

Title: Report on the Wireless 4 Communities: Linking rural communities of India through unlicensed (free) spectrum'

Summit: International Summit for Community Wireless Network (IS4CWN), Berlin, Germany

Duration: 2-4 October 2013

The International Summit for Community Wireless Network (IS4CWN) is a community for communities that aims to bring together leading technology experts, policy analysts, on-the ground specialist and university researchers working on the state-of-the-art community broadband projects across the globe. The Summit serves as an opportunity to share ideas, best practices, discuss policy issues, coordinate research and development efforts.

IS4CWN 2013 brought together participants not only from US and the EU but panelists from the developing world who are interested in building and expanding community wireless networks in their own countries. This year, IS4CWN celebrated 10-year anniversary of Freifunk, Berlin-based community of projects supporting free mesh networking tools.

The Summit distinguished technical and academic sessions through the cross-discipline and global diversity of the participants. Access to technology and technical knowledge was one of the major themes of the Summit's agenda. The Summit was focused on three distinct, but overlapping, aspects of community wireless networks: technical solutions, policy recommendations, and community strategies. The Summit represented various sessions, workshops, panel discussions and hacklabs to facilitate an interesting and productive exchange of ideas.

Some of the major advocacy sessions were Women and Community Wireless: Addressing Challenges, Sharing Success, Community Organizing and Alternative Business Models, Empowering Local Networks to Collect Data, Coalition Building for Community Wireless Networks, Governing the Wireless Commons: Protocols and People, Green Technologies in the CWN Domain, Local Wireless Networks and Disaster Communications, etc., while Tech Showcase sessions were Learning How to Teach (How to Build a Network), Long Link and Wireless Optical Communication, Mesh Networking Firmware and Mapping Showcase.

This year, Digital Empowerment Foundation (DEF), Delhi based NGO, organized the working session, entitled '**Wireless 4 Communities: Linking rural communities of India through unlicensed (free) spectrum'** on the second day (3 October 2013) of the Summit with an objective to bring stakeholders who are using unlicensed wireless spectrum in developing countries as rural wireless-based enterprises with aim of connecting rural regions of the country to share their spectrum issues and challenges and how are they using unlicensed spectrum for connecting remotest regions of the country. The session was focused on the following objectives:

- Discussed the importance of free spectrum for public good and advocacy towards utilizing it for social development
- Understand the scope and opportunities of unlicensed spectrum in India and other developing countries

- The magnitude and extent of unlicensed wireless band/free spectrum can be used to connect isolated areas and communities of the country.
- Explored and understand the rights and ethics challenges and issues around unlicensed spectrum
- Shared the wireless network experiences working in ground of the country

Panelists of the session are Mahabir Pun, Nepal Wireless, Hemant Babu, Nomad India Network and Ritu Srivastava, DEF shared spectrum challenges and issues around developing countries.

Initiating the session Mahabir Pun shared how Nepal Wireless has used unlicensed spectrum and providing connectivity in rural areas of Nepal. Using Wi-Fi technology, the project connected many villages to the Public Switched Telephone Network (PSTN) and providing call services, internet access and video conferencing facilities in the villages.

Nepal Wireless is working in the remote villages of Himalayas and trying them to connect with internet. Referring to the fact that over 80% population in Nepal is living in villages and they cannot afford internet, he commented no matter if telecom operators are introducing 3G or 4G technology in the country, if it will be highly priced, most of people cannot afford such technologies. Thus, open (free) spectrum is utmost important to provide connectivity in Nepal. He agreed that telecom companies are certainly unable to provide their services for free as they have to pay huge licensing fees, thus, there is requisite to understand the importance of open (free) spectrum. Like India, the Government of Nepal is also making its efforts to connect 75 district headquarters of the country with optic fibre network; he questioned what about the last mile connectivity in the country. According to Mr. Pun, connecting district headquarters or centres is not enough for last mile connectivity, there is not only need to connect to each and every villages but also make connectivity affordable to them. Giving an example of Nepal, he stated the government of Nepal has encouraged rural ISP to pay licensing fee of INR 100 in year. Further discussing about regulations, Mr. Pun recommended that regulations related to open spectrum is not important in developing countries like India or Nepal, but it is also important to motivate and encourage rural small enterprises to become ISP provider within their region through which rural ISPs can also earn some additional income. Thus it is not only about opening up of spectrum but also creating resolutions for the better utilization of the spectrum.

Talking about unlicensed spectrum issue in India, Ritu Srivastava stated that the Government of India exempted frequency 2.4 GHz band license-free. According to her, over 80 percent population does not have access to internet or means to access information. In the nutshell, she mentioned that though there is a constant movement towards better technologies but the promise of scaling of the services has not been delivered yet in rural regions.

Raising the issue of accessing information, she also recommended that there is need of committed players such as non-profit organizations, small enterprises and individual players in the market to provide equitable solutions to rural citizens and those who are yet deprived of accessing information as big telcos might not be interested to cover in their big business models. Talking about the accessibility issues around unlicensed spectrum, she mentioned that spectrum regulation in India is majorly managed, regulated and controlled by the WPC wing in the Dept. of

Telecommunications (DOT), which not only handles licensing use of spectrum for wireless purposes for government and private users including for commercial use in India.

Moreover, the licensing process is cumbersome as there are three-level of licenses available in India – firstly the national level, which costs around 250 million, the second level is state level, which costs 25 million and 0.25 million for the district level. Thus, for any non-profit-organisation, it is tough to get license under category A or category B as it is quite expensive. Thus, if anyone is planning to be rural ISP provider (block-level), then it is expensive to pay licensing fee. Alternative is that – to become rural ISP provider, anyone can become franchise of main ISP provider.

And if the (distribution centre) tower falls with 7.1 km Aerial distance from airport, need a clearance from Airport authority + SACFA (Standing Advisory Committee for Frequency Allocation) clearance. She concluded that being a franchisee of big ISP, rural ISPs have to share their user-log and other log details with big ISP, thus there is no data protection. Thus, at last she welcomed opportunities for new ideas, policy advocators who would encourage small and medium enterprises to work altogether for the benefit society.

Giving a perspective of unlicensed spectrum across South Asian countries, Hemant Babu initiated the discussion explaining 2.4 GHz and 5.8 GHz bandwidth are available as free (unlicensed) spectrum. Explaining about the science behind unlicensed spectrum, Mr. Babu further stated that radio waves or the spectrum is limited resource according to physics. Further explaining about spectrum utilization, he stated if all available bandwidth will be utilized, it will not solve the problem of delivering content. Thus, the problem could only be solved by using available spectrum efficiently. Bestowing on the success of the Wi-Fi technology in the 5.8GHz, Mr. Babu added that success was partly due to cheap cost of equipment and partly due absence of license fee. Even if, lowering down the license fee for 700 or 900 MHz, there is no equipment which is even close to the price range of 2.4GHz or 5.8 GHz range. At last, he concluded his points urging to use available spectrum effectively and efficiently.

Recommendations

- As the demand for bandwidth and connectivity is bound to grow in future. In a question of optimal utilization of available open spectrum, there is need of continuous experiment with the existing spectrum and looking for robust bandwidth solutions to provide the last mile connectivity.
- In terms of the using new technologies, Wi-Fi is one of the most usable technologies as it doesn't have issue of the connectivity and stability.
- In an effort to provide equitable access and increase internet penetration, there is need to explore all kind of spectrums, including open, white space and the existing spectrum.
- Another major recommendation is to develop sustainable social enterprises and to generate strong demand at the lowest price that could work for the poor. There is also need to understand the price-factor which has to be reduces before it reaches at grassroots level.
- It must be mandatory to understand whether rural communities are able to harness the benefits of the existing bandwidth.