Commotion Wireless as a Community Technology:

Lessons from Community Technologists in India and Nepal

Ryan Gerety, Bincy Ninan-Moses, Andy Gunn, Will Hawkins
Open Technology Institute

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In June 2013, the Open Technology Institute (OTI) gathered innovative community technologists and organizers from India and Nepal for the first international Commotion workshop. By gathering participants from a variety of community-based, technology training and wireless networking projects, OTI and the participating groups were able to exchange experiences, educational models and technologies. OTI received valuable feedback on the Developer Release version 1.1 of the Commotion Wireless software, the Commotion Construction Kit training modules, and OTI's Digital Stewards model of community-based technology. The workshop was also an opportunity to strengthen the global network of technologists and organizers who see communities as a vital source of innovation in information and communications technology. The workshop was held in Dharamshala, India and co-hosted with AirJaldi, a social enterprise providing rural broadband connectivity and networking trainings in Dharamshala.

Fourteen participants representing eleven organizations attended the workshop from different parts of India and Nepal. The participating organizations work on a range of technology issues, including community radio, last-mile rural wireless networks, digital literacy, digital security, and open source technology training and advocacy. The participants included network engineers, broadcast engineers, community organizers, educators, and policy advocates. It was the goal of each participant to evaluate if and how community-owned mesh networks could complement their own work. By the end of the workshop, participants successfully built a temporary nine node Commotion mesh network combining a short-distance, high-density network with a longer-distance, wide-area mesh.

Key ideas from the participants' discussions and debates included:

- Community technology projects are more sustainable when communities have the capability to govern, as well as break and repair the technology themselves.
- Successful technology training and adoption needs a clear and common use in the participant's life.
- Internet access is not always the most important consideration—a local network can and should provide local content and applications in the local language.
- Wireless networks require planning and technical skills, however there are different methods of achieving that end. Service provider models employ trained technicians, while community models utilize participatory planning and community engagement.

Background

Community technology projects address several important gaps in India and Nepal. While India has the second largest telecom market in the world, a recent study showed that 18% of rural Indians walked almost ten kilometers to go online.[1] In rural areas, public computer centers and Internet cafes serve as the primary Internet gateways. According to recent studies, only 1.2% of Indian households have a broadband subscription,[2] and 0.7% of rural households report having a

computer with Internet access.[3] Overall, access to communications technologies is limited. According to the 2011 Census, only 9% of Indian households and 5.4% of rural Indians households report owning a computer. When users do go online, the lack of local language content is a barrier.[4]

Limiting the expansion of Internet infrastructure, India has regulatory challenges that make it difficult for small ISPs to acquire licenses. The 10 largest ISPs control 95% of the market.[5] Some analysts believe that these major ISPs are unlikely to invest in parts of India with less disposable income.[6] Additionally, current spectrum regulations have not allowed India to take full advantage of unlicensed spectrum opportunities to broaden low-cost access in remote areas using wireless technology.[7] In areas where there is access, Internet speeds in India are the lowest in the Asian Pacific region at 1.5Mbps.[8]

In addition to these regulatory and access challenges, the Indian government has increased its surveillance and censorship capabilities, and lacks any formal legal framework to protect the privacy and human rights of Indian citizens.[9] Since the 2008 Mumbai attacks, the government has increased its ability to censor online content and monitor Internet traffic.[10] The Central Monitoring System (CMS) was established to monitor all Internet and telecommunications in the country and was initiated in 2011.[11] Critics argue that India lacks the formal procedures to adequately protect freedom of expression or prevent the government from misusing the CMS.[12] There are additional concerns that the recent victory of the Hindu Nationalist Bharatiya Janata Party (BJP) and Prime Minister Narendra Modi may lead to additional restrictions to freedom of expression in India.[13]

Community-based technology projects have emerged to fill these gaps, addressing issues such as digital inclusion, online surveillance, local digital media, local language content, and the lack of infrastructure. Activists and technologists are finding innovative solutions to make India's digital ecosystem more secure, inclusive, and participatory.

Dharamsala Workshop

In order to learn from innovative projects around the region, as well as share OTI's Commotion mesh platform and its approach to participatory planning and governance of communications infrastructure, OTI convened community technologists from across India and Nepal in Dharamshala, India. Over the five day workshop, participants built a pilot Commotion network, developed potential Commotion project plans, and discussed networks for use cases such as crisis response, civic policing and community radio.

Dharamshala is a hub of wireless networking innovation and technical training for secure and open communications technology. OTI partnered with AirJaldi to host the workshop. AirJaldi is a social enterprise based in Dharamshala that works with rural communities in India to build Internet infrastructure in locations that ISPs may not find economically viable due to the difficult terrain, remote locations, and customers with low purchasing power. Eleven community technology organizations participated in the training: Digital Empowerment Foundation, Gnowledge, IRMA, Janastu, Mahiti, Mojolab, Nepal Wireless, Nomad, Tibet Action Institute and Open Knowledge Foundation (more information on these organizations see Appendix: Participating Organizations).

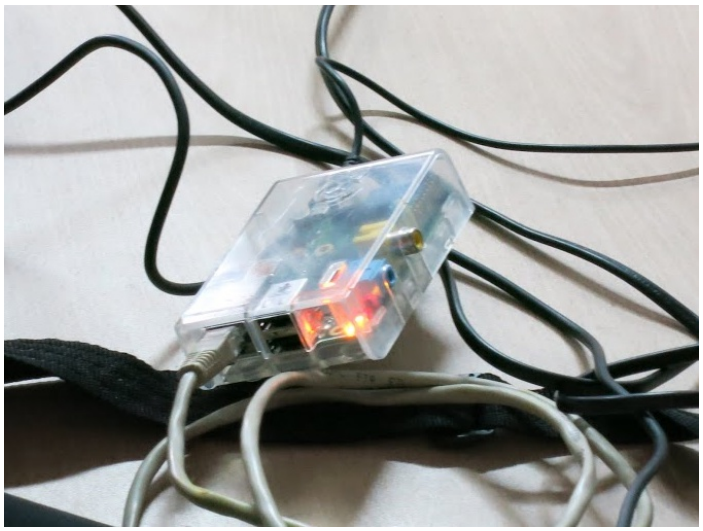
OTI conducted individual needs assessment interviews with each of these organizations to understand their particular interest in learning about mesh and community wireless networks. Groups were interested in mesh networks for two separate reasons:

(1) the technical properties of the technology, and

(2) the social properties of community-built infrastructure.

Interest around the technical properties of mesh fell into three related use cases: (1) mesh for flexible, quick deployments providing temporary Internet access (e.g. during events); (2) mesh for communications following natural disasters; (3) mesh as a lower cost solution for providing access to a few nearby sites within a traditional wireless network. Generally, participant organizations that currently operate as Wireless Internet Service Providers (WISPs) were skeptical that mesh could provide the reliability or performance they need, but saw the need for technologies that can be flexibly or more cheaply deployed in particular cases.

Other participants were most interested in the training process and planning methods that enable infrastructure to be built and governed by the community itself. Those participants were seeking technologies, materials and processes that could (1) provide a platform for local language and local news content, (2) support communities to build



Commotion running on a Rasberry Pi.

their own solutions without outside intervention, and (3) be governed in a participatory and collaborative manner.

Based on these interests, as well as the goals of OTI, the workshop focused on both the technical and social aspects of community mesh networks. Specifically, OTI had the following goals for the workshop: (1) collectively build a pilot Commotion network around the site of the workshop; (2) allow participants to experiment with Commotion Linux, Serval, and open source GSM technology; (3) get feedback on Commotion Developer Release 1.1; (4) identify best practices and lessons learned around community-based technology, (5) further understand the participants' particular use cases and develop concrete plans; (6) and, share and evolve the Digital Stewards community technology training model developed by OTI and local partners in Detroit.

The five day workshop included three days at the Dolma Ling Nunnery in Dharamsala and two days of activities in the field. The workshop included hands-on experience with:

- Flashing and configuring routers
- Building networks with omni-directional routers
- Using battery-powered routers to create popup networks
- Making longer-distance point-to-point and multi-point links
- Using participatory planning to design wireless networks
- Installing Commotion Linux and Commotion Raspberry Pi
- Experimenting with Serval's delay tolerant networking
- Using Osmocom, an open implementation of the GSM standard for mobile telephony.

The workshop also included discussions on principles for community networks and the Internet, definitions of community-based technology, approaches and methods to technology trainings, and regulatory issues in India. Each day of the workshop involved both technical experimentation and discussions around the social challenges and solutions.

On the first day, participants installed and configured Commotion on several omni-directional and sector routers. Participants also discussed the social and technical challenges of building wireless networks and the different models of network governance and trainings used by each organization. At the end of the day participants used their hotel rooftops to connect the hotels together with the workshop center.

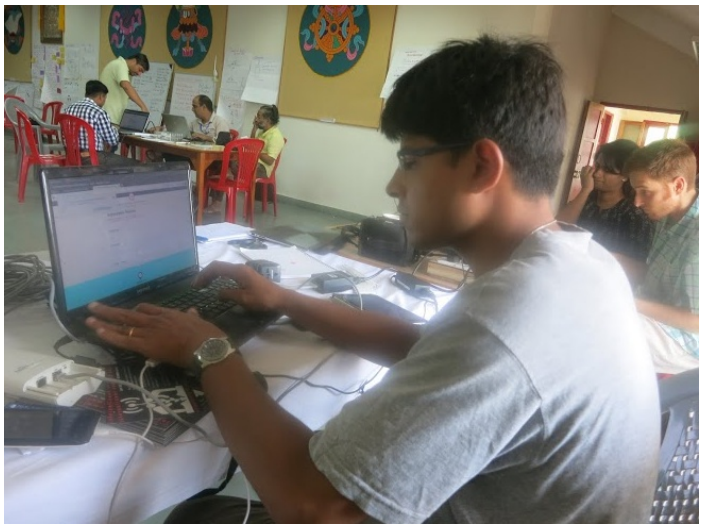
The second day focused on planning mesh networks. Participants used a common visual language developed in Detroit to plan networks they would like to build with Commotion.[14] Later in the day, participants experimented with Serval messaging (on Android devices), MediaGrid, and Commotion Linux on a mesh network linking battery-powered routers. The experiment revealed additional work necessary to make delay tolerant messaging over a mesh network fully functional.

On the third and fourth days, participants split into two teams and went into the field to build a nine node pilot network, combining three medium-distance links with a denser omni-directional mesh in the town of Norbulingka. The AirJaldi network provided two gateways for Internet access. After mounting the final routers, OTI staff and the participants returned to the workshop space to experiment with Osmocom, an open implementation of the GSM standard for mobile telephony.

The last day involved additional experimentation, as well as discussions about the regulatory environment in India, and the possibilities for using mesh technology for crisis response. During the experimentation some participants successfully installed Commotion Linux on their laptops, a participant meshed his Raspberry Pi device, while others spent more time exploring the Commotion installation, configuration and troubleshooting process.

Workshop Activities and Discussions

Based on the principle that community-based learning occurs



Arjun Venkatraman configures a Commotion router.

through hands-on experimentation and mutual discovery, OTI designed the workshop to alternate between small group discussions and technology experimentation, and to use the range of skills within the group to collaboratively built pilot network. The discussions, activities and field work are described in more detail in the subsequent sections.

Icebreaker with Network Routing

The workshop began with an exercise comparing a traditional hub-and-spoke network to a mesh network. The activity was designed both as an icebreakerand to help participants explore the way that network design and structure determine how information flows across the network. Participants first organized themselves in a hub-and-spoke arrangement and passed messages on colored note-cards from the spoke ends through the center to a different spoke. In this example, there was a single route to each destination and each message passed through the centralized point.

To demonstrate mesh routing, participants then organized themselves into a grid and passed the messages throughout the grid to the corner that matched the color of the notecard. As messages could take many different paths, the mesh structure of the grid proved more difficult to understand on the first try, highlighting the complications of routing in a mesh network.

Vision for Community-Based Technology and the Internet

The next set of workshop discussions focused on common visions for the Internet, community technology, and wireless mesh networks. Different groups of participants envisioned:

- "The internet as a free, secure, decentralized, and inclusive media for all communities to overcome economic marginalization and local problems."
- Community-owned networks "that are built with low-cost devices, equally accessed, and resistant to blackouts."
- Community technology that is "by communities, for communities and integrating across various devices and technologies," "peer-to-peer without centralized control or surveillance," and "enabling local content creation and consumption and in the local context and language."

Additionally, the groups brainstormed the shared properties of a free Internet:

- Free from surveillance, centralized control and marketing;
- And, egalitarian and community-owned as a common resource.

Approaches and Methods for Community-Based Training

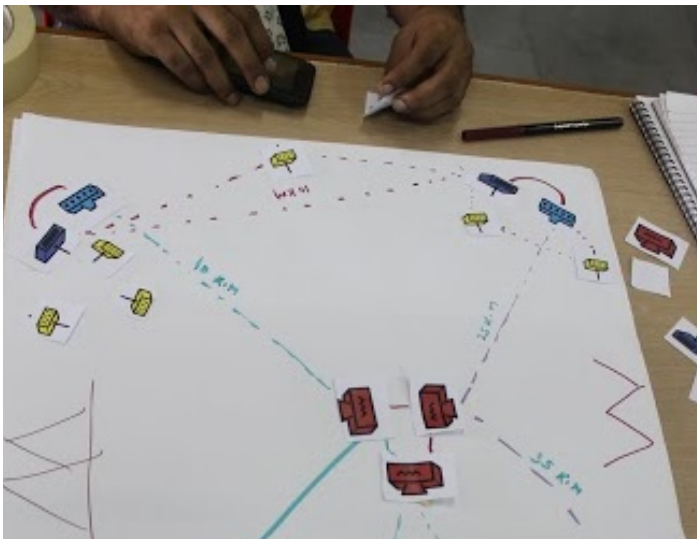
In small groups, participants and OTI staff discussed understandings of community-based trainings, lessons learned and best practices. Many participants had negative associations to the concept of teaching, and instead preferred to emphasize horizontal learning and skill sharing between peers. Some participants approached trainings with a more traditional pedagogical approach, and expected that the communities would solidify their skills through the hands-on experience of maintenance and troubleshooting the equipment after the trainer left the community. Participants agreed that success is ultimately measured by people creating and building things for themselves.

The participants first discussed why skill sharing or trainings are an important part of their core mission, and identified the following motivations:

- Supportive training can help overcome the negative perceptions of technology that have resulted from individual experiences of feeling disempowered or frustrated by technology.
- In rural areas you need locally-based technologists.
- Skills built in the community are resources to that community.
- Technology access spreads by sharing knowledge and skills person-to-person.

The small groups also brainstormed guidelines for workshop

Subhash Gurung, an experienced engineer from Nepal Wireless uses a shared visual language to design his network in Jomsom, Nepal.



Digital Empowerment Foundation (DEF) participants designed a network bridging several areas, using a hybrid network structure.

and training activities, and agreed on the following practices:

- Engage in peer-to-peer skill sharing rather than teaching.
- Build an awareness in communities about the available technology, so they can build from the knowledge and resources available.
- Be immersed in the community to allow for inclusive participation and best fit the context.
- Let the community collectively decide what needs are greatest, rather than pre-determining the needs.
- Break the fear of technology by breaking it apart or dismantling it and putting it back together.

To emphasize the importance of breaking and repairing technology to overcome anxiety around technology, one participant threw his phone on the ground, picked up the pieces and put them back together. This demonstration highlighted the principle that for communities to take ownership over their technology, they must feel capable of repairing it on their own.

Some participants also identified the following lessons from their own trainings:

- Identify women to be trainers in projects to get more inclusive community participation.
- Faster learners can share with others and get experience facilitating or teaching.
- Try to establish a link between livelihood and learning.

In structuring trainings, the groups identified the following best practices:

- Private or individual work time during the training allows people to practice at their own pace.
- Classes should be slow, gradual and responsive to feedback.
- Building in more social activities or "down time" facilitates unexpected collaborations.
- Show or demonstrate a concept instead of just explaining.
- Trainings should alternate between theory and practice, to ground the content.
- Inspire curiosity about each topic during the training.

These shared values echo the Digital Stewards approach to community technology developed by OTI and Allied Media Projects (AMP) in Detroit. "Despite the ubiquity of digital technology—and its vital role in contemporary life—the skills necessary to govern these tools are not widespread. While formal schooling and training programs play an important role in addressing this gap between the tools we use and knowing how to fully utilize them, self-taught and peer-led models for expanding knowledge and increasing skills are also critical. To that end, OTI and AMP anchored their methods in the concepts of popular education."[15]

Participatory Planning with Wireless

In order to facilitate participatory planning of community wireless networks, OTI and the Work Department developed a shared visual language and process that allows all community members to participate in the design and planning of networks.[16] The process encourages communities to think about their social assets and social networks as the foundation of the technical network. OTI

The Janastu network plan incorporates a delay tolerant network to allow for opportunistic data sharing between communities. Their network design consisted of sheep packs, sync mules and good shepherds.

First-time network technicians setting up a long distance link using a Rocket.

shared this "Every Network Tells a Story" activity with the participants, and each participant organization created a network plan for their specific use case.

OTI was interested to observe how veteran wireless engineers would interact with a simple visual representation of routers. While they were excited to bring the process into their own work, in retrospect it would have been preferable for those engineers to lead the other participants through the mapping process as part of the workshop, as few had experience with participatory planning.

The Pilot Network

During the third and fourth days of the workshop, participants built a nine node Commotion network. Although the network was temporary, the process of collaboratively building a network allowed participants to develop new skills, share technical practices and ideas, develop Commotion troubleshooting skills and collectively identify next steps. Participants who had never built a wireless network gained experience mounting routers on rooftops. More experienced wireless engineers shared their skills and were able to compare mesh with traditional network architectures.

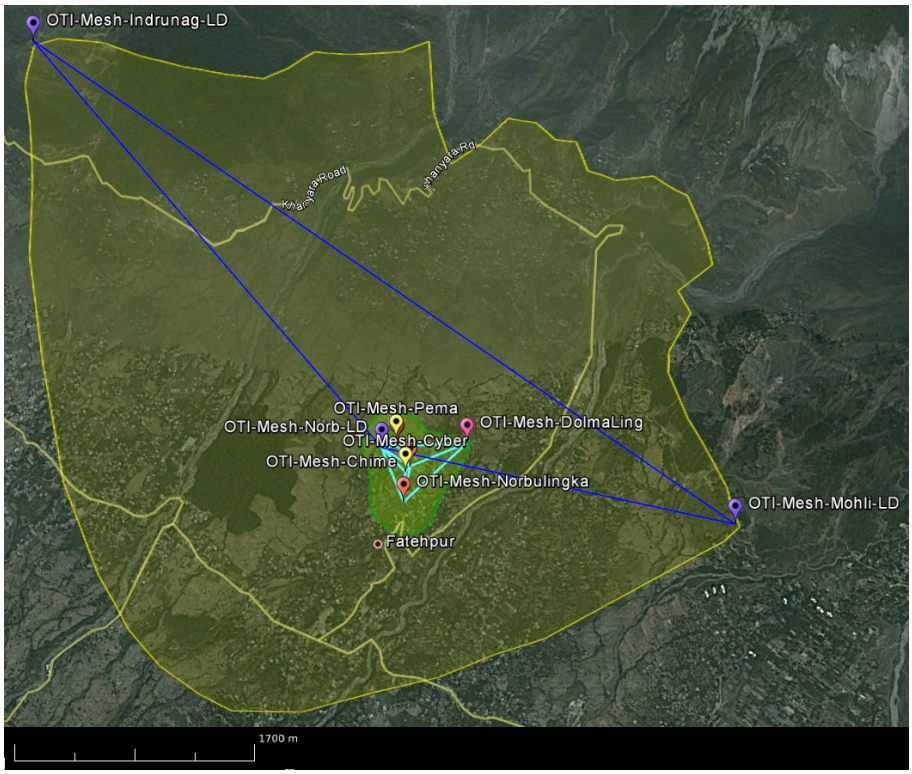
Before the workshop, OTI spent several days conducting site evaluations and planning with AirJaldi in Norbulingka, a valley to the east of Dharamshala. The pilot network was designed to demonstrate two wireless scenarios: (a) a higher-density local mesh, and (b) longer distance links connecting more remote areas.

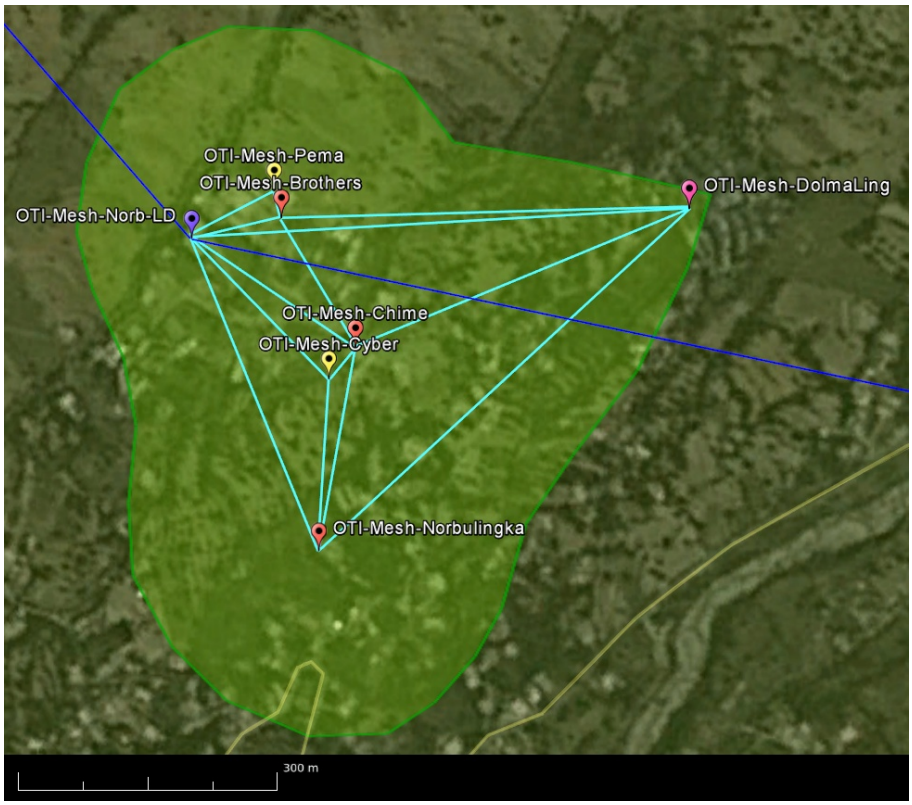
This network design allowed participants to visualize and experiment with different use cases and network topologies. Additionally, it allowed participants to practice planning different types of network links and mounting different types of equipment. OTI considered these use cases important given the array of participants' implementation plans and contexts, determined prior to the workshop in the pre-workshop survey and conversations.

The final network configuration consisted of three Ubiquiti Rocket M2 units providing the longer-distance, wide-area mesh coverage area; and one NanoStation M2 unit, two PicoStation M2 units and three UniFi Outdoor units creating a local, higher-density mesh covering Norbulingka and providing several links to AirJaldi's Internet gateways.

The network was built in several stages during workshop, and participants utilized this mesh coverage area to experiment with the technology. On the second day, the participants took portable routers outside of the classroom to the nearby hills and experimented with connectivity, Serval delay-tolerant messaging and MediaGrid secure chat. Those portable routers linked back to the classroom space, which then linked through a rooftop router to an AirJaldi Internet gateway in the center of town. At the time of the workshop, MediaGrid could only be used from a computer browser; OTI staff have since added mobile support.

On the final evening of the training, the group used a portable battery-powered router to test network and Internet





Commotion Network and Coverage Area.

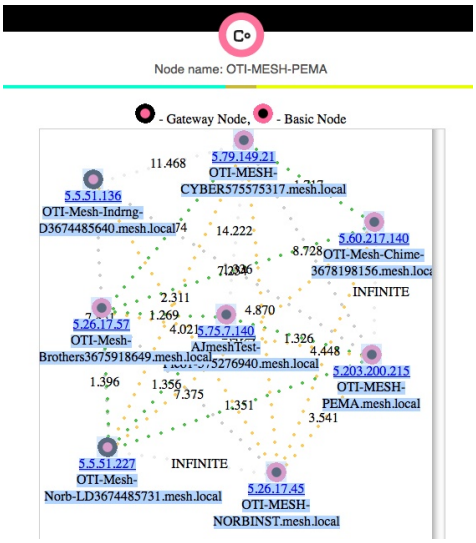
Equipment :
3 Rocket M2 units [purple]
1 NanoStation M2 unit [pink]
2 PicoStation M2 units [red]
3 UniFi Outdoor units [yellow]

Wireless Distances Across Blue Links:
4.7 kilometers
3.0 kilometers
2.0 kilometers

Interior Coverage Area:
~ 0.35 square kilometers

Wider Coverage Area:
~ 12.25 square kilometers

Gateways:
Two Internet gateways from AirJaldi's existing network provided access. These two gateways allowed for redundancy and resilience in the network.



Commotion Network Visualizer Screenshot. The final network was highly interconnected, providing a dense mesh cover over the area.

Temporary network installation to test the network reach.

access on the mesh in a small park within the coverage area. Later in the evening, down the road toward the edge of the coverage area, participants set up the same battery-powered router on the rooftop patio of a restaurant where the group had gathered, enabling Skype calls over the mesh several hops to an Internet gateway.

Workshop Follow-up

To further facilitate the process of helping organizations build new networks, OTI held regular group calls, individual check-ins, and email conversations to assist with troubleshooting technical issues, help identify potential funding sources for projects, and inform the group about community wireless events such as the International Summit for Community Wireless Networks.

As a result of the follow-up activities, some participants continued to collaborate with each other and OTI to solidify their network plans and apply for funding these new project ideas. Additionally, a few participants attended the seventh annual International Summit for Community Wireless Networks in Berlin in October of 2013, where they met with groups from other parts of the world engaged in building community wireless networks, advocating regulatory environments favorable to community infrastructure models, and creating new technologies. Many groups from North America, Europe, South America, Africa, and Asia expressed interest in collaborating with the Indian participants who attended the Summit.

OTI shared information about the Commotion Construction Kit and the official release of Commotion 1.0 towards the end of 2013 and beginning of 2014 so that these participants could test the technology and teaching modules and give us feedback based on their experiences. One participant initiated a Commotion network in rural Maharashtra using the Commotion Construction Kit.

Several participants published blog posts about their work in order to share their project ideas, spark interest in the projects, and connect with potential collaborators. These project ideas are in the early stages of planning and development; three are highlighted here.

Tamerind Tree School: Connecting Students

Following the workshop, Nomad India Network and the Tamarind Tree School, based in Dahanu, Maharashtra, initiated "My Big Campus," a package of wireless technologies and locally-hosted applications to meet the educational and communications needs of first generation learners from the Warli, Waghri and Surti communities in the region. The project intents to links students and schools through a wirelss mesh network, and initial links have already been established.

Mojolab and Janastu: Delay Tolerant Networks

Mojolab and Janastu plan delay tolerant community wireless networks in Karnataka. Mojolab and Janastu have plans to establish community-owned wireless mesh networks that would enable low-income communities to receive and share information locally. The project seeks to connect several remote mesh networks with portable storage devices that would opportunistically sync information between the networks.

Mahati: Expanding Digital Literacy

Mahiti seeks to expand digital literacy to include infrastructure. Mahiti and their local partner, Samraksha, currently conduct digital literacy courses with marginalized women in Karnataka and surrounding states. These communities are often excluded from traditional Internet infrastructure (e.g. Internet cafes). Community-built infrastructure would allow these groups to share Internet access and curate locally relevant information, as well develop technical skills. Mahiti believes it would be valuable to include community wireless in a digital literacy curriculum, and support the construction of a shared network.

Workshop Participants.

Findings

Convening regional community technologists from eleven organizations provided the opportunity to experiment with a Developer Release of Commotion; the Commotion project benefited from the feedback of experienced community technologists and wireless engineers; everyone involved benefited from sharing a range of skills and discussing best practices; and importantly, participants formed new collaborations and project plans.

The workshop and network construction process proved to be an excellent opportunity for testing and debugging Commotion. Workshop participants and OTI found several new non-fatal bugs and identified user interface improvements. These issues were relayed to the Commotion developers, and those changes were then incorporated into the next developer release of the software (Developer Release 2), and eventually the full version 1.0 release.

The workshop discussions around appropriate community-based technology implementation and design continue to inform OTI's design of training materials, community-based projects and technology development. The following themes emerged from the workshop discussions:

Support for locally available hardware is critical to wider adoption and sustainability. Over the last year, the Commotion project focused on security and usability as a first priority. This necessitated restricting Commotion support to wireless routers with 8 Megabytes (MB) of flash memory. Workshop participants identified cost and availability of this hardware as barriers to adoption. Many commonly available, lower cost routers typically have only 4MB of flash memory. At this time, Commotion networks use modestly priced, high quality equipment from Ubiquiti, which is commonly used by WISPs. While Ubiquiti equipment is sold around the world, it is typically available from only a few vendors in major cities. Additionally, although Ubiquiti equipment is modestly priced, it is still more expensive than more commonly available home routers.

Community networks require planning and technical skills, however there are different methods of achieving that end. A common theme throughout the workshop was the acknowledgement that community wireless networks require both planning and technical skills. For organizations working in a WISP model, this implies centralized planning and staff technologists. For community organizers, this implies a participatory planning model and a peer-to-peer community training component. The comparison of these two models generated a great deal of discussion, with the various organizations taking different approaches within their work.

Local applications and content are as important as Internet access for some communities. In many communities in India, especially in rural areas, participants suggested that people want local area networks to host local applications that reflect the unique character, language and needs of their communities. Additionally, because the regulatory environment in many countries prohibits sharing Internet access, hosting local applications and local content can connect communities, support the creation of local content, and share local information without being connected to the Internet. In a 2013 survey by the Internet and Mobile Association of India, individuals cited lack of content in their local language as a barrier to adoption.[17]

Community networks need social infrastructure as well as technical solutions. When community members are involved in the design and governance of their communications infrastructure, it will better serve local need, and the community will be invested in continuing to expand and maintain that infrastructure. Participant organizations have different methods of approaching these issues. As mentioned previously, some participants provide training on maintenance and troubleshooting for individuals hosting network nodes. WISP participants address this need by hiring and training local staff. Other participants were interested in a participatory process in which a community network would be built and governed by the community itself. In all cases, there was agreement that the community

must articulate the need, rather than an outside organization.

Overcome the fear of technology by breaking it. A challenge in adopting new technology is a general anxiety and fear. Often, first time users are worried that they might do irreparable damage to the equipment. During the workshop, participants discussed how they overcome the fear of technology in the communities by actually breaking the equipment. When community members fix the equipment, this fear is lessened. Once the fear is overcome, the community can increase its ownership of the technology.

Training pedagogy impacts how technology is adopted and how community technology projects are sustained. Many participants agreed that horizontal learning and popular education practices have several advantages over top-down or expert-based training methods. These methods reduce anxiety around the technology; minimize the negative perception of "experts" coming to teach in a community by recognizing that it is a mutual process of learning; increase skill sharing and knowledge exchange within the community; and, facilitate the process of breaking and fixing technology. These are all important factors in increasing a project's sustainability over time.

Sharing and collaboration between community technologists is important for everyone to continue to grow and learn. Many of the workshop participants knew each other and had worked together in some capacity on different issues before this convening. However, participants noted it was beneficial to have a place to gather with a common goal where everyone could meet, hack, and collaborate, as well as time to exchange stories and ideas from their work. By the end of the workshop, participants had drafted project plans and started to build new collaborations.

Appendix: Participating Organizations

AirJaldi is a rural broadband service provider based in Dharamsala, India. They also conduct wireless networking trainings in India in partnership with technology-focused organizations based in India and abroad.

Digital Empowerment Foundation (DEF) is a non-profit organization based in Delhi that works to empower communities with ICT solutions and bridge the digital divide. DEF helps communities build wireless networking solutions, engage in open government solutions, conduct trainings in network building, and work on various technology policy issues.

IRMA-India is the Information and Communications Technology division of the Orissa State Volunteers and Social Workers Association based in Bhubaneshwar. The organization includes social workers and community activists who focus on rural development, especially with the use of ICTs, and promote volunteerism in communities.

Janastu is a non-profit organization based in Bangalore that provides complete open source solutions to community based organizations and NGOs in South India for information management. They work with rural and tribal populations in Karnataka and a recent project focuses on shepherd communities and nomadic groups that need access to networks and technology for work and livelihood.

Mahiti is a non-profit organization based in Bangalore that develops information and communication solutions for urban and rural communities in India. They work with community based organizations to help build and support different local social-impact initiatives.

Mojolab works to build innovative solutions in communities with very low access to technology through citizen journalism initiatives. A major project of Mojolab, CGNet Swara, is an interactive voice response system that helps people in underserved communities report on issues that affect them, and create a common portal for information and reporting.

Nepal Wireless Networking Project (NWNP) is a social enterprise based in Nangi, Nepal that uses long-distance wireless links to provide Internet access, timely information and technology solutions in rural communities, as well as bridge resources between rural and urban Nepal. NWNP's networks provide Internet access, e-education, e-commerce, community information, emergency information, and other services in rural communities.

Nomad India Network is a non-profit organization in Mumbai that works with communities to build community radio stations. In addition, Nomad develops and manufactures affordable FM radio equipment for community stations and NGOs. Nomad also provides trainings and workshops on communications technology to enthusiasts who want to learn radio engineering practices for their

stations or communities.

Open Knowledge Foundation (OKFN) promotes open data and advocates for governments and researchers to promote more open data around the world. OKFN builds open data tools, expands the community of open data advocates, and engage international leaders in the process.

Tibet Action Institute brings together thought leaders, organizers, and technology experts at the forefront of the Tibetan movement to develop and implement visionary strategies to help Tibetans win their nonviolent struggle for rights and freedom. The Tibet Action Institute develops and deploys technology systems and offers training in the safe and secure use of information and communication technologies.

About OTI

OTI engages local organizers and technologists to build community wireless networks through project-based learning and collaborative teaching practices. OTI and Allied Media Projects developed this approach through the Digital Stewards training program in Detroit to grow local digital resources while also creating teaching tools that can be used in other contexts. Digital Stewards do the work of building and maintaining the technology their communities need to foster healthy relationships, build resilience, and increase access to critical information. OTI works with local partners to integrate this approach into their current work, so they build the technology that augments their existing efforts to strengthen their communities. OTI is developing a set of practices, tools, and technologies that anyone can use to become a Digital Steward. OTI has used these educational tools with local partners in Detroit, Michigan and Brooklyn, New York to teach youth and community organizers the skills they need to develop community wireless networks.

In order to facilitate the building of community wireless networks globally, the Open Technology Institute leads the Commotion project, an open-source communications tool. The goal of Commotion is to simplify the process of building secure infrastructure so that community members can plan and build networks themselves. Commotion networks are designed to support local applications and/or distribute Internet access.

Notes

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Main Office
1899 L Street, NW
Suite 400
Washington, DC 20036
Phone 202 986 2700
Fax 202 986 3696

New America NYC
199 Lafayette St.
Suite 3B
New York, NY 10012

New America Foundation
www.newamerica.net