EMPOWERING RURAL MASSES THROUGH WIRELESS CONNECTIVITY

THE REPORT ON THE WIRELESS FOR COMMUNITIES (W4C) SUMMIT AT 8TH MANTHAN AWARD ANNUAL DIGITAL FESTIVAL FOR DEVELOPMENT ON 2ND DECEMBER, 2011

Organised by

Digital Empowerment Foundation (*www.defindia.net*)

&

Internet Society (ISOC) (*www.isoc.org*)

CONTENTS

INTRODUCTION

Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) have launched a joint project called "Wireless For Communities" (W4C) in late 2010. The project aims to provide a holistic, community-empowered approach to connecting rural communities to the Internet. The motivation for the W4C project by ISOC and DEF is twofold. One is to totally democratize the availability of connectivity and enable access to information at the will of citizens outside urban centres – and remote rural areas in particular; second is to address the lack of content, product and services originating from rural areas which affects the economy from percolating to the bottom of the pyramid. Pervasive connectivity will ensure that localized content and services are not only encouraged but also facilitated and produced – the sum of which will contribute linguistic and cultural diversity, help build the rural economy and bring the next billions online.

PROJECT BACKGROUND

In developing countries, the wireless connectivity has been emerged as one of the inexpensive technologies to bridge the connectivity gap in remote areas. These wireless technologies have created much interest on the part of the international-development community.

For example, in India, even with mobile penetration, the tele-density in rural areas are still less than 40 percent, and Internet connectivity is a far cry. The reason has mostly been the issues around last mile connectivity. On the other hand, last mile wireless connectivity has the potential to resolve the issue of prohibitive cost of deploying conventional wired infrastructure in remotest areas of the country.

In order to address these issues, and connect remote and underserved regions of the country, last year, the Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) initiated a joint project called "Wireless for Communities" (W4C) which utilises low-cost Wi-Fi based equipment to connect and empower rural and underserved communities. The motivation for the W4C project by ISOC and DEF is twofold. Firstly, to totally democratize the availability of connectivity and enable Internet accessibility to information in rural parts of the country, secondly to address the issue of lack of content product and services originating from rural areas which affects the economy from percolating to the bottom of the pyramid.

SUMMIT PREAMBLE

In developing countries the possibility of the application of wireless technology has emerged as one of the cost conscious solutions to bridge the connectivity and corresponding information gap in remote rural areas and has therefore created much interest among the international-development community. Since tele-density in rural areas still remains under 40% and internet access ranges at even lower levels last mile wireless connectivity has the potential to resolve the issue of the prohibitive cost of deploying conventional wired infrastructure for the remotest areas of the country.

In order to address these issues, DEF and ISOC have organized a summit which aimed at creating a common platform involving different stakeholders for the purpose of discussion on how to utilize low-cost Wi-Fi based mesh equipment to connect and empower rural and underserved communities.

ORGANIZERS

The 'Wireless for Communities (W4C)' has been initiated by Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) with a support from regional partners.

- ***DEF:*** Digital Empowerment Foundation (DEF), a Delhi based not-for-profit organization, registered under Societies Act XXI of 1860 in the year 2002, working with a mission to create economic and commercial viability using means of Information, Communication and Technology (ICT). Since its inception in December 2002, DEF has engaged itself into number of activities while pursuing its mission and objectives of ICT delivery and promotion in India.

- ***ISOC:*** The Internet Society (ISOC) is a nonprofit organisation founded in 1992 to provide leadership in Internet related standards, education and policy. ISOC is dedicated to ensuring the open development, evolution and use of the Internet for the benefit of people throughout the world.

SUMMIT FOCUS

- Implication of wireless, mobile & broadband technologies which help transcend traditional infrastructural bottlenecks in rural areas
- Sharing and showcasing best wireless/broadband based initiatives & implementations where such networks have proved to be highly effective in serving the masses

- Building connectivity & information platform/tools to keep farm and non-farm villagers updated with latest news & information about their respective occupations
- Connecting the government and business services that can reach the masses through wireless & mobile networks in local languages and in oral medium

The Summit was structured in a form of discussion platform for all stakeholders of wireless community, including wireless implementers, wireless designers, private stakeholders, government officials, policy makers, etc. The summit started with an overview of the project and how wireless technology can help in connecting rural regions of the country. The Summit also shared experiences and success stories from the ground level emphasizing on challenges faced while setting up the network as well as addressing the issue of lack of content and services provided for rural area which strongly affects the village economy from emerging from the bottom of the pyramid.

SPEAKERS

MODERATOR:

Mr. Osama Manzar, Founder & Director, Digital Empowerment Foundation

CASE STUDY PRESENTERS

- Mr. Mahesh Venkateswaran, CEO, KGVK Social Enterprises Limited
- Mr. Rajendra Negi, Director, Henvalvani, Tehri, Uttarakhand
- Mr. Mahabir Pun, Founder, Nepal Wireless

ROUND TABLE PARTICIPANTS

- Mr. Rajnesh Singh, Regional Bureau Director for Asia, ISOC
- Mr. Basheerhamad Shadrach, Development Consultant, New Delhi
- Mr. Mahabir Pun, Founder, Nepal Wireless
- Mr. Mosharraff Hussain, Deputy Director, D. Net Bangladesh
- Mr. Dhamendra Singh, Director – Technology & Business Development, Hughes Communications India Limited

- Dr. Ravina Aggarwal, Program Officer for Media, Ford Foundation
- Mr. Amitabh Singhal, Director, Telxess Consulting Services (Pvt.) Ltd & Board Member at Public Interest Registry
- Mr. Deepak Maheshwari, Corporate Affairs at Microsoft Corporation (India) Private Limited

SUMMIT BYTES

OVERVIEW OF W4C PROJECT

The Summit inducted with an overview of Chanderi Wireless for Communities Project. The film represented how W4C project impacted rural communities of Chanderi. Explaining about the idea behind the concept of the project, only 10 percent of India's population is connected through internet connectivity. According to the government the broadband connection has been reached to the block level, however, the connectivity has not yet reached to panchayat and village level. The Central Government of India has also passed the scheme that all panchayats should be connected through fibre cables in the next 3-4 years. In this regard, wireless is an accessible and cost-effective solution to this challenge. The government has also allotted free spectrum to utilize wireless services to connect rural communities. Using this spectrum, we can cover up to 50-60 killometres by connecting node-to-node by using wireless mesh methodology.

Realizing the importance of wireless technology, DEF & ISOC initiated the project last year in Chanderi district of Madhya Pradesh and training to 50 local people.

- **W4C Project Vision by Rajnesh Singh, Regional Bureau Director for Asia, ISOC**

Mr. Rajnesh Singh started with emphasizing the aim of the project namely to empower and leave an impact on communities through the provision of wireless connectivity in remotest regions, such as Chanderi in Madhya Pradesh, where the lack of accessibility and infrastructure are major issues. Giving the brief overview of the project, Mr. Rajnesh explained the expansion phase of project in regions like Tura in Meghalaya, Tehri in Uttarakhand and Gawhati in Assam. He also explained the future outlook the project further expanding to Bangladesh and Sri Lanka. This will be achieved through running training workshops not for already existing engineers and technicians but the community at large since the core aim of the project is to achieve wireless connection *"by the community for the community"*. The idea, therefore, is to further build up a wireless infrastructure in the villages and empower local community members to run, operate and deploy the network on the one hand and which then in turn pass on the acquired knowledge to other people within the community on the other hand. He strongly emphasized that the third phase of the project also aims at addressing specific content based needs within communities with a focus on minorities, youth groups in

general and in particular female youth in order to up skill their knowledge on education or primary health care.

BEST PRACTICES SHARING SESSION

1. Mr. Mahesh Venkateswaran, KGVK, Jharkhand

Mr. Venkateswaran emphasized the importance to bring the ecosystem of a village under a well managed ICT systematic framework for a variety of reasons. First of all to set up intranet clusters through wireless connectivity is important for knowledge sharing at the last mile when it comes to the implementation of all sorts of development programmes Wireless connectivity plays an absolute and indispensible central role for the social enterprise model, the rural BPO as well as for the Total Village Management model developed and implemented by KGVK. The wireless link enters the picture where the local BPO has to be connected to different clusters in order to communicate to the costumers at the village level. Wireless connectivity also provides the basis for a proper set up and functioning of e-governance as a tool to connect local institutions such as the village education committee or the health and sanitation committee to the district magistrate with the goal to ensure that the approximately 600 government schemes meant to profit the Panchayat, the Anganwadi centres as well as the schools are actually reaching the desired target groups. The proper functioning of a wireless network gains further importance in the eyes of the need of connecting local entrepreneurs as well as paraprofessionals to ensure their presence and the proper flow of information in order to create an economic and socially viable community at the grassroots level in the light of the absence of doctors, nurses or vet's. Started with a net investment of approximately 900000, it has been possible to reach out to village level entrepreneurs, hospitals, 3 schools and a couple of institutions such as common service centres in 20 Gram Panchayats within a time-frame of seven months. In the process, it has already been registered that the demand from the ground level for further wireless connectivity is huge and the program coordinators of KGVK have been approached by local entrepreneurs, nursing colleges and schools with the request to extent wireless connectivity to their facilities.

2. Mr. Rajendra Negi, Director, Henvalvani, Tehri, Uttarakhand

Mr. Rajendra Negi shared that Wireless is one of the most crucial solutions that can provide connectivity in hilly areas like Uttarakhand. Sharing about the challenges, Mr. Negi explained the government is trying to connect these regions through fibre optic cables; however, these cables are prone to forest fires. Secondly, the connectivity provided by BSNL through WIMAX can be availed by paying around Rs. 1500-2000,

which is not affordable by people living in these regions. In this regard, wireless is a solution is a cost-effective solution that can provide seamless connectivity.

3. Mr. Mahabir Pun, Founder & Director, Nepal Wireless

Mr. Mahabir Pun shared that the wireless technology in Nepal entered as on an illegal basis in 2001 but legalized by the government in 2009 with the aim of connecting remote villages of about 1000-2000 inhabitants in the Himalayas situated without access to roads, telephone lines or electricity. The wireless device, which was earlier seen simple indoor network is now capable to secure the last mile connectivity at the village level in a remote setting in order to provide not just internet but all kind of extremely useful services to the community. In practice, this meant wherever electricity was not available and solar power was used and towers were build for point-to-point connection using simple wireless 5.24 and 5.7 GH per frequency in order to guarantee the installation and functioning of access technology such as computers IP phones meanwhile reaching out to 120 villages in 13 districts of Nepal. According to Mr. Pun's assessment the existence of a wireless network can improve the social and economic development of rural communities in various ways. First of all the application of computers at the secondary school level familiarizes children with the technology starting from an early age guaranteeing future socio/ economic parity with their peers from other regions of Nepal as well as the rest of the world on the one hand and helps building and consolidating a well informed future leadership base on the local village level. Second wireless connectivity is important to increase the effectiveness of community development projects. In order to manage and train the village community in those important income generating skills wireless technology becomes indispensable in providing an effective solution to foster high level communication in remote areas since it is difficult to guarantee real life presence and interaction in the light of missing roads. Third, it is possible to use wireless connectivity for internet phoning for people from rural areas who work abroad to communicate with their relatives back in the village on a comparatively cheap basis on the one hand and at the same time the set up of internet phoning represents a viable income source for other members of the community who provide this service. The project also build a very simple website for a largely illiterate audience aiming to visualize useful links for education as well as for the purpose of posting messages for example the advertisement and sale of products by the villages. Through the availability of wireless technology it is also possible to provide weather services from local stations as well as access to telemedicine connecting rural areas to urban medical centers and providing training for local community health workers as well as boosting local tourism through the establishment of an online presence regarding trekking routs or community lodging. So far around 300000 Dollar have been invested for the installment of wireless network systems and the corresponding communities run centers while it has to be pointed out that money has been allocated through private donations and government support but mainly the financial base has to be raised from the village community itself.

4. Mr. Mosharraff Hussain, Deputy Director, D. Net Bangladesh

Mr. Hussain provided a brief update on the implementation of the wireless for communities' project in Bangladesh stating that people demand the installment of mesh networks and training on the maintenance and usage of the technology. This fact became very obvious when after the conduction of about 11 training sessions followed by a publication in the newspaper students, college teachers as well as business man got in touch with wireless Bangladesh demanding access to mesh wireless systems.

5. Mr. Basheerhamad Shadrach, Former Executive Director, Telecentre.org

Mr. Basheerhamad Shadrach shared that telecentre activity when started in India, there was no internet connectivity. Moreover, even the best telecentres recognized never had connectivity, which brings wireless technology on the centre stage of possible solutions. But at the same time, it also sheds light on the fact that the whole notion of telecentres and connecting people with the source makes clear that the demand required to establish connectivity is often not generated on the ground level but is instead generated from the provider source. In other words, the idea that connecting the grassroots demand with the source of ICT technology alone will not bring about connectivity at the last mile but moreover alongside with the installation of wireless technology there has to be a strong emphasis on the creation of local content, which understands and responds to people's demands on the ground level.

6. Mr. Amitabh Singhal, Director, Telxess Consulting Services (Pvt.) Ltd & Board Member at Public Interest Registry

Mr. Singhal accentuated on regulatory issues in the country and emphasized that the government needs to analyse spectrum regulation on a regular basis. He emphasized that even when in 1999, when the first telecom policy that came into existence, ISP (Internet Service Providers) Association was only association in the country that could access bandwidth of any international satellite. Thus, it is also required to push for regulations for availability of satellite bandwidth.

7. Mr. Deepak Maheshwari, Corporate Affairs at Microsoft Corporation (India) Private Limited

Mr. Deepak Maheshwari initially highlighted the de-licensing issues of network and stated that de-license process in any country has taken time. He also emphasized that there is a need to understand the importance of technology, whatever various range of technologies, including wireless, WIMAX, Wi-Fi, or satellite. He also underlined that utilizing network for various other services like IP telephony, VoIP services, etc. He recommended that utilizing network for the connectivity of communities is more important rather than establishing these networks.

RECOMMENDATION POINTS

- First and most important recommendation point that came out from speakers of the summit is to establish the last mile connectivity to connect communities living on the edge of information within the next two years through the application of affordable mesh network systems as the absence or inefficiency of the existing connectivity remains the major problem for the majority of the rural population all over India, Bangladesh and Sri Lanka often preventing the village communities from achieving social and economic advancement.
- Another foremost important recommendation that emerged is that the wireless connectivity alone will not lead to an all over advancement and development of village ecosystems but moreover it is important to generate demand and capacity at the grassroots level for ICT through the conceptualization, provision and accessibility of community desired and locally applicable content.
- The connectivity by itself is not only important but the ability of the local cluster of entrepreneurs to conceptualize knowledge according to the needs of the community will culminate in utilizing their unique strength and lead to true connectivity.
- The need of a rich diversity of content is also important to make rural wireless sustainable. Building a wireless network or providing internet facilities will not be sufficient to guarantee the success of the project but the key solution lies in the inauguration of as many services for rural communities as possible such as e-learning, information for farmers, telemedicine, IP phones and e-commerce in order to create true freedom of opportunities in rural areas.
- In comparison between wireless mesh network connectivity and satellite connectivity, the recurring bandwidth cost of satellite is costly not because the satellite is an expensive but the problem is supply and demand issue in India. The beauty to this satellite bandwidth is inherent feature of cloud availability whereas other networks are dedicated to particular segment its block, village, or wire. The whole of satellite capacity which is deployed is available as the cloud and every connection point (CP) which is connected to that can utilize it. The cost of setting satellite will decrease very soon. So, if any VSAT is deployed at any village for example at Chanderi that VSAT can give 60 Mbps of throughput, which is much more than the entire village require.
- De-licensing of wireless network in any country has been implemented in short phases and in India, it started as in-door or campus and later on the government approved to utilize for outdoor purposes. It is nice an opportunity to connect the remote regions of the country using wireless network.
- One of the major recommendations that emerged was that the government should analayse the utilization of spectrum and make regulations on spectrum utilization. Regulation of network bandwidth, including VSAT bandwidth is

major outcome of the discussion point. Taking it as further initiative step, DEF would like to volunteer itself in analyzing the various possibilities of spectrum analysis.

- Creating such networks is not only important but also understanding the importance of such networks and utilizing it sufficiently and purposefully in majorly important. These networks can also be utilized as intranet serving one major community.
- There is also requirement to look at various technologies, including wireless mesh network, WIMAX, terrestrial network, Wi-Fi, broadband, optic fibre cable, satellite network and each technology should get a chance.

PHOTO GALLERY