

Changing lives with **mobile** **and broadband connectivity**

Communities look forward to a brighter future in a model Digital Village enabled by VNL and BSNL.



Can mobile and broadband connectivity transform the face of communities? Is it possible to change lives through e-Education, e-Health, and e-Governance?

VNL shows how the Karenda Digital Village model can be adopted by the Digital India program to extend connectivity beyond Gram Panchayats.

Summary

Mobile and broadband connectivity has the power to change the lives of poor and backward communities, and give them a brighter future. This can be easily seen in Karenda, a modest village in Rajasthan.

Working with BSNL, which provides backhaul and subscriber management, VNL has provided mobile and Wi-Fi services here, using its award-winning, sustainable WorldGSM™ technology, and extended them to two

neighbouring villages, Bahadari and Phalsa, to create a cluster of Digital Villages with a combined population of 3,590 persons or 587 households (2011 Census).

Perhaps the most game-changing application in this Digital Village is the Smart Class that VNL has setup in the Government School, Karenda, where e-Learning is now helping students and teachers follow a new paradigm of education.

E-Governance, too, gets a boost through connectivity at an e-Mitra booth where citizens can access government-issued identity documents without having to travel long distances.

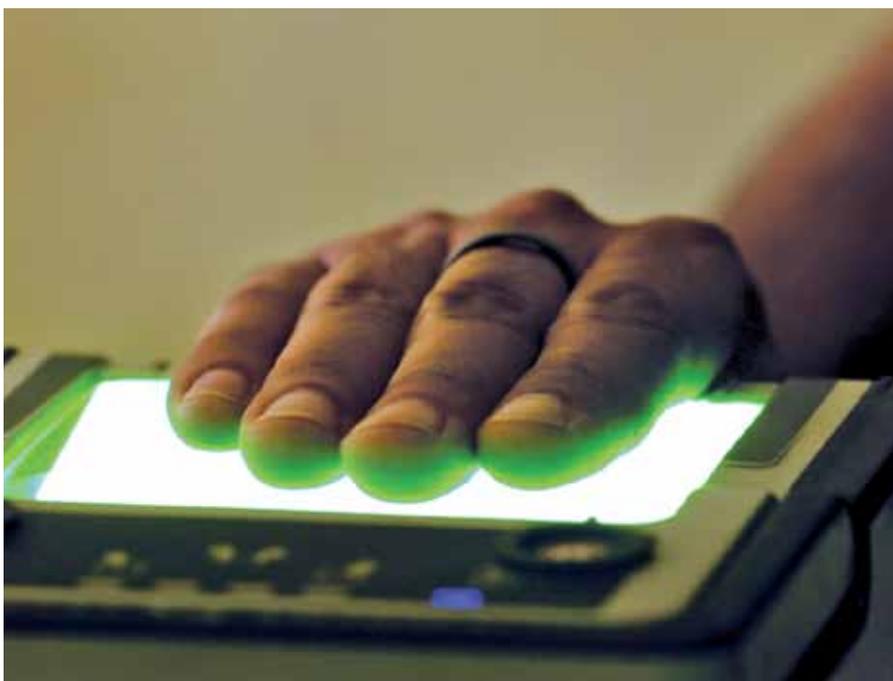
That's not all. Connectivity is changing lives in a quiet, yet fundamental way in this village cluster. Communicating with family, friends, associates and the outside world is now easier. Entertainment is available with a keystroke. Information

e-Mitra outlet helps residents procure government documents quickly and inexpensively





Students learn more enthusiastically in the Smart Class at Government School, Karendra



Fingerprints being scanned for Aadhar card at the e-Mitra outlet

on agricultural inputs and markets is now available. Banking and other commercial activities are accessible. Emergency and other health services are within reach. And governance is easier and more interactive.

India's Digital India program envisions connectivity upto the Gram Panchayat, or Block level. Karendra is a perfect example of how VNL can help extend the program's reach beyond, to the level of connected, Digital Villages.

Today, Karendra might look the same. But slowly and surely, lives are changing, and the future looks promising.

The Problem

Though not far from Bhiwadi, a bustling industrial town in Rajasthan, Karenda (Gram Panchayat) village situated in Tijara Tehsil of Alwar District, had erratic mobile and data coverage at the best of times.

But Karenda was not just the perfect example of an underserved village. It also displayed the classic indicators of backwardness. As per the 2011 Census, it had an adverse female sex ratio of 882 (lower than the Rajasthan average of 928), and a literacy level of 58.34% (lower than the Rajasthan average of 66.11%), in a Muslim dominant population.

Agriculture is not the mainstay – of 1,086 workers classified as Main Workers, only 337 were cultivators (owner or co-owner) and 92 were agricultural labourers. But as many as 32% adult

males are classified as marginal workers (employed for less than 6 months) with a significant dependence on industrial units in neighbouring Bhiwadi.

Karenda has a humble Government School, which until recently ran classes upto the middle level, and now has been upgraded to higher secondary level. Because of prevalent poverty and conservatism, enrolment and attendance have never been upto the mark.

Health facilities are practically non-existent, and for any government-related or legal work, the villagers had to travel to Tijara, some 30 km away.

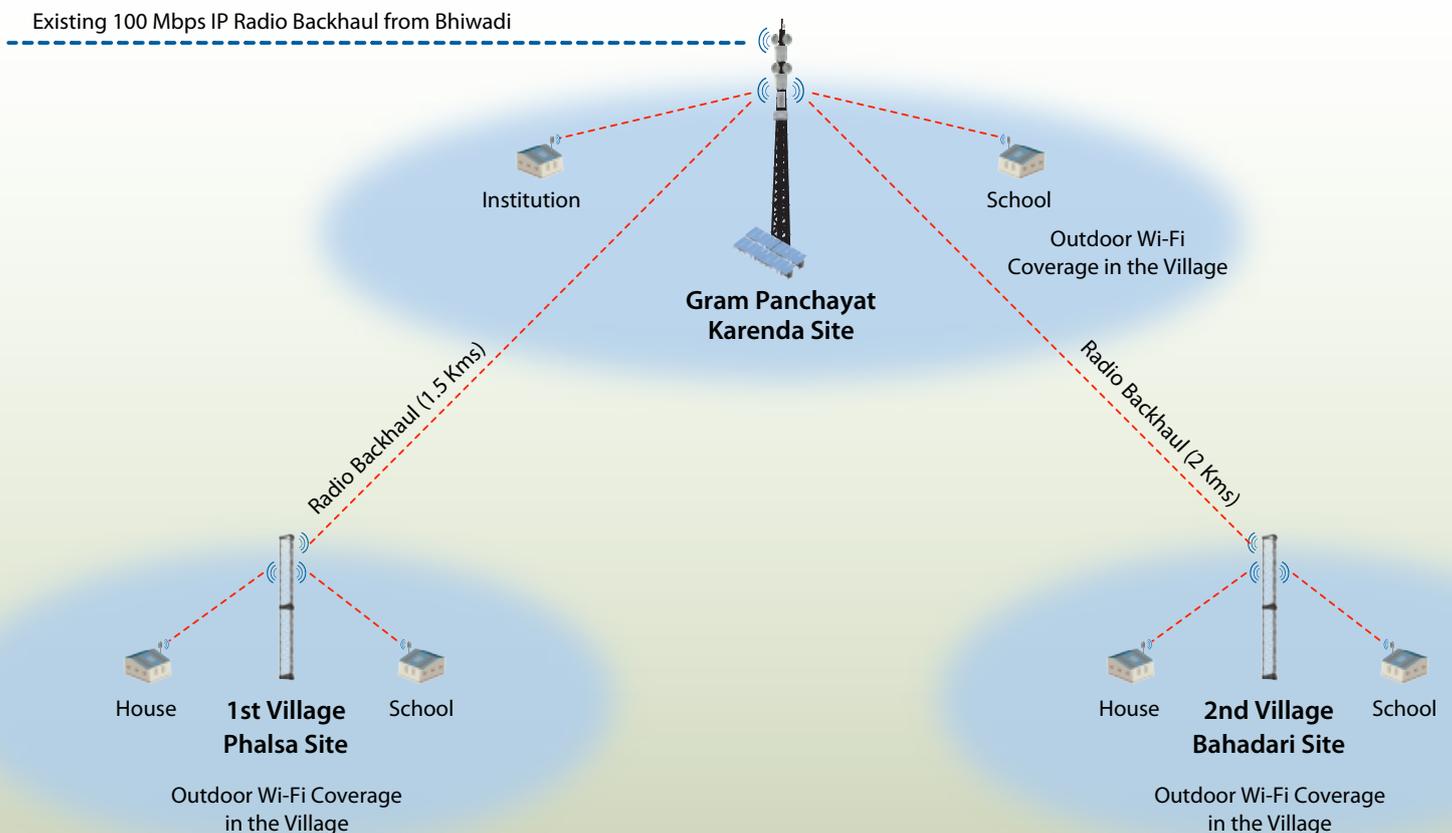
The Solution

VNL deployed its WorldGSM™ solution with the objective of providing integrated mobile, broadband, broadcast and

surveillance services to this underserved village cluster.

The VNL site at Karenda is compact and energy-efficient. A triangular mast with mounted WorldGSM™ BTS, is powered by just six solar panels. The site covers an area with 5 km radius for voice telephony using GSM. The site also has a surveillance camera and an IP-based Public Address system which can be accessed via IP or by dialing a phone number connected over GSM for making important announcements in these villages.

The Wi-Fi Access Point receives 100 Mbps bandwidth from the BSNL exchange at Bhiwadi, and is delivered locally using APs and an omni-directional antenna. Hops were created to connect the three villages by IP-Radios to provide broadband at the three hotspot sites.



Network connectivity schematic for connecting Blocks with Digital Villages

Though access is ubiquitous, the Government School, Karenda is one of the biggest users of broadband services. VNL has installed an e-Learning system at the school, which provides a better, experiential learning platform for students as well as teachers.

The Digital Classroom has a large digital whiteboard, and a Linux based e-Learning platform for providing access to instant information via the Internet and pre-installed audio-visual content.

The Digital Classroom and the broadband connection are powered by VNL's PowerCube™ 300 – a solar-based power management solution mounted on the rooftop at the school.

Benefits

Digital Villages can help remove the digital divide that often exists in developing economies, enabling development to reach underdeveloped regions, and the country to leapfrog. Mobile and broadband connectivity are having just that impact in the Karenda cluster.

With cheaper devices proliferating in tandem, villagers are now connected to the world with a keystroke and a tap, and with family, potential employers and the government, enabling them to know and learn more, entertain and socialize, transact and bank, and generally work and live better. Facebook, WhatsApp, and Hotstar are already buzzwords, and villagers of all ages can be seen enjoying the benefits of digital connectivity.

But by far the most significant contribution has been e-Learning, that is now enabled in the Government School, Karenda. Learning has literally taken a leap through VNL's Digital Classroom. Children now access vast amounts of information and material using e-Learning and websites like YouTube and Google. This has had a significant impact on



attendance and has fired the imagination of the students and teachers alike.

Not far from the school, at the periphery of the village, an e-Mitra outlet has been established by an enterprising youngster from Karenda. This outlet uses computers, printers, scanners and photocopying machines to offer documentation services. Internet is accessed from the VNL broadband network, enabling instantaneous download and printing of identity documents like Aadhar cards, mark sheets, bio-datas, etc. Prior to this, the villagers would have to travel significant distances to access such services.

It's heartening to see the smiles on the faces of the children studying in the Government School, Karenda, the youth that eagerly connect to job sites looking for work, or even those that hang out on social media with their connected mobile phones. And even though parents and grandparents don't get the change that is underway quite in the same way, there's a palpable change in the air at Karenda.

The Digital India program envisages 250,000 digitally connected Gram Panchayats.

Karenda is the perfect model for extending digital connectivity to connect villages beyond that number, using VNL's innovative solutions.



Impact

3

VILLAGES COVERED

690

GSM SUBSCRIBERS

509

BROADBAND USERS

150

EMPOWERED STUDENTS

100%

SOLAR POWERED SITES



"Internet is something new in our village, and is proving to be very useful. We don't have to run from pillar to post anymore, to make changes on documents like ration cards."

Ganga Ram, Resident, Karendra



"I can now talk to my friends and relatives in Saudi Arabia using WhatsApp, for free, which used to be a very expensive affair earlier"

Rizwan, Grocery Shop Owner, Karendra



"We can now access YouTube to learn about subjects beyond our text books."

Lukman, Student,
Government School, Karendra



"Now we don't have to travel 40 kms to the District Office to check the status of village related projects... Everything is now just a call away."

Krishna, Deputy Sarpanch, Karenda



"Technology creates a greater impact than traditional methods of teaching. Parents can see their children taking keen interest in studies because of the Smart Class."

Mahima Pandey, Principal,
Government School, Karenda



"My business is growing everyday. Customers from 20 nearby villages come to me for official and personal work. For them, the cost of getting jobs done has gone down appreciably."

Mohan Singh, Owner, e-Mitra outlet

About VNL



VNL makes the award-winning WorldGSM™ system, a sustainable, turnkey GSM and broadband solution specifically for rural and remote locations. It also makes a range of privately owned and managed GSM & broadband network solutions for specialized applications such as secure communication platforms for homeland security, communications for remote industrial centres and rapidly deployable networks for disaster and emergency situations.

VNL's pioneering work has been widely praised. During Mobile World Congress, 2010, in Barcelona, VNL was the recipient of GSMA's 2010 'Green Mobile - Best Green Programme Product or Initiative' Award. VNL was also named a 'Technology Pioneer 2010' by The World Economic Forum. In addition, VNL was named the third most innovative company, and the most innovative telecom company in the world, in the Wall Street Journal's annual Technology Innovation Awards in 2009.

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