2016 at Bengaluru. This note has gaps from the first consultation paper on "Proliferation of Broadband through Public Wi-Fi Networks" issued on 13th July 2016. With our comments below, we seek to reduce the gaps and hope that TRAI considers these suggestions.

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?

A1. No. The architecture designed is an aggregation of WiFi hotspots & standardisation of login process and not interoperability. We understand that the presented architecture would be applicable only for paid WiFi and not for Free WiFi. Free WiFi is understood to be provided as per the existing login process. We have discussed the implications of the presented architecture for paid WiFi below:

1. **Licensing as against voluntary registration:** TRAI is proposing to create a database of WiFi hotspots and login URL's with a requirement of every hotspot provider (Restaurants, Cafes, Retail outlets, etc.) to register with their digital signature and PAN which would create friction in onboarding. This is evidenced from the drive carried out by the Navi Mumbai police to locate unsecured WiFi connections mentioned in the Indian Express (http://indianexpress.com/article/cities/mumbai/cops-open-wifi-connections-a-risk). After the drive, most of the Restaurant and Café owners stopped providing WiFi instead of installing a hotspot software.

   Our suggestion: Registration for paid WiFi database should be made voluntary and optional. Hotspot providers who wish to benefit from the standardisation of WiFi hotspots would automatically come and register with TRAI. Further, registration should be made simpler with hotspot provider registering themselves with the requirement of only a valid Indian mobile number and email address.

2. **Lack of internet infrastructure:** There is a lack of high speed internet infrastructure to provide low cost and high speed WiFi. Most of the unlimited internet plans do not go beyond 4 mbps which isn't sufficient to provide WiFi. We believe users will prefer a 4G mobile network with higher speeds as opposed to a temporary paid WiFi with low speeds. A massive overhaul will be required in the wired internet infrastructure with fibre broadband available to providers.

   Our suggestion: TRAI should enable high speed broadband fibre network at affordable rates before having a paid WiFi infrastructure. Cities which have a reasonable fibre network like Bangalore, could be a pilot for 6-12 months to see whether the small vendors are adopting this concept and whether the users are paying for the system proposed in the consultation note. This would also allow some time for transition.

3. **One Time Registration Process:** The proposed registration process is expected to be made either through Aadhaar based eKYC or Indian mobile number. This leaves foreigners out of the system and contradicts the point C(6)(b) of this consultation note. Enabling simple login process for foreigners was also one of the key consultation in point 3.13 of the first note of TRAI.

   eKYC through Aadhaar would anyways require one time password verification on the users Aadhaar associated phone number. The timing of this consultation and the architecture proposed essentially addresses the telecom operators who have already mined the Aadhaar database of their customers while issuing SIM cards and are bundling WiFi plans with their mobile services. Even payment wallets can do transactions worth Rs. 20,000 per month without KYC, so we do not see any reason to have it for accessing public WiFi.

   Our suggestion: One time verification should be done through any international mobile number. Requirement of Aadhaar should be optional or removed as asking Aadhaar or PAN for a public WiFi access may refrain users from accessing it. Data symmetry should be maintained across the app provider and the hotspot provider enabling sharing of all data for each transaction.

4. **Single payment system:** Though the payment mechanism through UPI appears promising, however it will refrain the users from using other payment options like credit cards. If the pricing is based on one time access or monthly loading, different payment gateways should be made available to be used each time.

   Our suggestion: One click UPI payment would appear in the Captive portal interface, however there would be an option below to skip UPI and use other payment gateways for users who do not mind a longer process and wish to use credit cards.

5. **Reliance on mobile app & captive portal interface:** The proposed architecture relies on the use of a mobile application for Android and iOS devices for the login process along with user interface on Captive portal. Both the platforms behave quite differently while connecting to Public WiFi and may not function seamlessly with the Captive portal interface which opens on browser. If we think of WiFi access from a user's perspective, it is of utmost importance to keep the experience seamless. A browser is pre-installed on all phones and even works on older handsets, so access should be available without the app if the user so chooses. Apps also expose privacy of the users, as apps will ask permissions which may not be required for the app to function. Most of the apps nowadays takes access to your contacts even though it isn't required. Further, the users are now moving towards having fewer apps on their devices.

   Our suggestion: The registration and login process should also be available completely on the web and optional on mobile app. In a scenario where a user chooses to register on the website, he will select the WiFi SSID at the venue and complete the same login process on the mobile web. The user will thus have an option to whether install or not the WiFi provider app.

   Further, the login process needs to be thought from the futuristic technology. Connecting to an Open WiFi network would be a few words of command to the Google Assistant or Siri and should ideally operate directly over the web without the need for an App.

6. **Static registry of SSID:** The system proposes a static registry even for WiFi SSID & authentication URL. Both these data values are variable and may keep changing based on the preference of the hotspot provider and software provider.

   Our suggestion: The registry should be dynamic, updated real time and made available via an API.

7. **Payment in kind through non-monetary options:** We understand that the proposed system of WiFi would be applicable only for monetary payment to access WiFi. The other non-monetary options which are available to pay for sponsored WiFi would work as per the existing login process. These could be payment through watching a video, Facebook check-in, Twitter follow, social media post, download an app, answer a poll and other several innovative options which make the login process interactive and do not charge the user for WiFi.

8. **Reporting requirements:** The current paper is silent on reporting requirements by the hotspot providers. We understand that the customer information accessing the WiFi is proprietary to the hotspot and software provider and is not required to be reported to TRAI. However, there is no information whether TRAI would put any further guidelines on reporting, complaint mechanism or ombudsman. Every additional regulation proposed will weaken the system to achieve its objectives and TRAI should keep it as minimum as possible.

Q2. Would you like to suggest any alternate model?

A2: We have incorporated several suggestions in answer above to improve the proposed system of aggregation of WiFi SSID's and standardise the authentication process.

However, to achieve a truly interoperable model, TRAI would have to create a central authentication system for the users, where each hotspot providers access point communicates with the central server of TRAI for authentication across all access points. This would enable roaming over WiFi across multiple access points, multiple software providers and multiple hotspot providers.

This architecture would have a Central WiFi user authentication system. User can also use WiFi while travelling and will not be required to re-login on different WiFi hotspot providers or venues. This will enable WiFi hotspot interoperability. Prepaid or Post-paid subscription data can be used at different locations and with different hotspot providers. TRAI can provide a central radius server for captive portal authentication across different software providers.

However, we haven't come across such a system currently operational across the world at the scale proposed by TRAI.

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?

A3: The proposed system of paid WiFi necessitates TRAI to allow hotspot providers to resell the capacity and bandwidth to the end users without the need of any additional registration requirement than proposed.

For allowing everybody to resell the capacity and bandwidth, TRAI may consider using registration than licensing.

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

A4. The regulatory guidelines should ensure that there is no conflict of interest between entities hosting the central servers and the those providing authentication system. To achieve true unbundling, the entities providing internet backhaul, the hotspot provider, the software and app provider should be different independent entities.

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

A5. The objective of paid WiFi through small hotspot providers like retail outlets cannot be provided without allowing them to resell the WiFi bandwidth. If the reselling is done only though wireless over WiFi and not through cables, we do not see any additional requirement of compliance apart from those already suggested.

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?

A6. The internet service providers and telecom providers would continue to provide the bandwidth at the costs offered by them through various plan. This should be independent of the end use for the internet as most of the venues have only one internet plan for their own use as well as providing WiFi.

The hotspot provider, the software provider or the app provider may eventually emerge with different pricing options. There could be revenue sharing amongst them. The software could be based on subscription basis for the hotspot provider or a combination of both. Regulatory intervention isn't required in the pricing and should be left to be decided by each party. However, how the plans would work across multiple access points and providers while keeping the same for the user remains to be understood.