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Director General, Broadband India Forum, Public Wi-Fi is the stimulus that Digital India needs to move forward

Over the last few months, the lockdown across the country has thrown into focus the critical need for connectivity for one and all. With the digital highway being 'virtually' the only means of remaining connected, the critical need of the hour is to examine how this can be augmented. This does not assume that the services have been poor–on the contrary, the digital services providers have played a stellar role in ensuring that the country has stayed connected. But this connectivity has been primarily as a result of mobile broadband, where due to the severe limitation of availability of spectrum; issues related to congestion, capacity, and quality of service have been ever present. The vast Indian topography, with its challenging terrains and rural and remote hinterlands, requires a combination of several different solutions to realize the goal of ubiquitous, affordable, and quality broadband service. The National Digital Communications Policy has identified an interplay of multiple technologies, including mobile broadband, augmented by optical fiber cable networks, satellite communications, and last but not the least, Public Wi-Fi hotspots, as key to achieving the national objectives of Broadband for All in Digital India.

Unfortunately, the percentage of persons who access broadband through public Wi-Fi hotspots is minimal, due to its sheer lack of availability. Against 169 million hotspots globally (CISCO Annual Internal Report, 2018–2023), India supports a mere 0.35 million. Projections indicate that in 2023, there will be 628 million hotspots globally. With 1/6th the number of the world's subscribers, India should support at least 100 million hotspots; and the *Connect India* goals of the

NDCP envisioning 5 million hotspots by end-2020 and 10 million by end 2022, are steps in the right direction.

New data-usage trends indicate steady growth and heavy consumption of video-content streaming, video calling, and similar high-bandwidth applications. The advancements in technology will lead to greater demand for even higher performance speeds and a seamless experience using 5G and IoT, which are expected soon. Thus, the need for anywhere everywhere connectivity through public Wi-Fi will be critical.

World over, Wi-Fi is utilized for heavy data usage and video downloads (which now constitutes almost 70% of the data traffic in India.). If used effectively and sagaciously, Wi-Fi can serve as a perfect complement to mobile broadband and help diffuse the load on the cellular networks, thereby improving the efficiency, capacity, and quality of service of these networks. Wi-Fi also has tremendous advantages over mobile broadband in terms of faster scalability and less dependence on heavy infrastructure.

In this context, the TRAI recommendations to the government on proliferation of broadband through public Wi-Fi networks, when implemented, would be of immense benefit to millions of citizens across the country. TRAI's vision of opening up the sector for the provision of broadband services through a plethora of smaller entrepreneurs, viz., village-level entrepreneurs (VLEs), kirana stores, chaiwallahs, etc., via a simple process of registration using the *unbundled and distributed* service model, in contrast to the existing vertically integrated service-based model, deserves to be lauded. These recommendations, if implemented, would help provide local internet access through the local neighborhood shops, thereby enabling ordinary citizens to leverage the power of the internet to improve their livelihoods and lives, generating immense value for the entire community. This will also help in the proliferation of affordable broadband to all, and result in substantial growth in business and employment opportunities, thereby driving socio-economic development and inclusion, as well as accelerating the pace of rural digital connectivity.

The TRAI has recommended WANI (wireless access network interface) architecture to facilitate seamless Wi-Fi roaming, whereby people can easily access Wi-Fi on the move. Seamless inter-operability of public Wi-Fi, based on WANI architecture, could improve the quality of customer experience while using Wi-Fi services. It is believed that WANI can help increase broadband penetration in a similar manner to how Aadhaar and UPI have been able to boost use of digital financial transactions and facilitated financial inclusion. Developed through extensive field trials, WANI enables seamless roaming from one Wi-Fi hotspot to another, without the hassles of re-identification of subscribers and reauthentication of payment mechanism, thereby making Wi-Fi-based broadband services extremely easy to use and affordable. Adoption of WANI 2.0 could further provide access across technologies in a truly seamless manner and be extremely useful in the proliferation of IoT as it supports device-to-device communication.

Contrary to the popular view, which believes Wi-Fi is competition to mobile broadband, the addition of more public Wi-Fi hotspots will help facilitate larger amount of data downloads without over burdening the mobile data network. This is the reason why, world over, almost 70–80 percent of the operator's traffic is offloaded to a public Wi-Fi network. Also, the traffic generated by the hotspots and access points will necessarily have to be carried only by the telcos as a part of their backhaul network. This being a new revenue stream, it could help boost their revenues.

The delay in acceptance and implementation of the liberalization of public Wi-Fi framework has been a setback to the realization of the goals of the NDCP and that of Digital India. In the interregnum of four years since the TRAI recommendations were pronounced, the country could well have suffered a large and irretrievable loss. If we were to go by ICRIER's report in 2017 that a 10 percent increase in total internet traffic in India leads to a humungous 3.3 percent increase in GDP, the potential loss is considerable.

The delicensing of the 6Ghz spectrum band by the FCC in USA serves as an excellent example of the power of delicensed spectrum bands, and how it can be used to complement high-speed mobile broadband (4G/5G) with similar speeds while indoors; and in fixed locations with the help of technologies like Wi-Fi 6e–the latest technology from the Wi-Fi stable which can cater to gigabit throughputs and speeds.

Emulating the same would be in India's interest, as Wi-Fi 6 emerges as a prime candidate for *peer-to-peer* integration with 5G in the near future. Opening up of spectrum bands, critical for implementation of large-scale public Wi-Fi deployments, must be undertaken as fresh capacity would be required to cater to many applications that would emerge along with the evolution of the technology to WiFi 6 and beyond.

For the sake of national interest, it is paramount to ensure that the government takes the Wi-Fi recommendations seriously and implements them on a war footing to facilitate acceleration of Digital India and Broadband for All, and bring forth the benefits for the common man, the economy, and the nation as a whole. ●