4th Wireless for Communities & Open Spectrum Summit Report

11th Manthan Award Asia Pacific

ORGANIZED BY: Digital Empowerment Foundation (DEF)
& Internet Society (ISOC)

2014

WIRELESS FOR COMMUNITIES

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Introduction

The **Digital Empowerment Foundation (DEF)** in partnership with World Summit Awards, the Ministry of Communication and Information Technology, Government of India and other organisations working in ICT for Development launched the Manthan Awards in October 2004 to identify, reward and give recognition to significant contributions in the field of ICT for Development (ICTD).

Under this framework, the Wireless for Communities and Open Spectrum Summit was established four years ago as part of the **Wireless for Communities (W4C) programme** by DEF and the Internet Society (ISOC). The annual Summit's fourth installment focused on **'Community Wireless Networks and Digital India'** and was held on 4 December 2014.

The W4C programme uses low-cost wireless technology to create community-wide wireless communication networks using unlicensed spectrum in rural regions of India. Overall, the project aims to provide Internet connectivity to some of the remotest areas of the country, thus enabling community members to access information and services, and to engage with wider communities online.

The Wireless for Communities Summit this year brought together key representatives from government, industry and academia, as well as consumer and policy advocates from Asia-Pacific to discuss connectivity gaps and challenges in providing last-mile connectivity to village households in India. The summit put forward a number of strong policy, legal and regulatory recommendations to help build the pathway towards a Digital India.

Summit Organizers

DEF: Founded in 2002, the Digital Empowerment Foundation (DEF) is a Delhi-based, not-for-profit organisation which aims to create economic and commercial viability using Information and Communications Technology (ICT). Since its inception, DEF has engaged in a number of activities while pursuing its mission to promote and deliver ICTs in India. DEF has more than 10 years of expertise and experience in ICT development and solutions deployment in under-served communities.

ISOC: By connecting the world, working with others, and advocating for equal access to the Internet, the Internet Society strives to make the world a better place. The Internet Society engages in a wide spectrum of Internet issues, including policy, governance, technology and development. We establish and promote principles that are intended to persuade governments to make decisions that are right for their citizens and each nation's future. Everything we do is based on ensuring that a healthy, sustainable Internet is available to everyone – today and for the next billion users.

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Background Note

The International Telecommunications Union's Plenipotentiary Conference 2014, which ended on the 7th of November 2014, saw a long series of discussions on topics ranging from equitable access to infrastructure, social inclusion, and licensing issues. At the conference, the Indian representative from the Ministry of Communications and Information Technology, Mr Garg, talked about the newly launched Digital India initiative of Prime Minister Narendra Modi during his policy statement. The Digital India project mainly focuses on providing affordable and high-speed broadband Internet to all villages in India so as to make government services and information easily available to all. Another ambitious project, the National Optical Fibre Network (NOFN), plans to lay optical fiber to fill the connectivity gap between the block and panchayat level.

These objectives are in line with the discussions at this year's Wireless and Open Spectrum Summit, which focused on economical and rightful access to communication infrastructure to ensure the social inclusion of marginalized communities, including women. Initiatives such as the W4C have proven that use of unlicensed spectrum is an effective method of creating community wireless networks and providing connectivity to the last mile.

Participants at the Summit discussed the major issues faced by organisations working to provide affordable network connectivity to remote and rural areas. These included issues around bandwidth, spectrum auctioning procedures, SACFA clearances[1], emerging technologies and new business models for rural ISPs.

Methodology

Taking off from the recommendations from the 3rd Wireless for Communities Summit in 2013, the moderator Mr Rajnesh Singh, urged speakers to engage in a thoughtful discussion to develop further solutions to the challenges encountered by ongoing efforts to bridge the digital divide in rural parts of India. After all participants had expressed their views, an open dialogue ensued on the specific issues which arose. The Summit ended with all speakers being asked to summarise their key takeaways in the form of a tweet – in 140 characters or less.

[1] The Standing Advisory Committee on Radio Frequency Allocation (SACFA) siting clearance ensures that all wireless

Eminent Speakers

Moderator

Rajnesh Singh, Regional Bureau Director for Asia-Pacific, ISOC

Community Network Stakeholders

- Michael Ginguld, CEO, AirJaldi Research and Innovation
- Vibhas Sharma, Founding Director and CEO, Aura Ventures Pvt. Ltd.
- Nagarajan M., District Development Officer, District Panchayat, Sabarkantha, Gujarat
- Shahid Ahmad, Project Director, Digital Empowerment Foundation

Panelists

- Dr. Ravina Aggarwal, Program Officer for Media Rights and Access, Ford Foundation
- Dr. Mahesh Uppal, Director, Com First (India)
- Rajan Mathews, Director General, Cellular Operators Association of India (COAI)
- Dr. Rajat Kathuria, Director & Chief Executive, Indian Council for Research on International Economic Relations (ICRIER)
- Ashish Sanyal, Former Sr. Director, DeitY, Govt. of India; Independent e-Gov and ICT4D Consultant
- Deepak Maheshwari, Head, Government Affairs, Symantec
- Chat Garcia Ramilo, Deputy Executive Director, Philippines, Association for Progressive Communications

Delegates

- Ms. Noelle Francesca De Guzman, Regional Programmes Coordinator for Asia-Pacific, ISOC
- Ms. Kavita Tatwadi, Business Research Analyst, IITCOE (IIMA Idea Telecom Centre of Excellence)

Summary of Summit Proceedings

A Recap of Recommendations from the 3rd Wireless for Communities Summit

The Summit began with a recap of the top 5 recommendation points from the previous year's summit, as published in the 2nd Wireless for Communities casebook:

1. It is vital for policy-makers to understand that technology and digital literacy can easily permeate rural areas. Such resources can play a key role not only in strengthening the democratic governance process and delivery of government services, but also in enabling citizens to improve their livelihood, obtain social benefits, and avail of better health care, education and skills development.

2. There is a great need for a harmonized and time-bound regulatory approval process for providing last mile connectivity, particularly in rural areas. This can be integrated with an appropriate policy and licensing mechanism for rural ISPs, similar to the highly successful cable TV retailer model in India, to bring down deployment and access costs, thus making rural broadband services affordable to the target community. The policy framework should also look at business and sustainability models and take into account the importance of knowledge-sharing between communities and practitioners.

3. The Department of Telecom (DOT) and Telecom Regulatory Authority of India (TRAI) should look at the various policy aspects of unlicensed spectrum and how other bands could be delicensed to aid in accelerating Internet penetration. Both increased tele-density and Internet usage are vital for the country's economic development. Spectrum, which has been recognized by the Supreme Court of India as a public resource, should be used as efficiently and inclusively as possible to serve the public interest. More spectrum resources should be delicensed and made freely available to civil society organisations with suitable policies to restrict and penalise their misuse or abuse.

4. It is crucial to introduce rules and regulations that make it mandatory for licensed Class A, B or C ISPs to share bandwidth with rural ISPs and provide them with backend connectivity under a revenue sharing arrangement. Doing so will help to solve issues related to substandard quality of ISP services. The business models for, as well as the implications of, licensed and unlicenced spectrum sharing on security and interference should also be considered. These can be the foundation for a policy framework that would make wireless telephony and broadband connectivity commercially viable for different types of players. This includes rural ISPs which may offer limited services but can more easily meet local and specific rural needs.

5. There is a need to promote rural ISPs as a sustainable social enterprise which can generate strong demand for connectivity at prices that the poor can afford. It is thus necessary to understand all the

underlying price factors to create an ecosystem that enables rural ISPs to offer broadband connectivity at the grassroots level.

Discussion Points from Speakers

With last year's Summit outcomes in mind, the moderator, Mr Rajnesh Singh, opened by posing thematic questions to the panelists and participants.

A conducive environment for small businesses

Asked about the viability of licenses for rural Internet service providers, Mr Michael Ginguld noted that there are three classes of licenses in India: Class C (telecom circle) which he says has been cancelled, and Class B (state) and A (country-wide), both of which are costly to avail. This system has prompted bigger ISP players in the market to purchase spectrum and sell them to smaller ISPs at a high cost. He posited that the introduction of a rural ISP license would enable smaller ISPs to do away with this practice, helping them operate at lower costs in rural areas. However, Mr Ginguld also noted that this in turn might lead to the flourishing of millions of ISPs across India, which the government might not be able to regulate and monitor properly for performance and quality of service.

Other participants agreed, but also pointed out that smaller ISPs use services from bigger ISPs which are themselves subject to monitoring, regulation and security clearances. Last-mile ISPs should be fully liberalized, they said, adding that dynamic sharing of both physical infrastructure and spectrum should be promoted to help achieve last-mile connectivity.

Ms Ravina Aggarwal echoed the need for a diversified ISP landscape in India, which she said could facilitate the development of new business models for universal access. She added that more effort should be put into utilising existing technologies, rather than waiting for new ones to solve current issues in connectivity. A more liberalised licensing system, perhaps one that includes a panchayat-level licensing model, panelists said, will benefit not only small players but ICT organisations that want to conduct pilot tests of novel innovations in rural areas.

Speaking from what he has witnessed in the field, Mr Vibhas Sharma said that cost, the main issue for a village level entrepreneur (VLE) wanting to provide connectivity to customers, may be reduced through the use of long-term evolution (LTE) technology or the 700 MHz spectrum band. He suggests that rural TV cable operators, which are well regulated, have a good customer base and have a cable-ISP license, could be a viable Internet service provider for rural areas—a proposal that his team had already put forward to the regulator. He believes the set-up will contribute to improving last-mile connectivity and can enable small cable operators to earn more revenue.

Cable networks, which other participants argued are not too prevalent in rural areas, are only one option in the multitude of technologies that can be used to reach the last mile, as Mr Rajan Mathews pointed out.

Both the call network and the radio access network, he said, are either already or on the verge of being IP-enabled. He added that the cost of connectivity to the end-user is just as big an issue, with both smartphones and mobile data packages yet to drop to affordable price points for the rural consumer. He suggested a subsidy model for the BBNL's NOFN scheme to help solve last-mile connectivity, adding that the government can further incentivise private sector investment by lowering their Universal Service Obligation Fund payments by one percentage point—from the current 5%--for every non- commercially viable area they decide to cover. Other panelists held a different view, insisting that the USO fund should instead be utilised more efficiently by the state for advancing Internet access.

It is the government's responsibility, argued Mr Mathews, to provide connectivity efficiently up to Panchayat level, at which point the private sector can step up to create business models that are appropriate for the last mile.

Issues around spectrum

The second part of the discussion revolved around the use of spectrum, with the moderator asking panelists to comment on whether existing allocation mechanisms—auctioning spectrum to the highest bidder—impose an additional burden to end-users, to whom these costs are inevitably passed on.

Mr Ginguld concurred, saying that the bands 700 to 900 MHz, which are currently popular among telecom companies, should be reconsidered for public use—a position that was countered by Mr Mathews, who argued that government should instead focus on reformulating the procedures and criteria for auctioning, which to his view remains the most efficient and transparent way of allocating the scarce resource. Other panelists believed that public policy objectives, rather than solely profit maximization, should drive spectrum distribution. Mr Ginguld offered a different take, stressing the use of additional technologies that would allow bandwidth to be utilised more efficiently.

That said, panelists agreed that there is room in the field for both licensed and delicensed options to co-exist. Indeed, the social benefits of the latter were well-recognised in the room. However, Mr Shahid Ahmad was quick to remind participants of the continuing hurdles faced in utilising de-licensed bands. One such barrier is the requirement for a Standing Advisory Committee for Frequency Allocation (SACFA) clearance, which he lamented can be slow to obtain, for any tower above five metres in height. This makes it difficult for those wishing to use the 5.8 GHz band for instance, as it works optimally with good line-of-sight, and thus require towers of more than 10 metres, especially in areas of dense vegetation. Mr Ashish Sanyal responded by underlining the need for the state to do away with its umbrella policy for unlicensed spectrum.

Alternative models

Referring to his group's activities in the field, Mr Nagarajan spoke of a profitable grassroots-oriented approach that has seen good results in a number of underserved and unserved areas in India. It is a system wherein the district panchayat invests in and owns the network, and appoints an ISP to run it. The district takes 20% of the revenues, 10% of which is given to the village. In the district of Sabarkantha in Gujarat, Mr Nagarajan and his team, using their development funds, created a village network using the 5.8 GHz band, enabling them to extend connectivity around a 100-kilometer radius. Some 500 users availed of Internet access when it was offered for free in the first month, and 150 people signed up as paying subscribers in the subsequent months. Also in Gujarat, a tribal administrative division, known as a taluka, was fully connected to WiFi broadband this year, translating to 32 gram panchayats having Internet access using free spectrum.

Overall, participants at the summit largely agreed that there is a need to empower village-level entrepreneurs, whether by encouraging revenue-sharing arrangements with bigger providers, which is believed to help alleviate issues around bandwidth cost and points of presence, or by providing them with easier access to capital through, for instance, opening the industry up to microfinance lenders.

To conclude the round-table discussion, Mr Singh asked everyone to summarise their takeaway points in a tweet-like statement, and with it the Wireless for Communities Summit ended with useful technical, legal, financial and policy recommendations.

Summit Recommendations

Following are the main recommendation points from the round-table discussion during the 4th Wireless for Communities Summit.

To address licensing and bandwidth issues

1. The introduction of a rural ISP License would help eliminate the dependence of smaller ISPs on bigger players, enabling rural ISPs to operate at lower bandwidth costs and provide broadband connectivity to rural areas. Class-A ISPs, which provide services to smaller ISPs, can aid in ensuring that the latter complies with government policies. Rural ISPs should also be made a legitimate business entity.

To address infrastructure issues

1. Sharing of physical infrastructure between smaller and bigger players would be helpful in achieving last-mile connectivity.

2. New technologies like Long-Term Evolution (LTE) should be explored to provide last mile connectivity. Additional techniques like multiple-input and multiple-output (MIMO) can be used to utilise bandwidth more efficiently.

3. End-user costs to connectivity, such as smartphone and data recharge prices, should be reduced to improve Internet penetration in villages.

To address legal issues

1. SACFA clearance requirements should be eliminated or revised to allow for the quick and easy setup of towers in densely vegetated areas. An overhaul of the unlicensed spectrum policy would also help solve such infrastructure issues.

2. Incorporating policy-driven objectives in the spectrum allocation process can help to reduce acquisition costs for ISPs, giving them more capability to invest in rural infrastructure rollouts.

To address financial issues

1. Rural cable TV operators, which have a cable ISP license and a good customer base in rural parts of the country, should be supported and enabled to provide connectivity in underserved areas.

2. The private sector should create service models specifically for running rural Internet networks, while the Universal Service Obligation Fund (USO Fund) should be used to incentivize ISPs whenever there is a funding gap. The government could also opt to reduce ISPs' USO payments in exchange for their investment in non-commercially viable areas.

3. District panchayats or self-help groups can invest in village level infrastructure, using funding from such sources as the Backward Region Grants Fund and the state government. The network itself can be run by any appointed organisation on a revenue-sharing basis.

4. Microfinance lenders can provide cheaper credit to village-level entrepreneurs to allow them to get easier access to capital.

Annexure I: Selected Photographs

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Wireless for Communities Programme

To help address the gap in last mile Internet connectivity for underserved communities, the Delhi-based NGO Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) jointly launched the Wireless for Communities (W4C) initiative in October 2010.

The project involves deploying line-of-sight wireless technology and low-cost Wi-Fi equipment which utilize the unlicensed 2.4 GHz and 5.8 GHz spectrum bands to create community-owned and operated wireless networks. To further localize the initiative, the project strengthens grassroots expertise by training community members in basic wireless technology, enabling these 'barefoot engineers' not only to run and manage these networks but to pass on their skills to others. The Training of Trainers programme, which receives content development and technology support from DEF and ISOC as needed, has to date been conducted in 14 locations across India, Bhutan and Bangladesh, benefiting more than 100 wireless community enablers.

Website: wforc.in

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