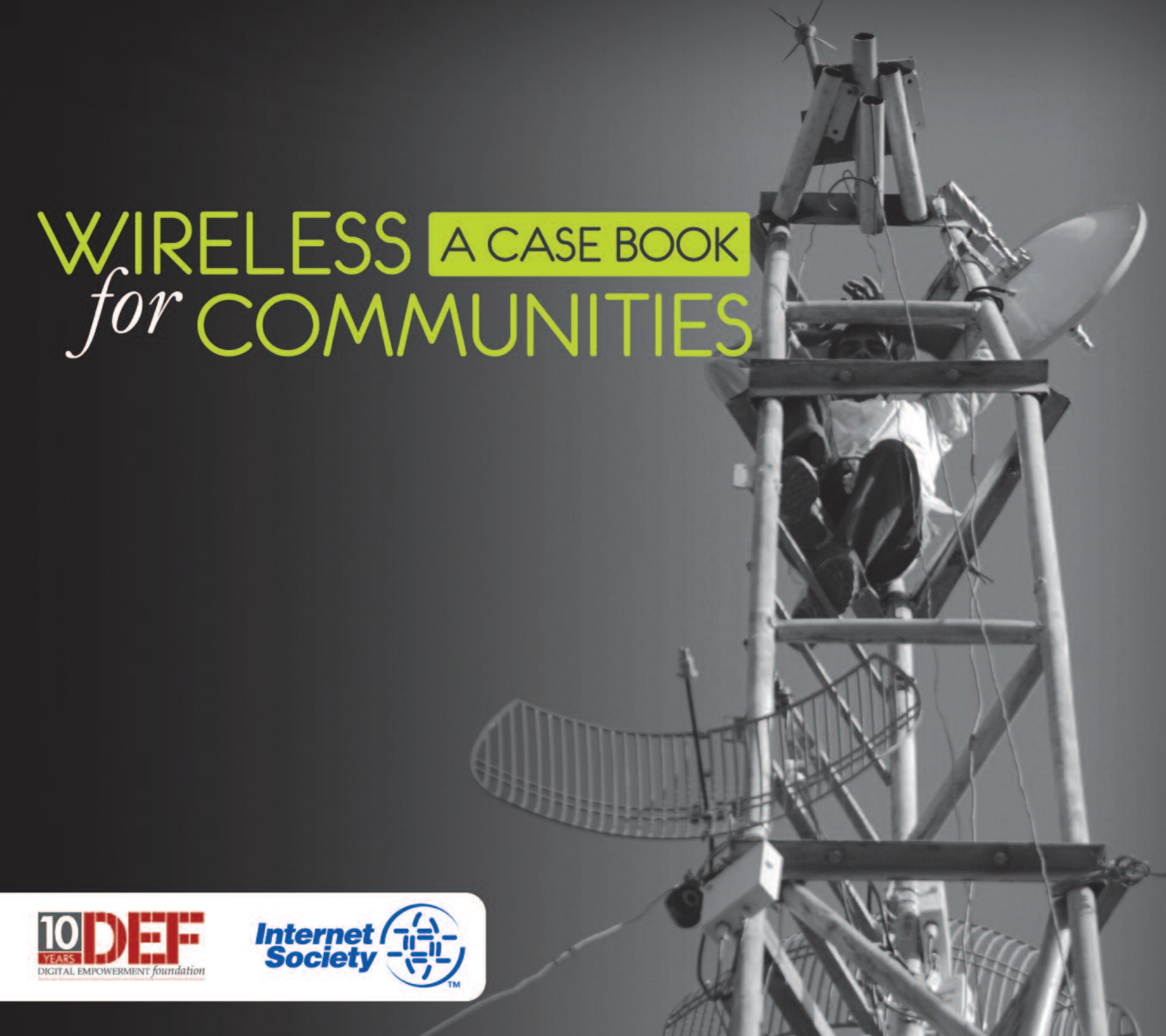
# WIRELESS *for* COMMUNITIES

## A CASE BOOK



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# Content

# Overview

At one time, all roads were supposed to lead to Rome; in today's world, the information highway leads Rome right to our homes. Using desktop and laptop computers and mobile devices, we can access data about Rome or virtually any other area under the sun from the Internet . Landlines, broadband, and wireless connections where terrestrial connectivity or infrastructure is non-existent, all do their 'bit' to bring the world to our doorsteps.

Yes, it is an age of information, of networking and coming together in virtual communities. In fact, connecting people and communities is considered the hallmark of a developed information society. However, Internet penetration and connectivity in rural areas still poses a major challenge. Large swathes of the hinterland remain unconnected to the World Wide Web. It is in this context that initiatives like the one taken by "Wireless for Communities" (W4C) in places like Chanderi and Baran assume great importance as they showcase successful interventions in wireless connectivity of remote locations.

This casebook is an abstract that highlights several such examples of individuals, communities, and institutions taking advantage of wireless broadband connectivity in distant areas. The casebook outlines the impact of such connectivity on the people, their lives and their work.

The examples given in the casebook have been culled from the program called "Wireless for Communities" (W4C), started by the Internet Society (ISOC) and Digital Empowerment Foundation (DEF) in 2010. In the last three years, the project has had an impact on eight locations and on thousands of users – all of them in remote areas.

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# Introduction

To be inclusive, growth and its benefits should penetrate down to every citizen of a country. Inclusive growth is not just a buzzword; it is a vital requirement for developing countries like India. Information and Communication Technologies (ICT), made possible by a far-reaching broadband infrastructure and affordable access to computing, can play a pivotal role in such inclusive growth.

However, in the current scenario, there are still many miles to go and many glitches to overcome before achieving the target of inclusive growth for everyone. For example, in India, even with mobile penetration, the teledensity in rural areas is still less than 40%, and there is no Internet connectivity in many areas. The reason for this lag has mostly been the issues centring on last mile connectivity. Indians constitute about 17% of the world's population. Yet about 35% of the world's poor and 40% of the illiterates in the world reside in India. When we consider other parameters also, the statistics seem paradoxical and skewed. Thus, while India has the third largest population of Internet users in the word, and the second largest number of Facebook users, less then 12 percent the total populations is connected to the Internet. Even the mobile devices penetration in absolute terms is less than 30 percent. Further, the usage is heavily weighed to benefit cities and towns rather than the rural hinterland.

Whereas the rise of knowledge economies underscore ICT as their cornerstone, in countries like India, this growth has been skewed towards urban areas and the relatively better off sections of society. Hence, we come across a scenario in which medical tourism may be booming, but thousands in rural areas die due to inadequate primary healthcare. Similarly, the government may declare many initiatives, but they often do not reach the people on the ground for whom they are intended. We need to equip more than a million healthcare workers and get across primary healthcare facilities to every Indian citizen. Governance and government initiatives need to reach every citizen of the country.

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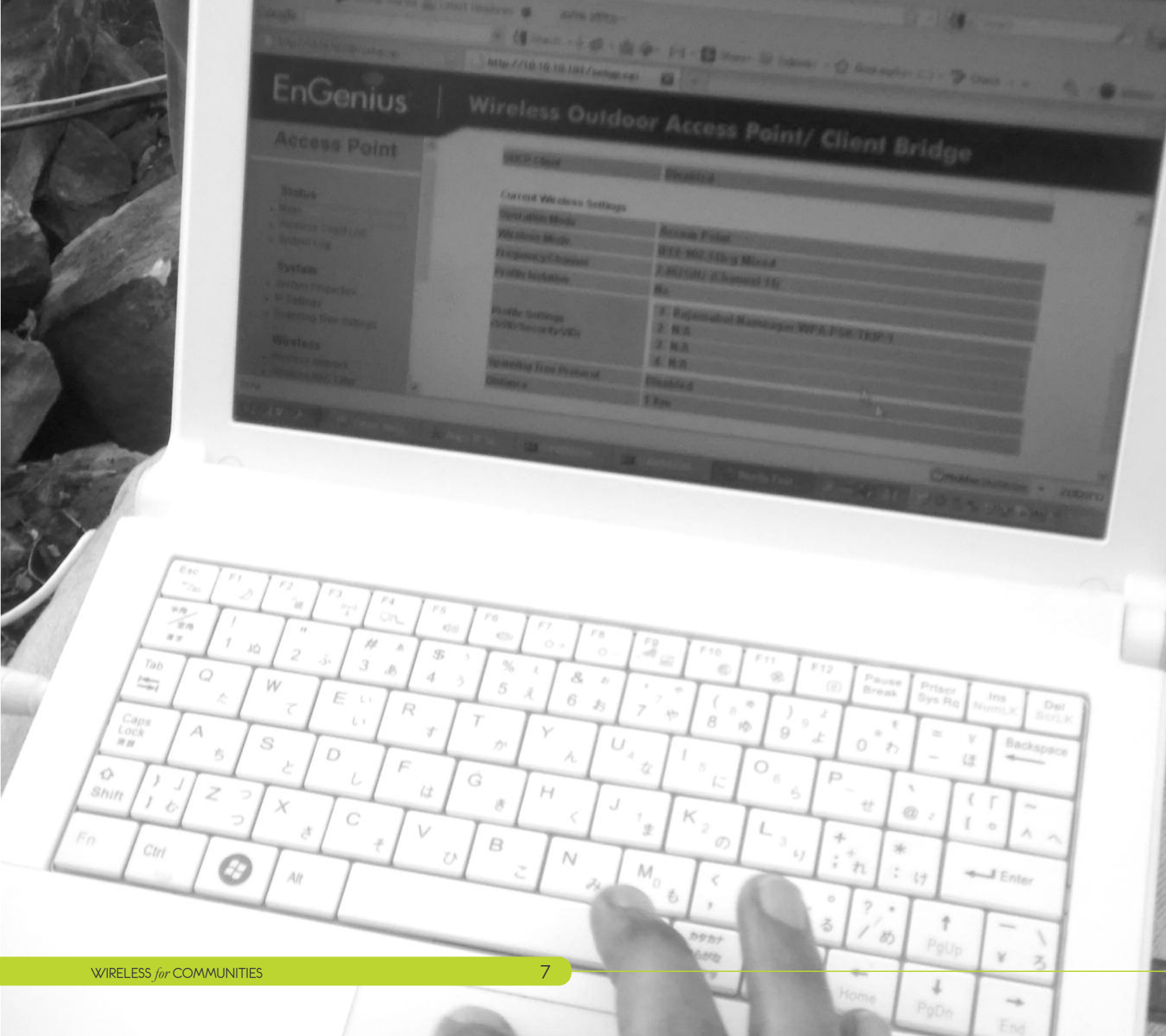
EnGenius
Wireless Outdoor Access Point/ Client Bridge
Access Point

With a mission to build a holistic framework for tribal communities, Baran in Rajasthan was identified to implement the programme in this second phase of the project.

In this context, in developing countries, wireless connectivity has emerged as an inexpensive technology to bridge the connectivity gap in remote areas. Globally, frequency bands in 2.4 GHz and 5.8 GHz have been generally allocated free spectrum that can be used by anyone without taking a license or paying a fee to the government. It is only slowly being realized that existing provisions such as free spectrum allocations provided by the government can be utilised to provision information and media infrastructure, and connect underserved communities.

To utilize this spectrum and reach out to remote communities, "Wireless for Communities" (W4C), was started by the Internet Society (ISOC) and Digital Empowerment Foundation (DEF) in 2010. Since then, the project has spread to eight locations and benefited thousands of users – all of them in remote areas. The W4C project has brought to these people e-governance initiatives like community service centres (CSC), automation of birth and death certifications, and single window clearance systems. It has also established information kiosks and rural cyber cafes, thereby transforming lives.

The first pilot project of DEF-ISOC W4C Program was launched in October 2010 at Chanderi, which is a handloom cluster famous for its traditional silk weaving art. The positive impact of the project motivated partner stakeholders to replicate this model in the second phase of the project in other cluster-based communities of the country.

With a mission to build a holistic framework for tribal communities, Baran in Rajasthan was identified to implement the programme in this second phase of the project. In phase two, the W4C Program was also implemented in Barefoot College, Tilonia (Rajasthan) and Tura (Meghalaya). In Phase 3, the W4C Program was implemented in Giridih (Jharkhand), Mandla (Madhya Pradesh) and Naogang (North Tripura). These are amongst the remotest and most backward of regions in India.

Both directly as well as indirectly, the impact of the project has been overwhelming. As a direct impact of the project, remote regions have been connected to the internet highway. More indirectly, its efforts have attracted the attention of other stakeholders, including policy advocates, government and private players to adopt wireless technology as an alternative solution towards connectivity and access. The efforts to utilise wireless technologies have also stirred the interest and curiosity of the international-development community.

# Wireless for Communities Program

In October 2010, Digital Empowerment Foundation (DEF) and Internet Society (ISOC) initiated a joint project called "Wireless for Communities" (W4C) which utilizes low-cost Wi-Fi based equipment and unlicensed spectrum (free spectrum) to connect and empower rural and under-served communities.

The motivation behind the project is twofold. In the first place, it is an attempt to democratize the availability of connectivity and enable Internet accessibility in rural parts of the country. Secondly, the project hopes to address the issue of lack of content products and services originating from rural areas, which hinders the economy from percolating to the bottom of the pyramid.

**The project aims at achieving three broad based objectives:**

- Training the trainers for technological know-how of wireless networking such as communication systems, basic networking technologies and other hardware and software related issues,
- Deploying wireless broadband connectivity across rural communities, especially in clusters,
- Setting up an open forum to discuss best practices, and lessons learnt, and to educate people on issues stemming from both a technical and policy perspective.

Through this project, DEF trained local communities to operate wireless technology and deployed the same for rural connections to link to the Internet. W4C

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# The Network

# Wireless for Communities Program in Chanderi

Chanderi is a small municipality of Ashoknagar district in Madhya Pradesh. It has a population of just over 40,000, forty percent of whom are illiterate. The nearest railway station is 45 kilometres away. There is no ATM facility and electricity is supplied for only six hours every day. A traditional weaving cluster is the main source of income for Chanderi. In this cluster 3,500 weaving families create the famous Chanderi Sarees. These generate an annual revenue of USD 10 million. However, the average income of a weaver is only 50 USD per month. Before 2010, there was no computer penetration and hundred percent computer illiteracy in Chanderi.

In 2010, a "digital design resource centre" called 'Chanderiyaan' was set up. Through "Chanderiyaan" people of Chanderi got a taste of digital tools, computers, Internet, broadband, YouTube, and so on. After that, there was no looking back. By 2011, computer-training centers were opened. Ordinary households, hotels and offices installed computers and Internet connections. Today people avail of telemedicine services, e-ticketing. They use cyber cafés, and government online citizen services.

Through the efforts of Chanderiyaan, computer knowledge and literacy has spread rapidly. There are ICT trainings on Skill Builder, certification and diploma courses on computer concepts, tele-health technology courses, and ICT for rural entrepreneurship livelihood. The wireless network has a coverage area of 5 kilometer within 360 degree wireless signals. The spectrum is of 2.4 GHz & 5.8 GHz and the height of antenna and the sector from ground is 80 feet.


As a result of wireless Internet and broadband, the weavers of Chanderi are taking their centuries old craft to the world through e-commerce and Facebook.

In 2013, there are over 50 households with Wi-Fi connections. Eleven out of the 13 schools have Wi-Fi connections and computer centers. Two of the three hotels in Chanderi boast of Wi-Fi Internet connections. Even a couple of madrasas have Internet connections and computer labs.

As a result of wireless Internet and broadband, the weavers of Chanderi are taking their centuries old craft to the world through e-commerce and Facebook.

# Wireless for Communities Program in Baran

Of the total population of Baran, 85% is rural. More than 60% of the women are illiterate. More than 40% of the million strong population is tribal. Sahariyas" or the 'residents of the jungle' belong to a tribe that lives in the Baran district of Rajasthan in India.

These tribal peoples of Baran are largely illiterate. Many of them are nomadic, homeless, bonded labourers. They eke out a living on a day-to-day basis.

Illiteracy, poverty, lack of identity, subjugation, and exploitation have collectively oppressed the Sahariyas and the other tribals in Baran. Most people outside the area are not even aware of the Sahariyas' existence, as they live in a media dark geography.

However, things have begun to change quite dramatically.

Seven centers covering an air distance of 118 kilometers and a road distance of 172 kilometers have been set up using Wi-Fi spectrum of 2.4 GHz & 5.8 GHz. The network provides wireless connectivity for 7 night-schools-cum-libraries and 8 cluster centers, where each cluster center covers 8 to10 villages.

The digitally enabled services include telemedicine, learning and education through video conferencing, raising local issues by community with local NGOs via video conferencing, narrowcasting community radio programs, providing information on government entitlements, and showing films and videos on social issues.


The network provides wireless connectivity for 7 night-schools-cum-libraries and 8 cluster centers, where each cluster center covers 8 to 10 villages.

# Wireless for Communities Program in Tilonia

The famous Barefoot College (BFC) is situated in Tilonia village in Ajmer district of Rajasthan. The college believes in the power of natural and traditional skills. BFC has two big campuses in Tilonia separated by a little more than a kilometer.

The Barefoot College covers more than 250 villages over a 400 square kilometres area. It has done and continues to do seminal work in the fields of education, skill development, health, drinking water, women empowerment and electrification through solar power for the upliftment of rural people.
With such work that requires regular interaction with people and authorities and between people themselves, the provision of wireless connectivity has been a great boon.

Under the Wireless for Communities program, both the campuses of BFC are fully covered with wireless Internet. The program also provides services like e-ticketing, cyber cafes, email and Internet service to all who visit the campus, and to the staff of BFC in the campus. It helps them in updating websites and uploading content for e-commerce for selling Tilonia crafts online.

In addition, BFC uploads all its villages' water data online with qualitative and quantitative analyses for public and policy advocacy. Some of the work of BFC can be seen at http://barefootcollege.org, http://tilonia.com; and http://neerjaal.org.


There are more than 500 people across the two campuses of Barefoot College in Tilonia who use Internet on a regular basis.

Recently, Barefoot College has also launched its presence on Facebook. Barefoot developmental activists directly update the page from the campus. There are more than 500 people across the two campuses of BFC who use Internet on a regular basis.

# Wireless for Communities Program in Tura


Tura is a hilly town and a municipality in West Garo Hills district in Meghalaya. It is a cultural and administrative center of Garo tribes, who practice the matrilineal system. Tura has a population of 58,391, with an average literacy of 73%, which is higher than the national average.

The main mode of transport is by road, and there is no railway connection or airport in the vicinity. Tura has limited connectivity in terms of public infrastructure and therefore lags behind in terms of overall development. Rural teledensity and Internet penetration is negligible here like most other places in north-eastern India.

The center in Tura is run and managed by DEF for providing digital literacy, vocational training in IT skills, distant learning courses and ICT capacity building of local NGOs, schools and village councils.

Under W4C, the center is also a hub for providing wireless Internet connectivity to myriad users across a 3 kilometer radius. These users include local schools, cyber cafes, and 15 families. Using wireless network for connectivity, more than 1,000 youth have been trained in the last 2 years through the Tura Internet Service Center.

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# Wireless for Communities Program in Giridih

With a population of 2,445,203, which is roughly equal to Kuwait or New Mexico, Giridih constitutes one of the most backward districts of India. It has a literate population of just over 65%. A single–gauge railway line, passes through the district headquarter.

During the 1960s and 1970s Giridih witnessed some economic prosperity because of mica processing and export. However, for many decades now the industry has been ailing. Giridih has been named as one of India's 250 most backward districts and receives funds from the Backward Regions Grant Fund Programme (BRGF).

In 2012, the DEF along with a local organization Nav Yuva Jagriti Centre established the Wireless for Community centre in Birni, a block Panchayat village in Giridih.

Beside providing wireless connectivity, the W4C center also functions as community information resource center for digital literacy, skill training and information related to government entitlements and services for the citizen. The center has been instrumental in providing Internet services to more than 15 nodes across 5 kilometers radius including government offices, schools, village councils and several individuals. The wireless Internet connectivity helps the local office of Birni Block in all the Government related work like disbursement of Old Age Pension; muster roll updates related to the jobs under national rural employment guarantee scheme and other social welfare schemes. The network also helped in developing more than 25 Village Council websites, which can be seen at http://epanchayat.in.


The wireless Internet connectivity helps the local office of Birni Block in all the Government related work like disbursement of Old Age Pension; muster roll updates related to the jobs under national rural employment guarantee scheme and other social welfare schemes.

Some of the other areas in which the network helps in accessing information include exam results of students, online data of all mid-day meals, exchange of Inter-departmental emails, and connection to the Gas distribution agency at Birni. People have also used the network to open bank accounts, and get printouts of Aadhaar (Unique Identification Number) card.

# Wireless for Communities Program in Mandla


The Mandala district of Madhya Pradesh, like Giridih, is counted among one of the two hundred and fifty most backward districts in India.

Mandala has a million population, which is roughly equal to the population of Cyprus. It has a literacy rate of 68.28%. Mandala is connected by road through National Highway 12 A, and by rail through narrow gauge.

The coverage area of the wireless network is in a 5 kilometer radius with a spectrum of 2.4 GHz & 5.8 GHz and the height of antenna and sector from the ground is 100 feet.

The W4C users at Mandala include score of households, village council offices, entrepreneurs, NGOs and shops. The base center, called Community Information Resource Center consists of five computers for ICT training, two computers for community use like email, Facebook, YouTube, and searching for locally relevant information. There is one UPS for power backup of the wireless tower and wireless equipment. The Zilla Panchayat campus is Wi-Fi enabled. ICT services include the Zilla Panchayat's official work, e-ticketing, cyber cafés, and citizen services.

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# Wireless for Communities Program in Naogang

The Halam, Debbarma tribal community dominates the Naogang Panchayat area of North Tripura state of the north-eastern India. It has a population of 58,978. At Naogang, 70% of Panchayat area is covered with National Optical Fiber Network (NOFN) line.

According to a survey, a lack of digital literacy is the main barrier to Internet penetration. W4C has sought to overcome this barrier by establishing and furthering ICT services and ICT training through establishing Community Information Resource Center at the Panchayat office.

The coverage of the wireless Internet network is of 2 kilometer radius with 5 nodes providing Internet access to a couple of hundred users. On its own premises, the center, offers several training courses including digital literacy, ICT Vocational Skills, micro-enterprise training for small and individual entrepreneurs. Through wireless Internet, the center also offers information on government schemes, jobs opportunities, cyber café services, and information on educational opportunities that include exam results and admission notifications.


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# The Impact

# The Barefoot Trainer

## MUDASSAR ANSARI

LOCATION: Chanderi
STATE: Madhya Pradesh
OCCUPATION: Wireless Network Engineer (Trainer)
PRIOR TO W4C: Unemployed

Mudassar Ansari belongs to a weaving family of Chanderi, a remote municipality where the lack of accessibility and infrastructure are major issues.

When in October 2010 Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) launched "Wireless for Communities" (W4C) program in the region, Ansari joined their Internet training classes. Initially he had very little interest in the subject, but as classes progressed, he became fascinated by the wide scope and immense possibilities that the Internet offers. Today, Ansari has knowledge of Geo Specific locations and Wi-Fi routers. Besides, he also knows how to configure line of sight links.

Ansari has begun working as a networking engineer for W4C. He also runs a Cyber Cafe in Chanderi. According to Ansari, "My computer knowledge became helpful in opening a Cyber Cafe." As Chanderi is a historic area with more than 300 monuments within a 5 kilometer radius, it is visited by a lot of tourists. Many of them use Anasari's café to browse the Internet and avail of e-mail facilities, etc. The cyber cafe has also become a learning centre for the Chanderi youth.

Mudassar Ansari's example underlines the changes that have been occurring in Chanderi. Three years ago, there was no cyber café, no teller machines and the state-owned Bharat Sanchar Nigam Ltd was the only Internet provider in Chanderi. When W4C was established, it created an environment for the free flow of information. Hundreds of young people flocked to DEF's Community Information Resource Center to learn computers, become digitally literate, gain vocational training in ICT, learn textile and apparel designs on computers, digital drum printers for full-sized designs and digitalization of all historical patterns. Mudassar Ansari is now not an isolated netizen of Chanderi; there are several people who accompany him in a journey of exploration.

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# The Born Innovator

## VIJAY ROY

LOCATION: Baran
STATE: Rajasthan
OCCUPATION: Wireless Network Engineer (Trainer)
PRIOR TO W4C: Volunteer with a local NGO

Vijay Roy, who is in his early 20s, is a refugee settled with Sahariya tribes in Baran district of Rajasthan. Forty percent of Baran's population consists of tribals. Vijay Roy is barely educated but full of passion and curiosity to learn new things. He does not believe that formal education is required to do anything in the world – leave alone computers or wireless networking.

Vijay was bitten by the Broadband bug in 2010. He was working with a local NGO when he heard about the Wireless for Communities project run by ISOC and DEF. Vijay joined the training and learnt about wireless networking, routers, modems, line of sight, mapping geo locations, planning networks etc.

Now working as a lead barefoot Wireless Network Engineer for W4C program, Vijay has helped establish eight major nodes all across Baran, some of them as far as 40 kilometres from each other. All the nodal points have facilities like video conferencing, tele-health, video cameras, web cams, projectors, printers, scanners and availability of more than 45 MBPS of broadband.

This broadband wireless Internet connectivity established with the help of Vijay and his newly acquired skills has already benefited at least 2,000 Sahariya tribes through digital literacy, vocational programs, tele-health programs, and entrepreneurial skill building.

Vijay adds, "We conveyed to the farmers that most of them have remained poor because of the remnants of an archaic agricultural system, which is based on inefficient market structures. Now, they are convinced about the fact that through Internet connectivity, they can benefit greatly from easy access to market information and vertical market integration." W4C

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# The Rural Entrepreneur

## RAJESH KUMAR VERMA

LOCATION: Giridih

STATE: Jharkhand

OCCUPATION: NGO founder & director

PRIOR TO W4C: Social Worker

Rajesh Kumar Verma, 37, is a graduate in political science. He lives in Giridih, a backward district, which is one of the most active corridors of Naxalism in the country.

Before the W4C project took off in Giridih, Rajesh had no inclination towards any training in technology, computers, networking or website development. In 2012, under the Wireless for Community program of ISOC & DEF, Rajesh got trained in wireless technology. During the training, Rajesh acquired the expertise to establish and provide Wi-Fi broadband Internet connectivity in his area of operation. As a result, Rajesh's NGO, Nav Jagriti Mandal, is now equipped with low cost Wi-Fi connectivity, a connectivity which was earlier available only 50 kilometres away from his centre. Rajesh has also been able to spread this Internet connectivity to several users in a 5 kilometre radius. He has helped in developing more the 25 Village Council websites, and provided connectivity to local government offices, small business units and few village councillors. W4C

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# The Lady WiFier

## RAJKUMARI

LOCATION: Khandela (Baran)
STATE: Rajasthan
OCCUPATION: Editor (Khoj Khabar, a local newspaper on Tribals)
PRIOR TO W4C: Unemployed

Twenty-six year old Rajkumari is from Khandela village in Baran district and belongs to a backward caste. Rajkumari attended school only till 10th grade.

When theW4C program of ISOC-DEF was launched, the Khandela centre in Baran began using broadband Wi-Fi connectivity. Availing of this facility, Rajkumari was in a batch of 10-15 girls who were trained by the centre and became adept in computer usage. Now, Rajkumari spends much of her time on the computer and surfs the Internet. She edits a local newspaper, 'Khoj Khabar' (meaning: News Hunt) that focuses on the Sahariya tribe, who were forced to work as bonded agricultural labourers by the landed gentry of the region. Victims of poor governance, neglect, and misguided policies, the tribal and backward caste people of Baran have largely remained poor, asset-less and illiterate.

"The paper only covers news about the Sahariya people," says Rajkumari. When the day's work is done, she spends time teaching science to schoolchildren.

Some of the skills that tribal youth acquire at Khandela W4C centre include basic word-processing and accounting software skills. They also surf the Internet and converse with students and faculty across all the seven centres in Baran via video conferencing. The centre is frequented by schoolchildren, who in their free time watch educational videos and learn origami, and drawing.

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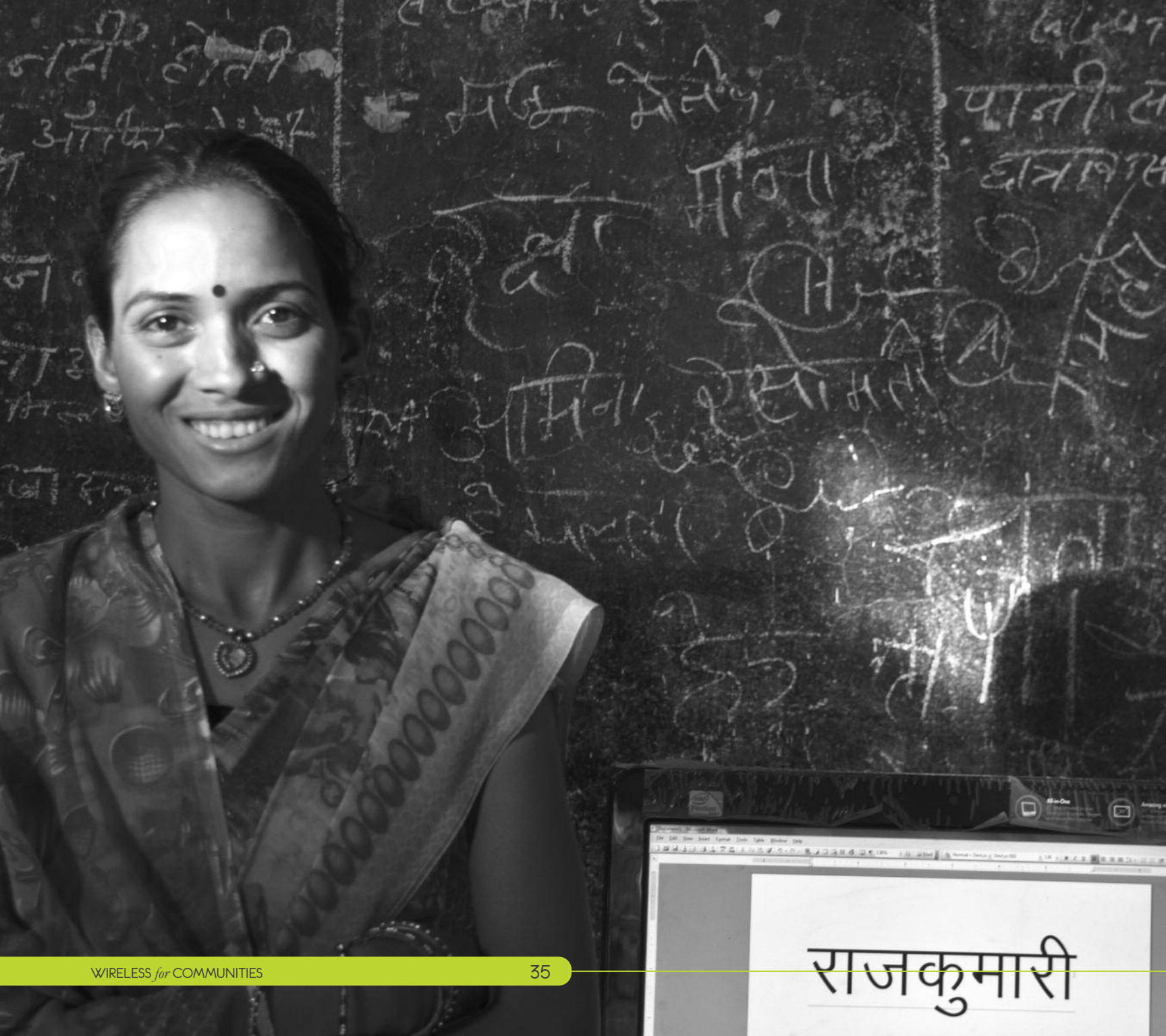
राजकुमारी

# The Digital Tutor

## ANURAG SHARMA

LOCATION: Chanderi
STATE: Madhya Pradesh
OCCUPATION: Tutor
PRIOR TO W4C: School Teacher

Anurag Sharma, 35, has been running a tutorial centre in Chanderi since 2004, which provides English language training.

In his one room tutorial home with limited infrastructure and no computer based teaching-learning equipment, Sharma's teaching delivery had been limited to a blackboard and few old subject books. However, he had always wished to add new tools and provisions like a computer with connectivity so that his students could learn in the most efficient way and achieve the maximum output. Until recently, the lack of connectivity restricted his desire to bring about these changes in his profession. At long last, in July 2012, this dream was realised as his tutorial home became equipped with low cost Wi-Fi connectivity. This was made possible as a result of the Wi-Fi services provided by the W4C (Wireless for Communities) program in Chanderi. Sharma has set up his own PC lab. His Wi-Fi tutorial home is the new K-12 resource centre in Chanderi with access to audio-visual learning.

Today, Sharma's skills are in great demand and there is a long queue for enrolment at his centre. Every day Sharma runs 5-6 batches of around 20 students each. Thus in Chanderi and beyond, the W4C, continues to empower citizens and communities with Internet connectivity.

"With low cost and reliable connectivity, there is a new found joy in learning and teaching at the centre," reflects Sharma.

Sharma has set up his own PC lab. His Wi-Fi tutorial home is the new K-12 resource centre in Chanderi with access to audio-visual learning.


Translate
Nope
ment of Madhya Pradesh
Portal
Tracking of Out of School Children for
Main-streaming
SAMSUNG
FOGGE

# Village Block Office @ Your Service

## BIRNI BLOCK OFFICE

LOCATION: Birni, Giridih
STATE: Jharkhand
WORK: Government office below district and sub-division level
PRIOR TO W4C: Office without reliable connectivity

Birni block is one of the twelve administrative blocks of Giridih district of Jharkhand state. According to the government of India, Giridih is one of the 250 most backward districts of India out of the 640 districts. The job of a block office in any district in India is to maintain, manage, and provide information related to all developmental and administrative activities of the government and their schemes and citizen services. In today's fast-paced world, if any of the blocks are not online or connected through computers and Internet, they are always lagging behind, in terms of both responsibilities and delivery of services, as well as accountability.

Incidentally, for a long time, Birni and all other blocks in Giridih have had computers and all the necessary software to manage and update all the government and citizen services work. But they were unable to update any data, or coordinate work with their district and state headquarters offices because they did not have Internet connectivity except through government owned BSNL (Bharat Sanchar Nigam Limited) or through data card, both of which were not reliable and had very restricted bandwidth.

While the other 11 blocks of Giridih still struggle and lag behind without reliable broadband connectivity, the Birni block office and several other offices in its neighbourhood are up to date, connected, and update their website and MIS (Management Information System) in real time.

According to Gautam Kumar, who is a computer operator in Birni Block office, "With uninterrupted connectivity, now we are able to do all the online entries of muster rolls of daily wages workers, pension fund schemes, old age schemes, etc. In recent times, all departmental information comes through email. In this situation, W4C connectivity is a lifeline for Birni Block Centre." He adds, "There is a demand for video conferencing from district and state office."

# Last Mile Education, Online!

## DEPARTMENT OF EDUCATION

LOCATION: Birni, Giridih
STATE: Jharkhand
WORK: Block level office of education department
PRIOR TO W4C: Working without reliable connectivity

The mid-day meal scheme in India is considered the lifeline of the school education system. This means that the government is supposed to provide lunch in the campus of each of the 1.4 million schools for 200 million plus children. Considering the massive operational challenge and responsibility, the records of delivery and management of mid-day meals have been put online in most of the states of India.

The challenge for most of the mid-day meals record keeping is that they have to do the entry online as there is no offline console or interface for entering mid-day meal related information – at least not for schools in Jharkhand. Birni is a small block in the Adivasi dominated Jharkhand state, which has 215 schools managed by Department of Education (DOE).

Unlike many other remote districts in Jharkhand, Birni's school mid-day meal status is up-to-date. This is because Birni's DOE office uses broadband Wi-Fi connectivity provided by the W4C program through local NGO called Nav Jagriti Mandal. Ironically, even through DOE is a government office; it does not use the government's biggest telecom, BSNL's services because of its poor and unreliable quality.

Abhishek Gaurav, special online data entry operator at DOE in Birni says, "I do all the jobs online. The W4C connectivity helps in preparing the online annual report and budget. It has also revolutionized our email communications across our department in Birni. As a matter of public accountability, the online entry of mid-day meal gives details of all the beneficiaries i.e., how many children from a school got the meal on a particular day of the particular month." Waiting for expansion of the W4C project's Wi-Fi network provision, the DOE is interested in having the Internet for all the schools so that children are exposed to digital literacy and interactive learning.

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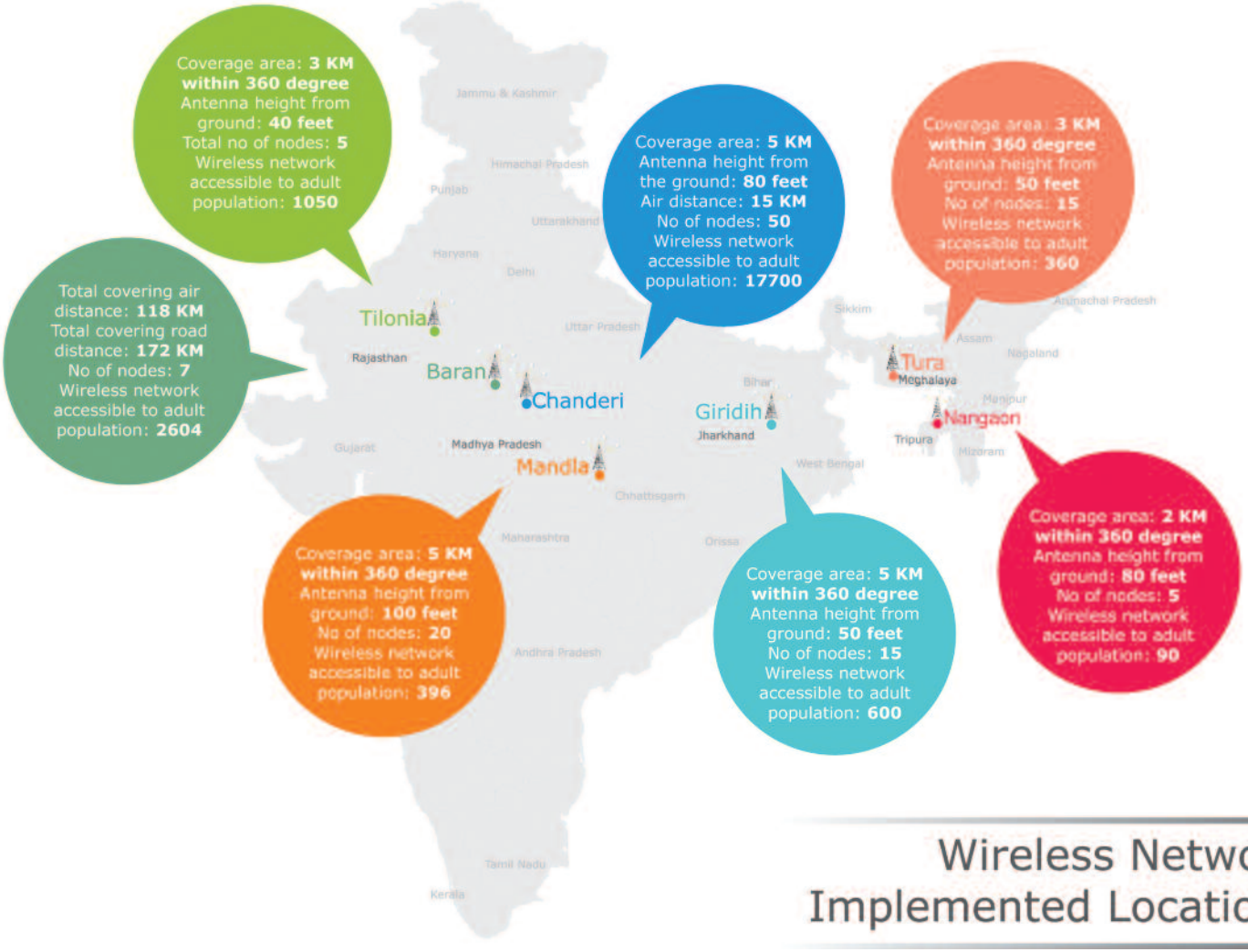
WIRELESS for COMMUNITIES

www.wforc.in




## Wireless Network Implemented Locations

W4C
Wireless For Communities

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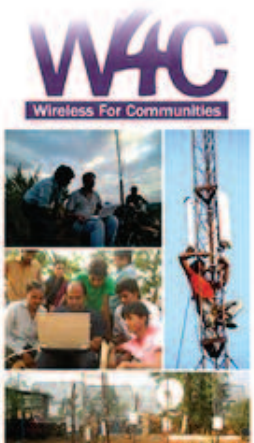

Internet Society (ISOC) and Digital Empowerment Foundation (DEF) initiated a project called, 'Wireless for Communities' in 2010. The project aims to provide a holistic, community-empowered approach to connecting rural communities to the Internet. The motivation for the W4C project by ISOC and DEF is 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.

**Objectives :**

Through this project, DEF trained local communities to operate wireless technology and deployment of the same for rural connections linking to Internet. The project aims at three components:

Training the trainers for technological knowhow of wireless networking

**ORGANISERS**

Internet Society™

10 YEARS DEF
DIGITAL EMPOWERMENT *foundation*


Globally, frequency bands in 2.4 GHz and 5.8 GHz have generally been allocated free spectrum that can be used by anyone without taking a license or paying a fee to the government. It is only slowly being realized that free spectrum allocations can be utilised to provision information and media infrastructure, and connect communities. To utilize this spectrum and reach out to remote communities, "Wireless for Communities" (W4C) programme was started by the Internet Society (ISOC) and Digital Empowerment Foundation (DEF) in 2010. Since then, the programme has spread to eight locations in India and benefited many thousands of users - all of them in remote areas.

An Initiative of

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www.defindia.net

Internet Society

www.InternetSociety.org