INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION STANDARDIZATION SECTOR

STUDY PERIOD 2025-2028

SG3RG-AO-C10

SG3 REGIONAL GROUP FOR ASIA AND OCEANIA (SG3RG-AO)

Original: English

Question(s): 6/3 Virtual, 10 February 2025

CONTRIBUTION

Source:	ITU-APT Foundation of India (IAFI)	
Title:	Proposal for a new Recommendation on low-cost public Wi-Fi network architecture for Asia and Oceania	
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Abstract: IAFI proposes the development of a new ITU recommendation for a low-cost Wi-Fi public network architecture on the basis of PM-WANI.

Introduction:

Cost effective connectivity plays a major role in bridging the digital divide and has a significant economic impact on individuals and society. Simpler low-cost wireless networks structures for public Wi-Fi networks that could offer flexible and affordable pricing structure can help in this mission. It is therefore proposed that **SG3 REGIONAL GROUP FOR ASIA AND OCEANIA (SG3RG-AO)** should study and recommends such simpler and low-cost approaches to providing internet access to the public in Asian countries.

India has promoted one such initiative called PM-WANI that allows users to purchase internet access based on their immediate needs and budget. This means users can choose to pay for internet usage by the hour or by data consumption with options for micro-payments as low as 10 cents, 20 cents, or 1 dollar. This pay-as-you-go model makes internet access more accessible and affordable, especially for low-income households and casual users who may not require continuous connectivity. This flexibility empowers users with greater control over their internet spending and ensures that everyone can access the digital world, regardless of their financial constraints

IAFI therefore proposes development of a recommendation for a low-cost WI-Fi public network architecture

Following are the key ways to boost economic growth and opportunity by enhancing digital access.

a. Increased Employability - Digital skills are essential in today's job market. Access to the internet and digital literacy training enables individuals to acquire these skills, making them more competitive and employable and may lead to higher incomes and improved economic well-being.
b. Access to New Markets - The internet opens doors to new markets and economic opportunities. Individuals can sell goods and services online, and access global markets, increasing their income potential.
c. Improved Access to Education and Healthcare - Online education and telemedicine expand access to essential services, particularly for those in remote or underserved areas. It may lead to better health outcomes, increased educational attainment, and ultimately, greater economic opportunities.
d. Economic Growth - Increased internet penetration has been linked to higher GDP growth. A digitally connected population is more productive, innovative, and able to participate in the global economy.
e. Rural Development - Bridging the digital divide is particularly crucial for rural areas. Internet access can revitalize rural economies by enabling access to new markets, promoting e-commerce, and supporting the growth of local businesses.

Enhancing Digital Inclusion is to ensure equitable access to the digital world for everyone. It requires breaking down the barriers that prevent people from accessing and using technology effectively. This involves providing affordable and reliable internet access, devices, and assistive technologies to all, regardless of location, income, or ability. Digital inclusion also necessitates fostering digital literacy, ensuring accessible content and applications, and encouraging active participation in the digital sphere for individuals and communities.

Public Wi-Fi offers a valuable service by providing internet access to a specific geographic area, like parks, libraries, and transportation hubs. It allows people to connect with friends and family, access information, and complete tasks online while on the go. Public Wi-Fi can also be a lifeline for those who lack affordable home internet, helping bridge the digital divide and promote digital equity.

It is often built and operated by local bodies, public-private partnership and individual person or business with the aim to provide affordable and accessible internet for everyone within that area.

So, public Wi-Fi plays a crucial role in enhancing digital inclusion by providing an alternative or complementary access method to mobile networks. Efforts to expand public Wi-Fi initiatives and community-based networks are essential for reaching underserved populations and bridging the digital divide.

Need of public Wi-Fi

Public Wi-Fi are needed in all countries, cities, towns and even in rural area due to the following reasons.

a. Unequal Access - Internet access remains unequal, with disparities between urban and rural areas, socioeconomic groups, and different regions of the world. Public Wi-Fi helps to bridge this gap by providing affordable access in underserved communities.
b. Essential Services - Internet is crucial for accessing education, healthcare, government services, and economic opportunities. Public Wi-Fi ensures that everyone can access these essential services, regardless of their circumstances.
c. Many areas are not covered by mobile signal and in many countries, population is still served by 2G/3G mobile signal.

Wi-Fi often uses as a complementary technology to mobile networks, providing access in homes, businesses, and public spaces. Wi-Fi coverage is likely higher in urban areas with denser populations and better infrastructure. Rural areas may have more limited Wi-Fi availability. Many countries are actively promoting public Wi-Fi initiatives to expand access, but coverage data can be inconsistent. Despite progress in expanding internet access, significant gaps remain, particularly in rural and underserved communities within the Asia-Oceania region. Traditional infrastructure deployment can be costly and time-consuming, hindering connectivity in these areas.

Public Wi-Fi in India through PM WANI[1]

PM-WANI (Prime Minister Wi-Fi Access Network Interface) is a groundbreaking initiative launched by the Government of India in December 2020, to revolutionize the internet connectivity by creating a vast network of public Wi-Fi hotspots across the country, particularly in underserved areas. Delivery of broadband services is facilitated by rolling out WANI infrastructure with the broadband services, under distributed architecture and unbundling of infrastructure to improve performance by different players under the WANI eco system. Last mile broadband connectivity can be provided through the network of public Wi-Fi access points and the backhaul requirement for these Wi-Fi access points will be met by procuring internet bandwidth from the telecom service providers/internet service providers. It empowers small businesses and individuals to become Wi-Fi providers, creating new economic opportunities and eliminates the need for obtaining a license to operate a PDO, reducing barriers to entry and encouraging participation. It offers a simple and online registration process for PDOs, making it easy to join the network.

Under the PM WANI distributed architecture and unbundling of functions, the eco-system will include:

- Public Data Office (PDO) – PDO or the Last mile service provider will establish, maintain, and operate only WANI compliant Wi-Fi Access Points and deliver broadband services to subscribers.
- Public Data Office Aggregator (PDOA) - An aggregator of PDOs and performs the functions relating to Authorization and Accounting.
- App Provider - Develop an App to register users and discover WANI compliant Wi-Fi hotspots in the nearby area

PM-WANI has seen significant adoption across India, with more than 2,77,000 of PDOs already been deployed. It represents a significant step towards achieving digital inclusion and building a truly connected India. By leveraging public Wi-Fi and empowering local communities, this initiative has the potential to transform the country's digital landscape and unlock new opportunities for social and economic development.

One of the most significant advantages of the PM-WANI Wi-Fi network is its flexible and affordable pricing structure. Unlike traditional internet plans that often require weekly or monthly commitments, PM-WANI allows users to purchase internet access based on their immediate needs and budget. This means users can choose to pay for internet usage by the hour (e.g., 1 hour, 2 hours) or by data consumption (e.g., 1 GB, 2 GB), with options for micro-payments as low as 10 cents, 20 cents, or 1 dollar. This pay-as-you-go model makes internet access more accessible and affordable, especially for low-income households and casual users who may not require continuous connectivity. This flexibility

[1] https://pmwani.gov.in/wani

empowers users with greater control over their internet spending and ensures that everyone can access the digital world, regardless of their financial constraints.

The expanding FWA technology ecosystem in India, with its increased coverage and affordability, presents an opportunity to bridge the digital divide by providing PDOs with the necessary bandwidth.

The PM-WANI model can be adapted to suit the specific needs and challenges of each country in bridging digital divide, taking into account local regulations, infrastructure, and socio-economic conditions. Collaboration among governments, the private sector, and community organizations will be crucial for successful implementation and empower the connected digital society.

Conclusion

The PM-WANI initiative represents a significant stride towards achieving digital inclusion in India. By leveraging public Wi-Fi and empowering local communities, PM-WANI has the potential to bridge the digital divide and unlock new opportunities for social and economic development. The framework's emphasis on affordability, accessibility, and ease of deployment makes it a crucial tool in ensuring equitable access to the digital world for all.

Proposal

Considering the success of PM-WANI in expanding internet access in India, IAFI proposes the development of a new ITU recommendation for a low-cost Wi-Fi public network architecture on the basis of PM-WANI. This will help the developing and less developed countries in the Asia-Oceania region, to consider adopting a similar framework. By implementing a PM-WANI-like initiative, these countries can leverage public Wi-Fi networks to address the digital divide and promote digital inclusion. This approach offers a cost-effective and scalable solution to expand internet connectivity, particularly in underserved communities.

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