

Digital empowerment through wireless connectivity.

For the two past weeks I've been fortunate enough to work on a project which goal was to provide the most rural and backwater places in India with wireless Internet connectivity. Internet connectivity which most likely will change these peoples life by providing them with a new way of communicating face to face. A new way for the illiterate to speak directly with the government. A new way for the sick which are unable to leave home to see their doctors. A new way for the children living too far away from school to attend classes. A way through wireless video conferencing.

The project which was a cooperation between "Nettverk Stavanger", Digital Empowerment Foundation and Engineers Without Borders Norway brought me on a mind boggling journey throughout India. A journey were I went from being a serious electrical engineer one moment to being a photographer, web designer, bargainer, chef, mosquito dinner and friend the next. Among all the memories, challenges and experiences the trip gave me, there are some which I'll never forget (as long as I don't stumble and knock my head).

Among them are sitting atop one of the highest towers in the 15th century palace, Raj Mahal, in Chanderi trying to configure failover on one of the MikroTik routers. Apart from the fact that there was close to 40 degrees in the tower and my buddy was dripping sweat, on me, everything was cool and quite. That was until the monsoon rain struck which suddenly decided to defy gravity by coming at us through every possible opening in the walls. The kamikaze rain didn't bother us to much though, but what followed made us have seconds thoughts: Thunder. We had five wireless point-to-point and omnidirectional antennas sitting on the roof hooked directly up to, yes you guessed it, the MikroTik router we were configuring. Doesn't sound like a good idea? Neither to us. Hastily we evacuated the tower, threw on our ponchos and returned to the nearby hotel where we now could safely access the Internet through our wireless Internet connection. In India 8% of the population have access to the Internet, in Chanderi they are now aiming for 40%.

Another unforgettable memory, would be witnessing two of the bravest locals ascend the homemade 33m high tower in Bhanwargarh. Their mission was to readjust the directional antennas atop the tower, connecting the data center to several nearby villages 10-20 km away. The antennas had been put out of alignment due to the strong winds and heavy rain. What they didn't know was that the same rain and wind would force them to cling to the tower for several hours, until the alignment was OK and the weather had died down enough to make it safe for them to come down. Another interesting fact was that this was actual not the first, but the second tower to be constructed in this spot. The previous one was blown over, and was now serving a new purpose as a playground for the children behind the school building. I wonder if the two brave men in the tower knew.

It was also interesting to find out that the seven network cables running the length of the 33 meter high tower was not only filled with copper, but also water due to faulty water proofing. This in turn made the RJ45 connectors oxidize and also made two of the PoE (Power over Ethernet) power supplies short circuit and blow up. A uneasy start which put us back a couple of days even before we got started on what we planned to do:

Configuring router software, not hardware. What it taught me, and the locals as well, was the importance of weather proofing.

After several days, many long hours and countless cups of "chai bina chini" we finally got the network configuration right and a local installation of BigBlueButton up and running. (BigBlueButton being the open source Linux package we opted for to supply us with video conferencing services.) An extremely rewarding moment for me at this point of time, as the video conference responsible, was to see the faces of the remote villagers pop up on the screen one after another followed by "Namaste!". Handing the laptop over to the Indian project manager and seeing his cheerful smile while talking to the others through the system made it all worth it. Mission accomplished.

Among the numerous challenges we faced one would be the fact that many Indians have a completely different concept of time and punctuality than what most Westerners do. There were also some challenges when the battery power supply in Bhanwargarh suddenly went down, and left us all in the dark. Nothing else but for us to go to bed at that time. The power supply in Chanderi was not among the most stable either, and numerous times the power went out, came back a couple of minutes later and then suddenly disappeared again. Thankfully they had USPs (Uninterruptible Power Supplies) installed which provided backup power.

The project gave me several new skills within the fields of network architecture and design, and taught me problem solving with limited resources. It also taught me more about interacting with different cultures and dealing with unfamiliar customs and rituals, both at a personal and profession level. Project management, the importance of keeping everyone in the loop, delegating tasks, keeping people motivated and documenting every step taken towards the goal were all parts of the project which I quickly realised the importance of.

The short stories I've provided here giving nothing but just the smallest glimpse into some of the numerous challenges and accomplishments I made in the local communities. These accomplishments could never have been made without Sjur Eivind Usken and Karen Elisabeth Ohm Heskja from "Nettverk Stavanger", Osama Manzar, Shahid Ahmad, Hasan Razvi and Kshitij Tayal from Digital Empowerment Foundation. These were just some of the many amazingly inspiring and beautiful people I was fortunate enough to get the opportunity to connect with during the project. I could write a hundred more short stories about the places we saw, the people we met, the food we sampled, the victories we shared and the challenges we encountered, but choose instead to let the photos themselves speak.

What a journey it has been bridging the digital divide.

Lasse André Lyngaas, 20th July 2012.