



# WIRELESS FOR COMMUNITIES (W4C)

PHASE – I

(CHANDERI WIRELESS COMMUNITY PROJECT)

IMPACT ASSESSMENT REPORT

December- 2011



## Phase I

# Chanderi Wireless Community Project Highlights

<b>PROJECT</b>	Wireless For Communities (W4C) – Phase I – Chanderi Wireless Community Project
<b>OBJECTIVE</b>	To set up and create a wireless community in Chanderi and provide smooth network with connectivity for better access
<b>APPROACH</b>	A decentralized approach with participatory method and bottom up community participation
<b>OUTCOME</b>	<ul style="list-style-type: none"> <li>○ Deployment and setting up of a model wireless community network</li> <li>○ Local human resource development in technical skills including wireless skills and otherwise (skill to use connectivity for access)</li> <li>○ Connecting local institutions, platforms with wireless connectivity for intended results and benefits</li> <li>○ Creating a community environment for network and connectivity</li> <li>○ Creating a model for advocacy and outreach for replication</li> </ul>
<b>IMPACT</b>	<ul style="list-style-type: none"> <li>○ Positive and encouraging impact in connectivity access by diverse set of user groups for knowledge, skill enhancement and livelihood promotion</li> <li>○ Impact in technical skill enhancement</li> <li>○ Impact in generating a positive environment for Internet access and use</li> </ul>
<b>JOINT INITIATIVE</b>	The Internet Society & Digital Empowerment Foundation
<b>FUTURE STEP</b>	Phase I of the project extended to Phase II in three locations in two States of India

## EXECUTIVE OVERVIEW

More than 70 per cent of India's population or 750 million people live in its 600,000 villages and remote regions. Despite mainstream infrastructure deployment, the status of telecommunication network in country's remote areas is poor. Most of the deployment programmes have ended up abruptly in big towns and villages. This leaves behind huge infrastructure deficits along with digital and information divide.

The programme titled 'Wireless for Communities' (W4C), a joint initiative of Digital Empowerment Foundation (DEF) and Internet Society (ISOC), was launched in the year 2010-11. The Phase I of the programme, included the ToT programme and Chanderi Wireless Community project. The Chanderi Wireless Community project was implemented in Chanderi in Ashok Nagar District of Madhya Pradesh in Central India. The project aimed to create a model of wireless community towards last mile connectivity in a traditional cluster based community context.

The Chanderi project, to bridge network and information divide, has key elements in - network deployment, Internet access, developing capacity of local human resource in wireless skills and empower community with content and service.

The impact of the project has been progressive and encouraging. Key indicators of the project – network deployment, its reach, usage, access and benefits – have shown positive trends. Key institutions networked and connected including schools and local councils. Education, health and livelihood have received encouragement from the project. For instance, the 'Chanderiyaan' e-commerce platform received a boost with wireless connectivity. Skill development has a positive impact. In terms of service utility, the project has larger impact in promoting art, culture, tourism and heritage in Chanderi.

The impact of the project motivated partner stakeholders to replicate the same in other locations. The project has attracted the attention of stakeholders, including policy advocates, government and private players to adopt the wireless technology as an alternative solution towards connectivity and access. In the Phase II of the W4C programme, the project is being replicated in three rural locations in two States in India. It is also extended to the two South Asian countries.

## CONTENTS

EXECUTIVE OVERVIEW .....	2
A. PROJECT PREAMBLE .....	4
B. VISION .....	5
C. OBJECTIVES .....	5
D. TECHNOLOGY FEATURES.....	5
E. SUCCESS INDICATORS .....	5
F. IMPLEMENTATION METHODOLOGY .....	6
G. PROJECT IMPACT .....	6
<b>The Impact</b> .....	6
H. BARRIERS.....	<b>Error! Bookmark not defined.</b>
I. W4C PHASE I EXPERIENCE SHARING & OUTREACH .....	11
J. PARTNERS .....	12
K. PHOTO GALLERY .....	12

## A. PROJECT PREAMBLE

Poor network and connectivity together with lack of internet and services access has aggravated development as well digital divides. It has, thus, become imperative to connect unreached and unconnected communities with alternative technology deployment. Although, users and technology implementers are aware of known advantages of wireless network technology, however, this approach is yet second possibility among users.

The suitability of wireless deployment in remote and sparsely located communities is an established fact including its low cost solution advantages.

The W4C programme was initiated to address key connectivity and accessibility criticalities. The Phase I of the programme, including the Chanderi Wireless Community project, was launched to experiment in key connectivity factors:

1. Addressing the issue of last mile connectivity;
2. Democratizing the availability of connectivity and enable internet accessibility and information decentralization;
3. Addressing the issue of content and services gap that obstructs local economy and pulls back social indicators; to address wireless technology skill gaps;
4. Initiating a dialogue and deliberation between stakeholders including public and private parties on the impact, need, scope, viability and sustainability of wireless deployment for community empowerment and meeting needs of underserved regions;
5. Initiating advocacy with the relevant public and private partners to propagate and adopt wireless technology as an unconventional solution to connect rural remote areas and communities with broadband connectivity and services on it.

The W4C is a cluster oriented programme wherein the wireless approach is adopted in a traditional cluster community lacking network and connectivity. The programme is a joint initiative of the Internet Society and Digital Empowerment Foundation.

## B. VISION

- To connect a community cluster with wireless mesh network with local operation, maintenance, ownership, viability and sustainability together with Internet access for information and content services towards community development and empowerment.

## C. OBJECTIVES

1. To connect a traditional cluster community with wireless network connectivity and access for empowerment and digital inclusion;
2. To set up access network with access platforms in the cluster community for information and content resources and impact access needs in education, health, livelihood and knowledge enhancement;
3. To develop local human capacities in wireless network and access skills for local management and usage through 'Training of Trainers' and user skill development intervention;
4. To create a model environment of wireless connectivity and access in a cluster;
5. To advocate, propagate and replicate the cluster model in different locations in India and South Asia; Organise summit to share experience, discuss best practices, deliberate on challenges, issues and solutions from both technical and policy perspectives.

## D. TECHNOLOGY FEATURES

The project covers the following features:

1. Cost-effective Wi-Fi equipment to connect and empower a cluster community;
2. Broadcast a network of internet and create an environment of better security (WEP/WPA, MAC authentication);
3. Create different kind of user according to rate, time and volume;
4. Secure the network of different kind of malicious virus;
5. Monitor the traffic daily, weekly, monthly and yearly and maintain accordingly.

## E. SUCCESS INDICATORS

- ❖ Enhanced internet connectivity
- ❖ Ease accessibility of information
- ❖ Connecting institutions and platforms
- ❖ Enhancing knowledge capability of users
- ❖ Livelihood and economic impact
- ❖ Local skill development

## F. IMPLEMENTATION METHODOLOGY

The project adopted two-way implementation methodology:

- Bottom – up community need assessment, participation in project set up and operation
- Local capacity building for project functioning and sustenance.

## G. PROJECT IMPACT

The project was based in the Chanderi Weavers ICT Resource Centre (CWIRC) in Chanderi in Ashok Nagar District of Madhya Pradesh in Central India.

Chanderi can be best described as a rural town with an urban consciousness with more than 500 years of history of kings and invasions. Populated with 40,000 people, the town is largely habited by weavers and artisans. Around 3000 families have been occupied in weaving and handloom for their livelihoods. DEF has implemented the Centre project and running it since 2009. The centre provides ICT enabled environment and infrastructure for the weavers' community to scale up their weaving skills and add value in their supply chain of designing and weaving along with other advantages.

## THE IMPACT

### I. Human Resource Development - Technical skill enhancement

The project has training as key component. Its impact includes –

1. The Training of Trainer (ToT) programme trained 10 local youths as wireless technicians and trainers. Out of 10 trainers, 4 have emerged out as master trainers whose skills was to be utilized in the second phase of the W4C programme in setting up wireless mesh network and training purpose. Already this is happening. Two advanced trainers have become enabling factors in second phase of deployment and network establishment. The objective of the training was to use local support to set up the Chanderi wireless mesh network within 15 km with the support of one relay station and 5 point-to-point nodes.
2. The ToT programme enabled trainees to be trained on wireless essentials – cabling; link analysis between two nodes; configuring the radio (Mikrotik and Engenus) as access point, client and as mesh; configure the Mikrotik Router as DHCP server, router, and hotspot server; creating user profile of different varieties; connecting the client with security (WPA/WEP) and Mac authentication
3. Access training to users to explore connectivity usage for information and content needs has propped up information and knowledge enhancement in end users. Weavers' access to connectivity has scaled up design patterns and innovations leading to a digital repository of designs.

## II. Wireless Mesh Network & Impact

Keeping CWIRC centre as a base, the wireless mesh network has been set up covering a range of 15 km by establishing one relay station, covering more than 20 point-to-point nodes. These 20 point-to-point nodes are providing internet connectivity at 1 CWIRC centre, 12 schools, 2 Madarasas, 1 PHC (Public health centre), 1 Hotel, 1 Digital Panchayat, 1 cyber café and 1 community radio station.

1. The CWIRC centre (the base node of wireless connectivity) is serving the weaving community and its younger generation as information and training centre. The issue of poor connectivity in the centre is now resolved after the wireless set up. Trainees, youths and others are using the Centre's access services for various needs largely design sourcing, exam results and admittance process and media access. The wireless network has also impacted the weaving community in sourcing design patterns for creating new designs. A design repository generated with more than 250 new design patterns;
2. The wireless facility has provided enhanced facility for the 'Chanderiyaan' e-commerce platform that DEF launched to promote local produce and handicrafts of Chanderi. Transactions and communication is scaled up online. Through this e-Commerce platform, weavers are connected and they are easily able to market their products. Overall, there are about 50 weavers who are directly or indirectly associated with Chanderiyaan's various components of projects. Moreover, there is about 20-40% growth in their income and revenue because of not only wireless per se but being associated with Chanderiyaan.
3. The project has resolved the issue of connectivity in 12 schools, including one (1) girls' school and two (2) Madarasas (Islamic Education Centre) that have now been connected through internet; students and teachers are having Internet and content access for course curriculum needs. DEF has set up IT labs in all schools by providing netbooks for the same purpose;
4. A total of 40 Panchayats (local village councils) in Chanderi are utilizing the facility of internet for their official purpose at the Digital Panchayat Centre, an initiative of DEF and NIXI. Before the deployment, the centre was facing the issue of internet connectivity, now the centre has internet connection that has been utilized by panchayat members for their day-to-day work of office (such as creating online content for their panchayats, maintaining database of National Rural Employment Guarantee Act scheme, etc).
5. Enhancing the functioning of a government public health in its tele-health programme with better connectivity and access. A public health centre located in Chanderi has a facility of tele-health services. Doctors of the centre were finding difficult to send the reports like ECG, BP, and Blood Sugar to district hospitals for referral suggestions because of inadequate internet connectivity. The Chanderi Wireless project ensured seamless connectivity that helped doctors to connect with senior doctors working in the district headquarter hospitals.

6. Chanderi ki Awaaz, a community radio station located in Chanderi, broadcasts local programmes up to 10-15 kilometer within the region. The radio station has now reliable internet accessibility. The station uses internet for creating local content for the radio station;
7. Before deployment, there was no cyber-café in the region. Now, DEF supported CWIRC has facilitated one cyber café which is managed by local entrepreneur. The cybercafé, located in the local market area of Chanderi, is being provided with network and connectivity with dedicated node. The cyber cafe is supporting tourism and heritage by allowing tourists a means to access information related to the region's culture, heritage and tourist places.

**Caselet 1: Wireless supporting Tele health programme**

The public health centre in Chanderi has a tele-health facility provided by DEF & Media Lab Asia. This tele-health facility was facing the issue of internet connectivity. The Chanderi Wireless project has now ensured seamless internet connectivity. Local doctors are now able to connect with senior doctors working in district headquarter hospitals. This has enabled doctors to send their patients' medical reports like ECG, BP, and Blood Sugar to district hospitals for referral suggestions. Around 15-20 patients receive tele-health facility every day supported by improved connectivity.



**Caselet 2: Wireless contributing in design repository**

The wireless project has contributed in generating a design repository in Chanderi. Weavers have accessed connectivity to source design patterns based on which new designs are being created. Till December 2011 the design repository has more than 250 new design patterns that are regularly sourced by the weavers to plant on raw woven cloth.



#### Caselet 4: Wireless supporting Digital Panchayat Centre

In Chanderi, there are 40 village councils, which have never experienced of internet connected, are now utilizing the facility of internet for their official purpose at the Digital Panchayat Centre. Panchayat members are now using this facility for day-to-day work of panchayat such as creation of online content, maintaining data base of NREGA (National Rural Employment Guarantee Act) scheme, etc.



#### Caselet 3: Wireless supporting Schools & Madarsas in Chanderi

The project has resolved the issue of internet connectivity in 13 schools, including one girls' school and two (2) Madarsas (Islamic Education Centre), which never had experienced ICT lab and internet connectivity. Thus, students and teachers are now able to access information and knowledge for their education and curriculum activities.

