(Re)Building Technology
V. 2

NGUYÊN

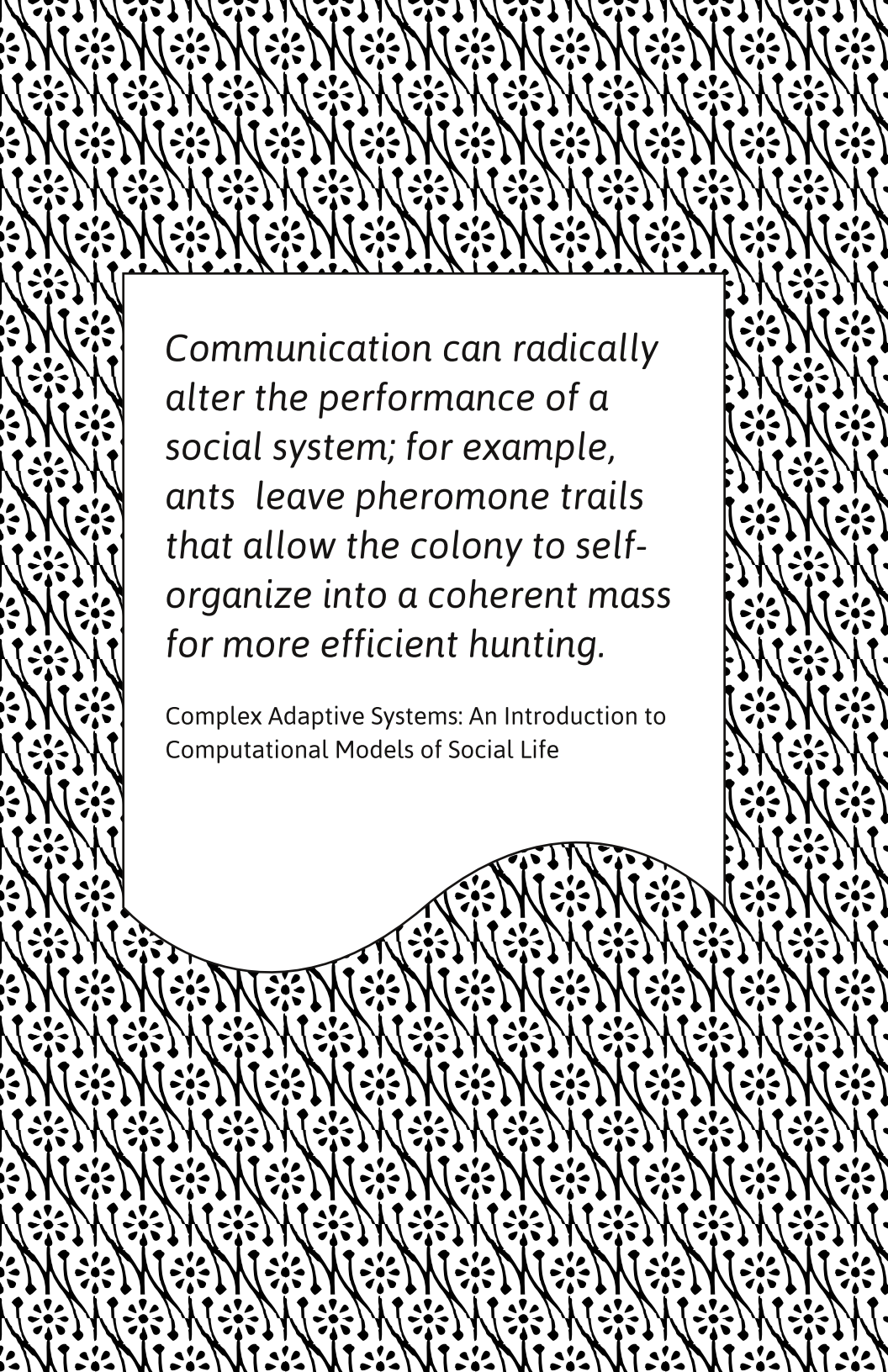communitytechnology.github.io
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(RE)BUILDING TECHNOLOGY : VOL 2

Communication can radically alter the performance of a social system; for example, ants leave pheromone trails that allow the colony to self-organize into a coherent mass for more efficient hunting.

Complex Adaptive Systems: An Introduction to Computational Models of Social Life

BUILD IT OURSELVES

(Re)Building Technology Volume 2 is a compilation of practices and stories from our community technology work in 2015. At the end of 2014, the Open Technology Institute and the Detroit Community Technology Project initiated the Community Technology Partnership and began awarding SEED grants to civil society organizations in different parts of the world. We awarded eleven grants over the past year, and this zine is dedicated to those incredible groups who are re-imagining the Internet.

The goal of the Community Technology Partnership is to support community organizers working on critical digital justice issues. This year's round of SEED grants focused on groups building autonomous, community-controlled communication infrastructure through a collective process of learning, teaching, and building. The SEED grants project grew out of the work of the Detroit Community Technology Project and the Open Technology Institute, and reflects the network principals of Allied Media Projects and the Digital Justice Principles of the Detroit Digital Justice Coalition. These principles guide a process that begins by listening and focuses on common ownership, access, participation, and healthy communities.

We established the project with the following five goals:

1. PROJECTS WITH PURPOSE: Strengthen projects that address core community issues using creative tactics, involve a process that builds collective power and skills, incorporate art and media, address systemic issues of ownership and governance, and do not shy away from reimagining infrastructure and the Internet.

2. BUILD IT OURSELVES ETHIC: Support solutions designed and initiated by local groups already working on social justice issues in their communities, rather than outsider-initiated or isolated projects. Local communities should initiate and lead projects, rather than outside groups building with or for others.

3. Community organizing and education: Focus on the process of organizing and shared learning as more sustainable and transformative than infrastructure alone. While network infrastructure itself is valuable, we are interested in understanding if a community process that priorities social justice values will result in a healthier digital ecosystem.

4. Community media production: Support a model of infrastructure that values the creation of local media and art, not only the consumption of Internet content. We seek to foster producers rather than consumers, and to do more than distribute of bandwidth.

5. Global interconnections between projects: Build a mutually supportive global network of groups experimenting with community infrastructure. We want the grants program to build relationships between groups, rather than create a dependency on us.


Collaborative Design and Building
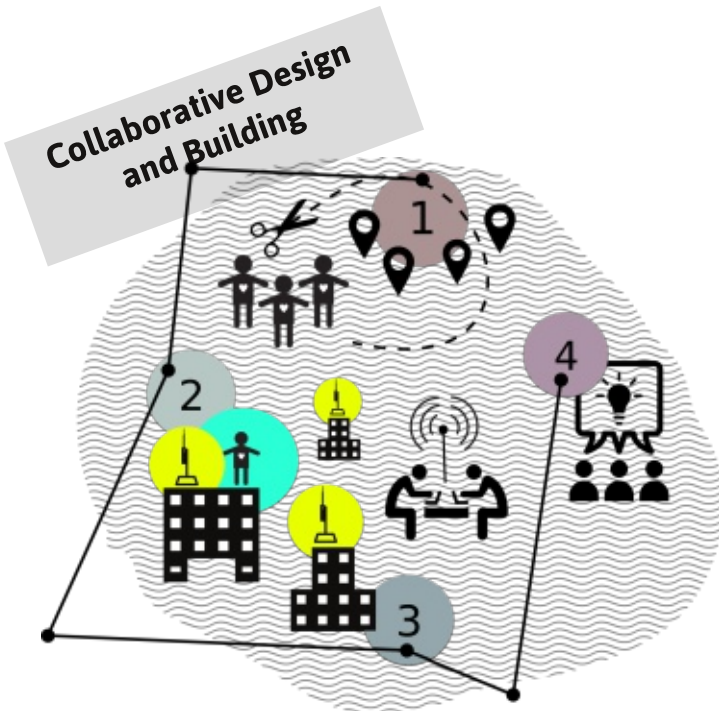
Networks with a Purpose

9 Big Ideas

1. Community radio stations and digital infrastructure.

Community radio stations are fundamental components to a healthy media ecosystem. Already trusted providers of local content using traditional broadcast radio infrastructure, these stations are now providing a new and valuable service by experimenting with local digital infrastructure in their communities. In the Democratic Republic of Congo, the networks in Bukavu and Goma are distributing local services (Wikipedia, chat, educational materials, books, and more) and a local blogging platform. The networks connect local organizations, universities, and radio stations. In Mulukuku, Nicaragua, the Cooperativa Maria Luisa Ortiz is building a network to link their various services with other local organizations and institutions. In both Bukavu and Mulukuku, the local organizations also operate a computer center, which has the advantage of providing Internet access in a community setting.

2. Connect youth media with a youth-made technology.

Both Connecting Eenhana, launched by Glowdom Educational Foundation and University of Namibia, and Santana Unipessoal's Youth Mesh Media in Timor Leste are focused on pairing youth storytelling with youth-built infrastructure. Youth Mesh Media seeks to capture the spirit of Timor Leste's struggle for independence by focusing on youth exploring their history through storytelling, while building shared digital infrastructure in the town. In Namibia, Connecting Eenhana are teaching hearing-impaired youth to create local applications and stories, as well as build a network linking the schools to other areas within town.
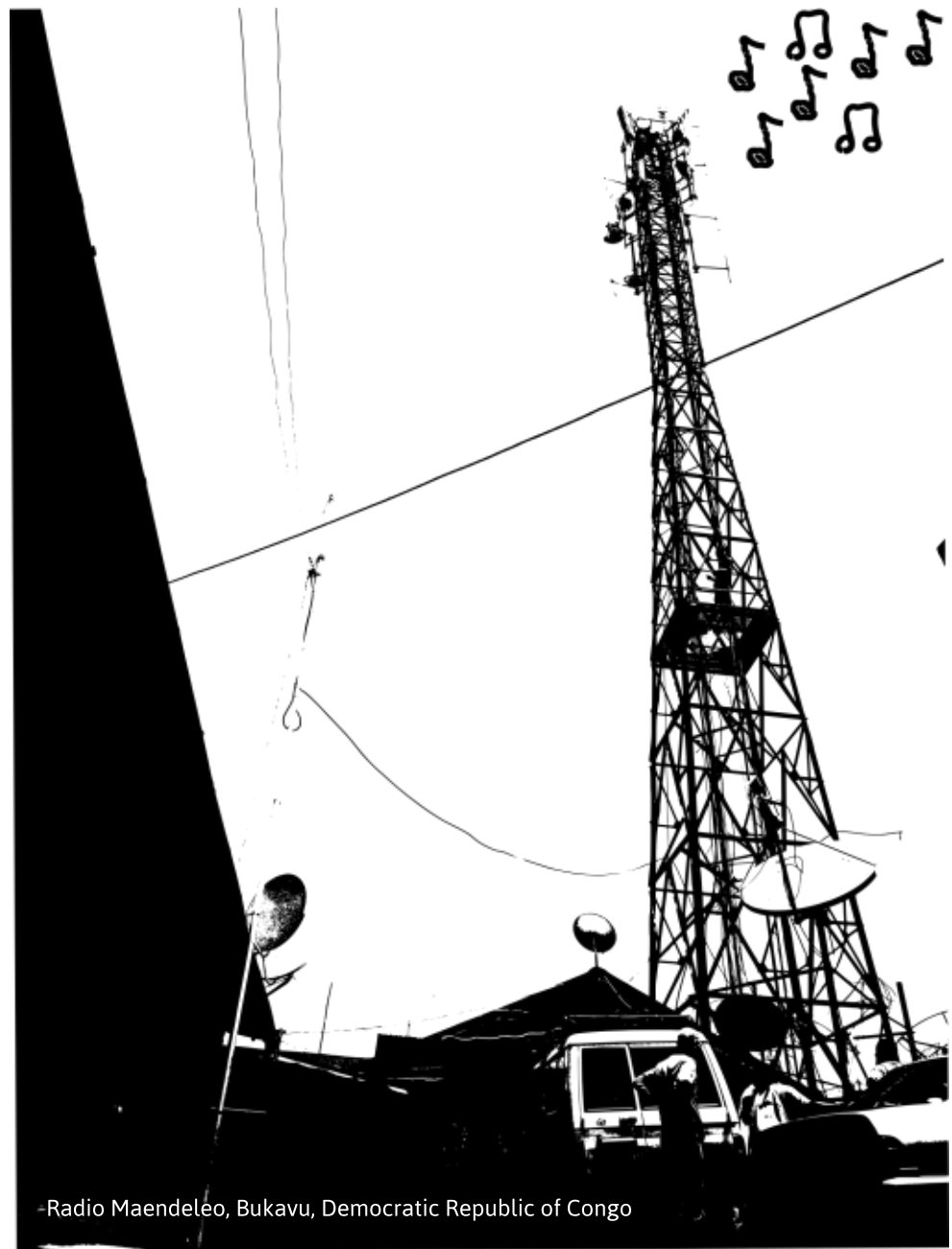
Radio Maendeleo, Bukavu, Democratic Republic of Congo

3. Get off the Internet?

Several community networks mentioned above do not provide Internet access, and instead, create local intranets that support local media making, learning, and engagement. Intranets can provide local blogs, offline Wikipedia, secure chat, media, and other services. We consider these networks truly experimental. We have become accustomed to ubiquitous Internet access, and it is difficult to imagine another type of digital infrastructure. And yet, many are hoping local-only networks will encourage local content creation, revitalize the do-it-ourselves spirit of the early Internet, and build local civic participation.

4. Counter-narratives for infrastructure ownership and control.

Falanster in Belarus is working to demonstrate the concept of community-controlled communications by providing local pop-up networks to large festivals. They also create T-shirts, posters, stickers, and jewelry to distribute at the festivals, and have painted a mural to counter the narrative that all infrastructure must be provisioned by telecommunications companies or the state. They organize their activities through regular mesh club meetings.

5. Decentralized local language media.

Outside of Bangalore, Servelots, Janastu, and the MojoLab Foundation are experimenting with creating rooftop networks that interconnect RaspberryPi devices inside each house. Acting as a low-cost home computers, these devices connect to residents' televisions along with a mouse and keyboard. Using the COWMesh network, when people want to share media, they simply plug in a media-filled USB drive to the Pi, and it is shared across the network. COWMesh particularly focuses on local language content, as little content is available in the hundreds of major languages in India.

Youth Mesh Media, Santana Unipessoal, Timor Leste

6. CONNECTING FOR CIVIC PARTICIPATION.

Working in an area recently plagued by conflict, Fantsuam is connecting villages in Kafanchan, Nigeria, to increase civic participation and dialogue. They are also supporting community ownership of public schools by providing relevant educational resources for students, and facilitating input into the local government budgetary process to make it more inclusive and fair.

7. DIGITAL LITERACY AND COMMUNITY NETWORKS.

In a remote part of Myanmar, communities built a wireless network spanning across valleys from town to town to provide minimal Internet access. Now Alternative Solutions for Rural Communities (ASORCOM) is seeking to add local services to offset access limitations due to low bandwidth. Because there are no telecommunications companies operating there, they are seeking to develop local digital literacy in addition to basic infrastructure.

8. COMMUNITY GSM AND OPEN SPECTRUM.

Nuvem is attempting to build the only community mobile network in Brazil, inspired by Rhizomatica in Oaxaca, Mexico. At the end of 2015, Nuvem was still waiting for a response to their license application. In the same town, they set up a wireless network that distributes Internet access, an OwnCloud instance for file storage, and Etherpad for collaborative documents.

9. BUILD-IT-OURSELVES FIRMWARE & ANTENNAS.

AlterMundi in Argentina may have the world's most innovative model for mesh networks. They make use of dual band Wi-Fi routers to improve the capacity of the network, and when necessary use a single router with two custom antennas: one to create nearby omnidirectional coverage, and one in front of a homemade dish antenna to create a longer-distance link. This allows a single router to perform multiple roles in a network, and thus, cuts costs and dependencies on expensive equipment.

Small local communities have no access or chances to get the licence and deploy outside networks without huge bureaucratic procedures even if they want to link just two houses in a rural area. What does it mean? We've just begun to shape new community rights--community digital rights.

--Falanster, Belarus

10 Community Network Lessons

Based on the successes and lessons of our projects and partner projects, we offer the following suggestions:

1. Community networks should be led and built by the people they intend to serve. Too often outsiders initiate projects to help a local community build a network. Outsiders can serve as supplemental technical support, or provide other expertise, but should not initiate or lead a project.

2. Begin projects with open, participatory community meetings where everyone can be involved in the initial planning and learning. Shared ownership and responsibility are best built from the first moments of a project.

3. Focus on the community process at least as much as the end result. The promise of community networks is only met when they are actually built and governed using an inclusive process. How are users becoming leaders or experts? How are people engaged in the decision making process?

4. Are you providing a service (as an Internet Service Provider), or organizing people to build infrastructure? Either model is valid, but it is best to be clear about the goal, and establish your organization and strategy accordingly.

5. Choose the simplest technology or even non-tech solution to get the job done. For example, a lot of energy in community wireless has been dedicated to creating open source mesh firmware; however, in some cases a simple point-to-multipoint network will be more resilient and easier for people to understand. Similarly, a community radio station, an outdoor bulletin board, or two-way radio system may fit the need better.

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6. Be sure the project is not technology in search of a problem. A network should not be the goal--but a means to an end. It should be clear that the project serves a critical need articulated by the people most impacted. It is easy for people to get caught up in new technology and never get to the point where the technology is serving its intended function.

7. Incorporate art, media, music, and storytelling. Content is at least as important as the network infrastructure, especially for drawing diverse people into the process and keeping them engaged.

8. Involve other groups, organizations, and movements even if they seem unrelated. Using a shared visual language and participatory planning process can help involve a wide range of groups.

9. Invite kids to everything. Similarly, make sure community elders can participate, provide input, and give feedback. Ensuring that the process is accessible to everyone strengthens the project.

10. Make sure there is a cycle of learning and teaching included in every aspect of the project. Learners becoming teachers will help ensure sustainability.


Mural
Falanster, Belarus
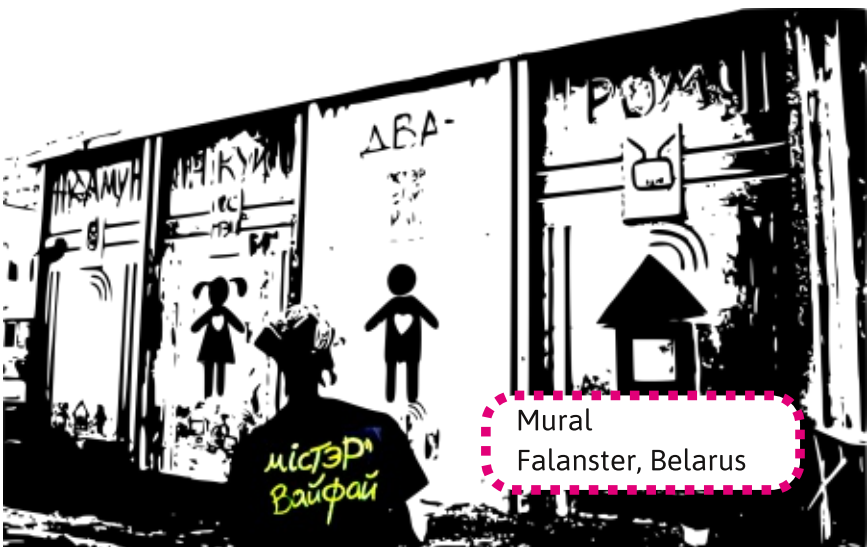
FACILITATION TOWARDS COLLECTIVE OWNERSHIP

DIANA NUCERA, DETROIT COMMUNITY TECHNOLOGY PROJECT

Facilitation plays an important role in both creating and maintaining collective ownership. One of the problems with technology is that it is has been positioned as an individual endeavor. We are interested in engaging with technology as a pathway for communities to become connected and even offer the ability to self govern. Technology and the Internet have the ability to transform our communities, assist in economic development, and help residents understand and utilize the power they already have yet may not be aware of. To unleash this potential in neighborhood networks while strengthening relationships, here are a few large scale facilitation strategies to collectively vision, make critical decisions, and problem solve when things get tough. These facilitation methods are broken up into two sections. The first focuses on Collective Decision Making and the second on Question based Problem Solving.

PART 1: FACILITATION FORMATS FOR COLLECTIVE DECISION MAKING
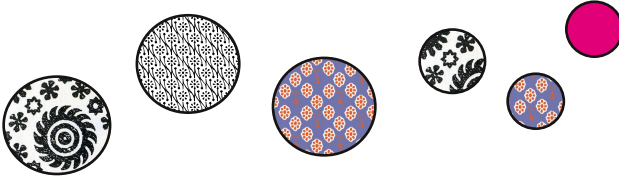
DOTMOCRACY

This is a great way to involve all perspectives in a room when creating ground rules or setting parameters for a new network. Often times the loudest person in the room can overly influence decisions. Dotmocracy is a way of ensuring decisions are made that include the perspectives of all participants   Here is an example:

Time Required: 60 minutes

1. Individual freewrite: Have each person write or outline their answer to a question that is at the heart of what needs to be figured out.
2. Participants pair up and share their free writes. Have each group identify three things they can agree on.
3. Have pairs merge into groups of four. Those groups should then find three things everyone can agree on again. Record those on a large sheet of paper.
4. Place the large sheets of paper from each group in a central location where entire group can see,
5. Pass out 3 stickers or dots to everyone in the room.
6. Have participants place dots on the top 3 statements they believe are most important.
7. Come together to reflect upon what was chosen.
8. Further flesh out the language of those three statements to be clear as possible
9. Discuss what they look like in practice.

OPEN PROPOSAL FORMAT

This tactic allows for ideas and proposals to come from within in a group rather than a central body of leaders. The idea is that everyone has access to the voting process, as well as the ability to submit a proposal to be voted on. For this to be successful, there needs to be a shared understanding of what makes a good proposal, and a long-term commitment to this process. Below are the steps and parameters in facilitating an open proposal format.

1. Individuals or groups create a proposal that presents the:
   - background information for the decision that needs to
     be made.
   - clearly describes the decision the group is voting on.
   - states the timeline, budget and any other details that
      are necessary to make the decision.
   - states the work and roles that will be needed..
2. The group then discusses the proposal, considering all relevant factors how to address or implement the decision.
3. People can ask clarifying questions or raise concerns when the proposal is shared.
4. People can propose amendments to the proposal.
5. The group then votes
    (see **Five Finger Voting** for voting strategies).
6. Repeat if necessary.

5 FINGER CONSENSUS VOTING PRACTICE
FROM INCITE! WOMEN AND TRANS* PEOPLE OF COLOR AGAINST VIOLENCE

FORMULA: In order for a proposal to pass, it must get less than twice the number of fingers than people. Less fingers means more enthusiasm for the proposal. For example, if there are 9 people attending the meeting, a proposal must get less than 18 fingers total in order for it to pass. So, let's say that 5 people give the proposal 3 fingers each and the other 4 people give it 2 fingers

each, giving us a total of 23 fingers. Not enough enthusiastic support for this proposal, so back to the drawing board.

One finger: This proposal is awesome. If I thought of it, I am awesome. If someone else thought of it, I am awed by their awesomeness. This proposal is necessary for the revolution.

Two fingers: I think this proposal sounds good. I have very minor concerns, but overall, I'm pro!

Three fingers: Well, the proposal is okay, but, frankly, I have some significant hesitation. I have shared my concerns with the group, but I don't think my concerns are enough to block or pass. I'll trust the group going forward and will take responsibility for the decision being made. I am not (consciously!) voting a three to passive aggressively let something through that I actually don't think we should do. This is not a four or five disguised as a three!

Four fingers: I pass on this vote. Either there's a conflict of interest, or I have a significant problem with the proposal, but I don't think it's appropriate to block. I have been very clear with the group about why I'm passing on this proposal. As a member of the collective, I understand that I am still responsible for the consequences of this proposal even though I am passing.

Five fingers: I block this proposal, I do not think it should pass. I will talk about my concerns and do my best to offer productive alternatives. I am not blocking b/c I enjoy wielding my vast power in a consensus decision making process for the purpose of making people miserable, but genuinely feel that it is my duty as a collective member to not idly stand by and allow this proposal to be carried out.

Six fingers: I'm not ready to vote because I have more questions!

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Part 2: Question Based Problem Solving

CREATING BIG QUESTIONS FOR INVESTIGATION
Adapted from the Detroit Future Schools guide to transformative education.

When you want to create a participatory framework for people, generating big questions is a good place to start. Big questions offer a structure for focused investigation and understanding the root of a problem. Here are a few steps to help facilitate a group in generating big questions when starting a new project.

STEP 1: Identify something you want your project to change or transform in your community.
For example: if digital literacy is a challenge in your community, you can brainstorm all the ways in which digital literacy is affecting your community, and then pick a topic that resonates with your team.

STEP 2: Identify the skills and practices you want to develop with your community in the process of implementing this project?
Brainstorm what opportunities for growth there are within your project. Can you strengthen existing relationships while building a community network? Are you able to train new people in your project along the way? Are there opportunities to connect people that were not connected before?

STEP 3: Create a question that both investigates the change you want to see and the skills and practices you want to develop.

Major topic + skills or practices you want to develop = big question

Think through how the skills and practices developed will impact the topic you chose in the first step. If your topic is community-

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owned communications infrastructure, and the skills or practices you want to develop are story telling, your question might look like: "How does a community-owned wireless network help people tell their own stories? "

If the topic is Digital Access to improve economy and you want to develop deeper relationships within the community, then your big question might look like: "What can the role of media and technology be in building new economies rooted in relationships?"

STEP 4: Create a series of questions that allow you to investigate the big question.
Take a moment to understand what questions you will need to ask in order to begin to investigate your big question. Consider the question: what can the role of media and technology be in building new economies rooted in relationships? You could further investigate by asking, what do we need to understand about our community to begin this work? You could also ask, how are people currently using media and technology to build relationships?

Generating at least 4 supporting questions will help you understand the scope of work and capacity needed to complete your project.

What can the role of media and technology be in building new economies rooted in relationships?
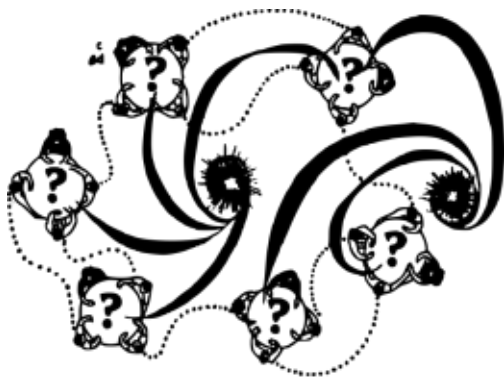
WORLD CAFE
FROM THE WORLD CAFÉ RESOURCE GUIDE
WORLDCAFE.COM

The World Café is a method for creating a living network of collaborative dialogue around questions that matter in real life situations. It is a provocative metaphor--as we create our lives, our organizations, and our communities, we are, in effect, moving among 'table conversations' at the World Café.

Assumptions of World Café:

1. The knowledge and wisdom we need is present and accessible.

2. Collective insight evolves from honouring unique contributions; connecting ideas; listening into the middle; noticing deeper themes and questions.

3. The intelligence emerges as the system connects to itself in diverse and creative ways.

What is World Café Good For?

World Café is a great way of fostering interaction and dialogue with both large and small groups. It is particularly effective in surfacing the collective wisdom of large groups of diverse people. The café format is very flexible and adapts to many different purposes – information sharing, relationship building, deep reflection exploration and action planning.

When planning a café, make sure to leave ample time for both moving through the rounds of questions (likely to take longer than you think!) and some type of whole-group harvest.

General Flow of a World Café:
1. Seat 4-5 people at café-style tables or in conversation clusters.
2. Set up progressive rounds of conversation, usually of 20-30 minutes each – have some good questions! (See the Big Question Generator to create the questions for this)
3. Ask one person to stay at the table and invite the other table members to move to other tables as ambassadors of ideas and insights.
4. Ask the table host to share key insights, questions, and ideas briefly with new table members, then let folks move through the rounds of questions.
5. After you've moved through the rounds, allow some time for a whole-group harvest of the conversations.

Operating principles of World Café:
• Create hospitable space
• Explore questions that matter
• Encourage each person's contribution
• Connect diverse people and ideas
• Listen together for patterns, insights and deeper questions
• Make collective knowledge visible

Materials Needed:
• Small tables, preferably round
• Chairs for participants and presenters
• Tablecloths
• Flip chart paper or paper placemats for covering the tables
• Markers, flip chart or large paper for collecting ideas
• Posters/table tents showing the Café Etiquette
• Materials for harvesting

PROBLEM TREE: IDENTIFY ROOTS AND SYMPTOMS

Problem trees have the ability to identify structural roots and the resultant symptoms of digital justice issues. Problem trees are a common, highly flexible popular education tool--this is a short, simple version that we used with groups already working on community infrastructure projects.
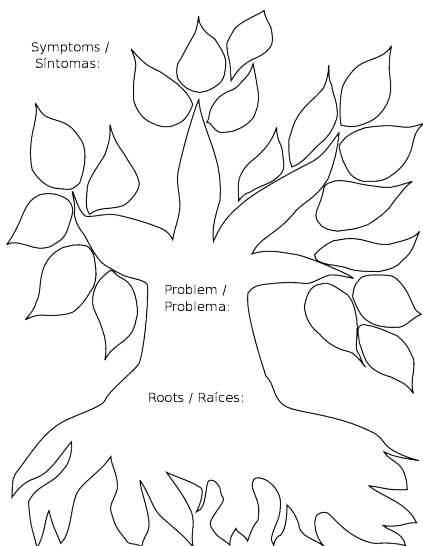
Steps:

1. In groups of 3 to 4, select a core problem your work or project is addressing. Write the problem in the center of tree.

2. Discuss the impacts and consequences of that problem-- these are the symptoms. Write each of the symptoms in a leaf.

3. Next, discuss the conditions, institutions and systems that reinforce this problem. Write these in the roots.

4. Gather together and discuss each of the problem trees. Are there important commonalities or differences?

After the problem tree, you might identify solutions at the individual, community, national and global level using **Solution Grids** described in the next section.

What are the economic, cultural and political systems that produce these issues?

DETROIT SUMMER SOLUTIONS 4SQUARE

This activity is great for understanding the complexity of a problem and generating solutions that can be used on multiple levels, moving from personal space to global impact. Paired with the problem tree, a group can go deep into the root of the problems and develop an array of possible solutions collectively.

Steps:
1. Fold a blank piece of paper into four quadrants.
2. Write the problem in the center.
3. In the top left: what can individuals do to solve this problem?
4. In the top right: what can we do as a community to solve this problem?
5. In the bottom left: what federal-level policies need to change/be created to address this problem?
6. In the bottom right: what could be done at the global level to address this problem?
7. Go back through the grid and write down the connections between the quadrants. How are each of the quadrants connected?

Individual	Community
Federal	**Global**

PEER CONSULTANCY

The Peer Consultancy is a method of coming together to help another group solve challenges in their work. This is a great way to harvest the collective knowledge of group and gather multiple perspectives on an issue.

Preparation: Before the activity, the group with the problem should have time to prepare a description of the problem they want to discuss (in the format provided below).

Steps:
1. The facilitator briefly describes the process below with the group, so that everyone knows what to expect.

2. The group presents their problem, in this format:

   • *Describe the project.*
   • *Summarize the situation that is prompting your question or dilemma.*
   • *Define the issue or question you have for the group.*
   • *What you want to get out of the conversation (i.e. feedback/group as sounding board, collective brainstorm new approaches, hear other's experiences, specific recommendations).*

3. People can ask clarifying questions to make sure they understand the problem.

4. The rest of the group discusses the problem with NO RESPONSE OR COMMENT from the group presenting the problem, unless something needs to be clarified. The facilitator should be strict about this rule.

5. The group presenting the problem joins the conversation.

Mulukuku, Nicaragua

Story Press°°°
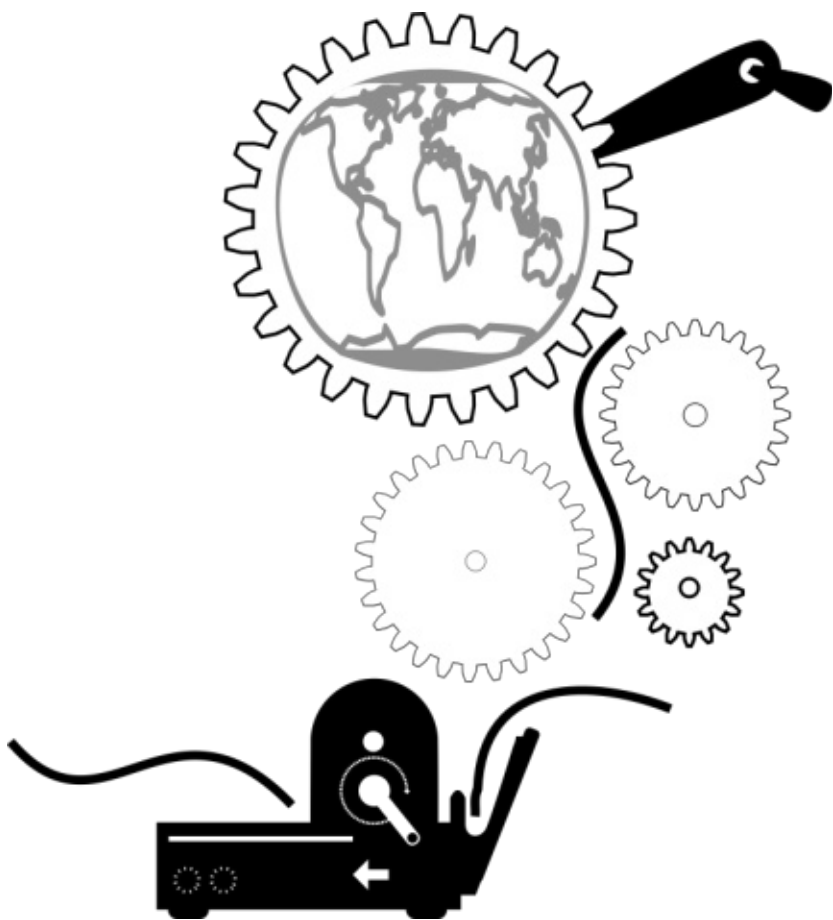
Mulukuku Net

Allan Gomez, Prometheus Radio Project
July, 2015

Station Support Director Allan Gomez visited Nicaragua from June 15th to July 5th to help establish a local mesh network. The project builds upon the ongoing media and technology work of the Cooperative Maria Luisa Ortiz (CMLO) in Mulukuku, a town of six thousand residents in Nicaragua's Region Autonoma del Atlantico Norte.

Since 2004 CMLO has operated Radio Estereo Mulukuku. Now the most popular radio station in the zone, Radio Estereo Mulukuku broadcasts a socially conscious mix of music, local news, and popular education programming about topics ranging from reproductive health and women's legal rights to environmental issues. The local mesh network will facilitate communication and collaboration between CMLO's central location, the radio station and other local allied organizations such as the hospital and school.

Despite recent advances (and a locally established radio station), the rural community of Mulukuku is lacking adequate communication access for many of its inhabitants. The defacto monopoly of cellphone/internet providers makes for a highly cost prohibitive option to access the vast resources of the internet. CMLO recognizes that although the extent to which internet access will be provided is very limited, the localnet can provide a powerful tool and service that offers a great deal of educational and collaborative functions for CMLO allies, clinic/hospital patients, students, teachers and other allies, including local government agencies and agricultural entities.

Allan's recent trip included an introductory workshop to orient Cooperative members to the basic technology involved in

establishing a mesh network and to brainstorm how the network will be put to use to serve CMLO's ongoing work. A subcommittee of cooperative members formed to learn about the technology, participate in the installation and spearhead management of the network. Three nodes and an App server were established during the initial installation, with the expectation to grow the network to ten nodes in the coming weeks.

Members of CMLO's technology subcommittee traveled to to Fumaca, Brazil to learn more about mesh network technology and take part in a more advanced mesh and GSM phone system installation in collaboration with the Brazilian organization in July, 2015. Committee members took back networking lessons learned during their Brazilian experience to build upon the groundwork laid during Allan's recent visit.

In the long term, successful outcomes would include:
  • A high level of engagement at the local high school from the student body and the teachers;
  • health providers and advocates would use the tools in responsible and inclusive ways to the benefit of the the local population (a one-way communication of this type of outcome has already been demonstrated via the radio station);
  • similarly there would be a significant demonstration of collaboration among conflict resolution partners (a key aspect of this desired outcome is better expediency in the process), to help provide efficient and thorough addressing of local conflicts before they become more severe issues.

In addition, the local radio station will have an increase in remote broadcasts and ease of inclusion more of the local population. The agricultural stewardship will be helped by providing shared working platforms to compile valuable assessments and evaluations of the local environmental situation.

CMLO Nicaragua

A - Access Point
C - Client
L - Computer Lab

M - Mesh router
S - Server

FM Radio
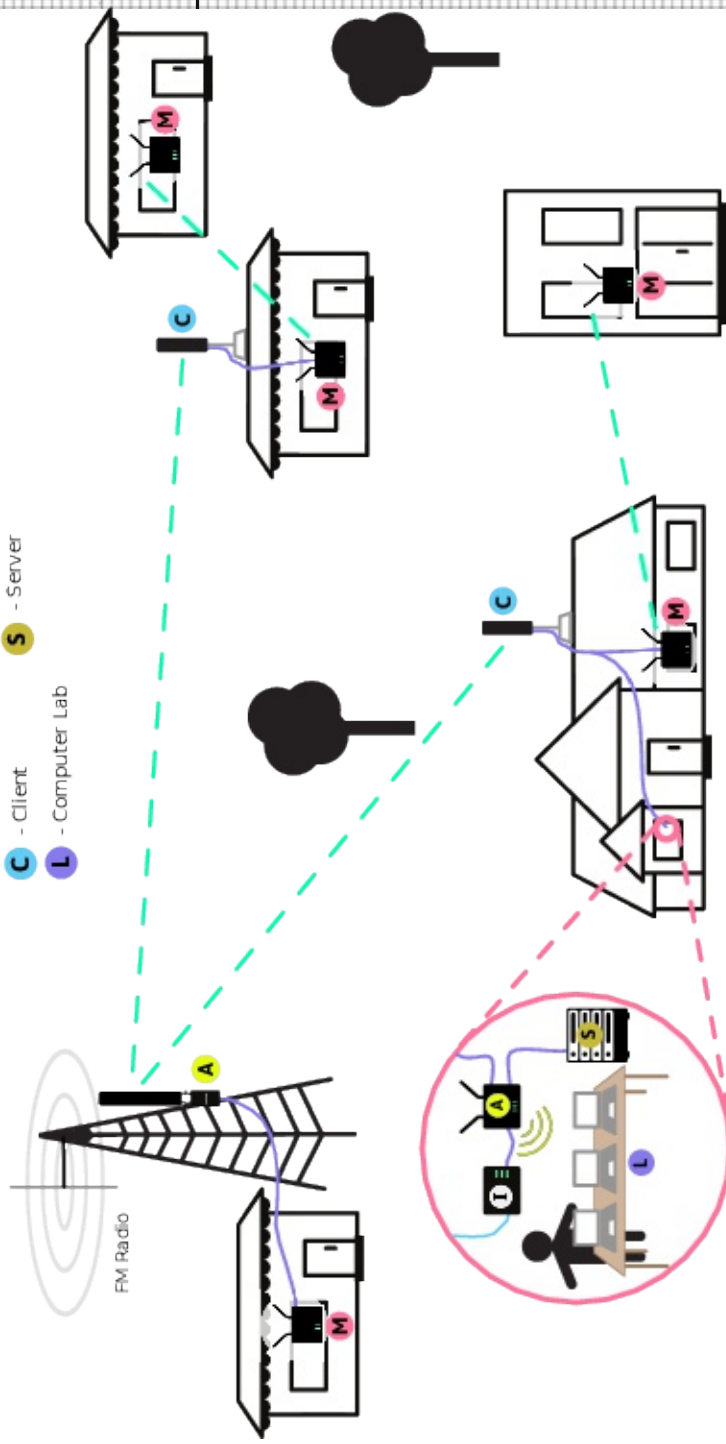
DESIGN: MULUKUKU NET
Mulukuku, Nicaragua

The network operated by Cooperativa Maria Luisa Ortíz (CMLO) in Mulukuku, Nicaragua is a hybrid network, using a combination of direct links and pockets of mesh. The network backbone uses Ubiquiti AirMax equipment (Rocket M5 and NanoStation M5 units) to provide longer distance links from a radio station tower. From this network backbone, meshing routers can connect together nearby sites.

In addition to experimenting with a wireless network to share local server and Internet access, the Cooperative also runs a cybercafé (computer lab), and an FM community radio station, which are also connected to the network.

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FANTSUAM REGIONAL WIRELESS NETWORK

JOHN DADA, FANTSUAM FOUNDATION
OCTOBER 6TH, 2015

The Fantsuam Foundation is working to set up a wireless mesh network that will enable us to provide wireless connectivity to five participating communities.

The hosts of our mesh network are the community-based institutions that can be easily assessed by members of the communities and resident Internally Displaced Persons. This network will have access to a repository of learning materials which can be used for civic education, political accountability, and communal security. We plan for the network hub to have audio-visuals that can be used in communities where literacy levels are low. Each community will also be encourage to document and upload its stories of community resilience in the face of violence, emergencies or any other crisis that may have arisen. This project will bring Nigerian rural communities into mainstream of the digital technologies.

Project activities include:
 • Community mapping: identification of obstacles to line of sight, audit of potential locations for routers, obtain list of resources that can be deployed for the project
 • Dialogue sessions with community leaders and institutions to explain project and ensure full ownership and participation
 • Purchase and installation of mesh network equipment, and
 • Training of youths in network maintenance

We have done mapping of the likely sites and have also concluded the preliminary training for representatives from these communities.

We are now approaching the installation phase. The critical equipment have been ordered and most of them have arrived. Our vendor gets his supplies from the UK and the recent review of financial regulation for Nigerian banks has slowed down imports, somewhat.

On 1st of October, 2015, the Kaduna State Government declared a state of emergency in its educational activities. This official recognition of the dire straits of education in Kaduna State is a major achievement and it is in order to address some of the challenges, that we are working to use wireless network to provide access to relevant educational software for students and teachers in rural and remotely located communities. There is indeed a high the inadequacy of teaching and learning resources for teachers and students.

We have now obtained educational software for students' interactive learning in Ordinary and Advanced Level of Biology, Physics, Chemistry, Mathematics, Economic, Literature in English, Offline Wikipedia, Accounting, Law, Philosophy and Sociology. We are also in discussion with a teacher-training expert on provision on modules on Continuing Professional Development, CPD, for our teachers as well.

We will, for the first time have a locally controlled ICT infrastructure which can be a rallying point for entire communities. Its emphasis on protecting rights of vulnerable people, supporting community ownership of public schools, providing relevant educational resources for students (such as information about educational opportunities, changes in school, past examination papers for revision) as well as making inputs into the local government budgetary process will make governance a more inclusive affair.

Kafanchan Nigeria

A - Access Point

C - Client

S - Server
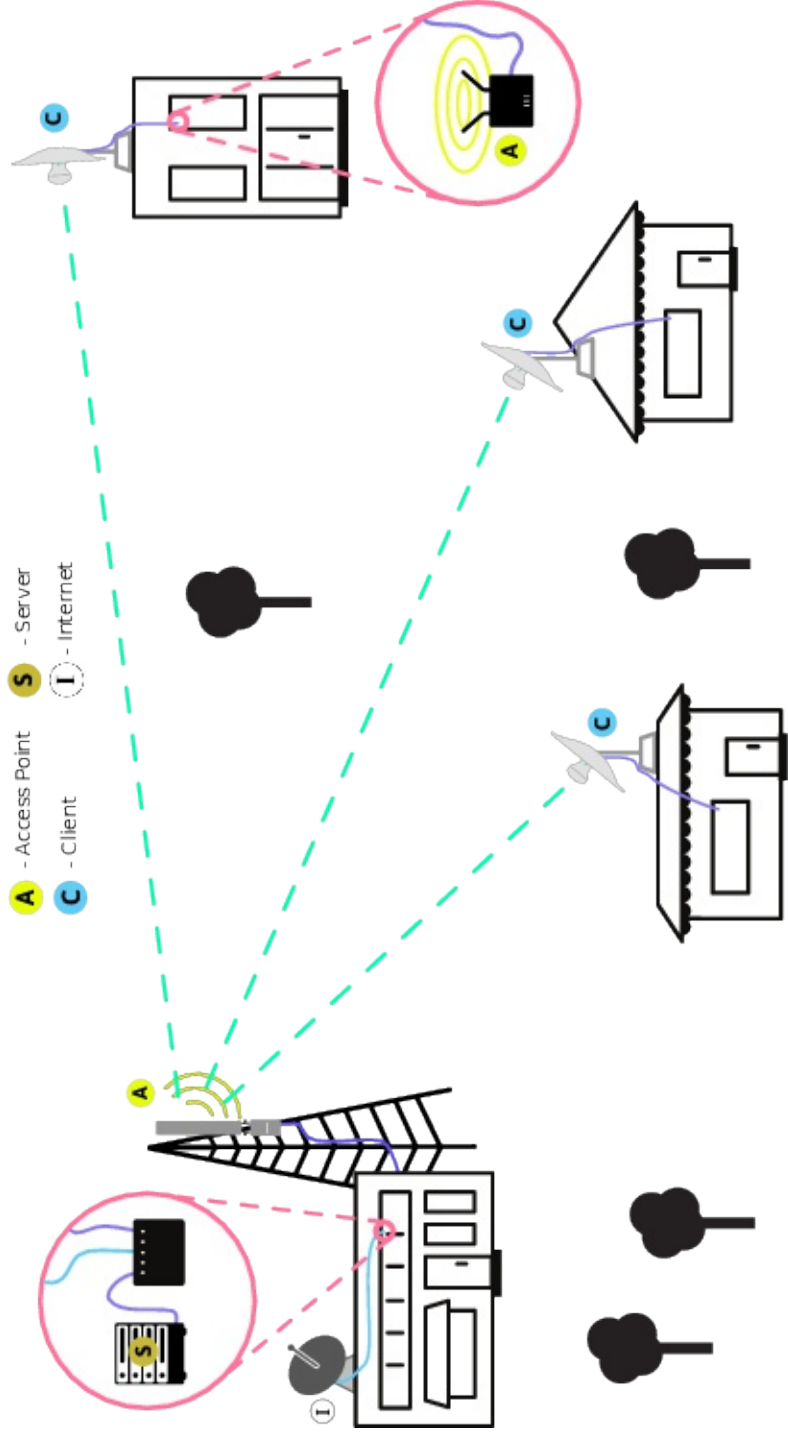
I - Internet

DESIGN: FANTSUAM FOUNDATION
KAFANCHAN, NIGERIA

The Fantsuam network in Kafanchan, Nigeria is a traditional Point-to-Multipoint network. At Fantsuam, they have a VSAT downlink where they receive an Internet connection. There are higher-powered Access Points (such as Ubiquiti Rocket M5 units with sector antennas) mounted on a tall tower that connect to other routers further away. The network equipment at Fantsuam is stable because it is entirely powered by solar panels, and does not rely on the problematic power grid.

At the remote sites, directional routers (such as Ubiquiti NanoBeam M5 units) point back at the tower up to 10 kilometers away. Those longer distance routers are then connected to smaller access points for people to use. People at each of these remote sites can access both the Internet or the local server at Fantsuam's office.

MESH AS A COMMUNITY FESTIVAL METATOOL

MIKHAIL VOLCHEK, FALANSTER

A year ago it was hard to imagine that I would communicate with different communities and perfom four field experiments with mesh networks in Belarus. Here I will summarize my experience over this year and focus just on moments which were the most important for understanding the technologal impact on different communities' behaviour during their annual festivals.

FIRST CASE: THE YOUTH FESTIVAL - INFORMAL EDUCATIONAL COMMUNITY

Our main idea was to build a network in a big hangar in Kastrychnitskaya Street (TSECH creativity space) during a one day youth gathering. The organizers expected about 200 participants. There would be six spaces used by presenters simultaneously.

Each space was handled by one volunteer. The event took place on two separate floors.

Achievements:
1. We launched a mesh network for the first time with several applications and Internet access.
2. We realized that we needed more detailed collaboration with organizational team. It wasn't just about a mesh network installation.
3. The knowledge about "mesh" was seeded among different communities which participated in the event.

Challenges:
1. The "mesh" strategy should integrate as early as possible into festival team activity. This helps the organizers understand the characteristics of a mesh network and how they can make talk to the participants and audience about it.
2. The core mesh team needs to have a conversation about network architecture and the building process beforehand. Don't wait to install everything on the eve of the event!
3. It is not enough to have one meeting with the festival team volunteers. They are usually not very technical people. It helps to prepare developed guides and demonstrate how it works before the festival, not just during.

SECOND CASE: MESH IN THE FOREST - TECH GEEK COMMUNITY

This event was held in the forest near Grodno (in the western region of Belarus). We deployed three mesh network nodes for two "Linux Retreat of Eastern Europe" conferences (each with around 120 attendees). One month beforehand, we had organized a collaborative session where we engaged these open source activists in a co-modeling plan for the network.

Achievements:
1. We worked in outdoor forest conditions for the first time, and set up a network which included two microservers with local applications (MediaGrid and Etherpad). We also used a splash page to orient newcomers.
2. The community tried to use some of the services for their specific needs. For instance, presenters used the network during a demonstration of a 3D-printer, and uploaded their presentation.
3. We collected many ideas on how to use these networks for geek community events, during ourdoor events, as well as how to run a co-modeling meeting.

Challenges:
1. The tech people weren't surprised by some new technologies. They are looking for something more social inside technology. What would be a social challenge for them to work on?
2. New team volunteers can understand the physical and basic link functions of network installations, but not the routing or higher level challenges. In other words, even a very skilled person who tries to troubleshoot a configuration can sometimes make things worse, if they are new to the technology or lack of orientation during the planning meetings.

THIRD CASE: MESH ON THE RIVER COAST - BUSINESS COMMUNITY

This was an open-air three day festival for young entrepreneurs with around 200 participants. It was held by Lipen.pro. This time we decided to build our network on several grassy clearings in the middle of dense forest with some low, steep hills. We deployed the network with web services, and made posters near where most people congregated for information.

Achievements:
1. We were able to cover about 70% of the festival area, even in a

" The experiment showed a strong point for collaborative planning and defining community needs.

dense forest setting. Power was provided by electrical generators.
2. We had a number of face to face conversations and seeded the "mesh" idea in leaflets and stickers amongst the young business people.
3. We came to the understanding that a network with web services may not be attractive because of lack of a tangible interface. We need to add more social activities and complimentary services, such as a mobile charging stations for smartphones, or sensible festival information on the network. The posters were not enough to increase attendees' interest in using the mesh.

Challenges:
1. Non-technical people prefered to choose sporadic walking and talking to the nearest circle of people, rather than trying virtual collaboration with the whole festival community.
2. We learned not to rely on the organizers understanding of mesh networks. We need to engage them in co-creation and planning of network features as a substantial part of their festival planning. For example, there could be a schedule, festival announcements, and a local website with more information about the festival on the network. These measures can help to overcome disinterest for volunteers on the first step.

3. It is necessary to prepare as many electrical sources as possible and (networks require power!). Diversify the sources of power: during the summer a solar panel would work perfectly.

FOURTH: WE RETURN TO THE HANGAR - QUEER COMMUNITY

Metafest had around 250 participants. The main task was to provide Internet access for the audience and organizing team. We set up a two-router network in the hangar, and set up there the same web services as before. The festival occured at nighttime and all the windows were closed.

Achievements:
1. We attracted volunteers to help with the mesh network installation, as well as with outreach.
2. The event organizer invited us and requested that we build the network.
3. We used two connections to the Internet in the mesh. Using two would ensure the Internet stayed active, in the case one of them failed.

" In interaction, it can be understood that the core of a community can feel the need, but doesn't understand shifting to a new technologies may require new behavioral patterns.
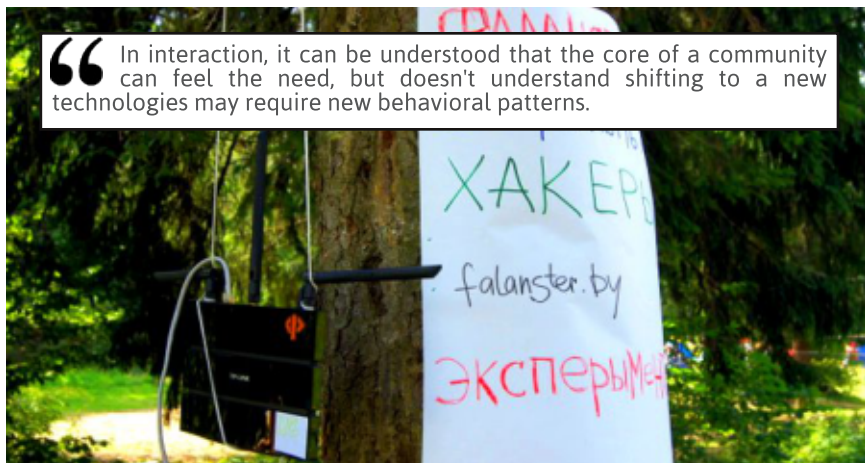
Here many of our challenges were similar with the previous events. Below I summarize possible solutions for them.

First, It is very important to begin communication about the network with the organizing team as early as possible. Try to meet with them three times or more, and two times or more with the festival volunteers.

Second, outreach about the network needs to use multiple mediums: off-line posters, an online splash page, live communication with participants at the beginning of the event when they arrive and register. Make big, interesting posters and ads. Use a loudspeaker to get people's attention!

Third, the network should be modeled with the organizing team, and needs should be discussed with that team and the volunteers. The festival organisers are usually at the core of a community, which helps understand the target audience needs.

Last but not least, the network should be built and tested in a laboratory setting many times. A golden rule!

ON THE EDGE

What were the political conditions for these activity? In our country people usually ask: Is mesh legal? The answer usually is: **we are on the margin.** It can be difficult to overcome legislative barriers for any outside activities in general. Today we have strict spectrum management law and regulation of civil agencies. There needs to be some regulation, but in the telecom market, only the big corporations (Velcom, MTS, Beltelekon) have access. Small, local communities have little access or chance to get the licence and deploy outdoor networks without big bureaucratic procedures - even if they just want to link just two houses in a rural area. What does that mean? It means that now we've just begun to shape our new community rights - community digital rights.

The Belarusian mesh battle will be continued...

BeMesh Festival Networks

M - Mesh router
A - Access Point
I - Internet
S - Server
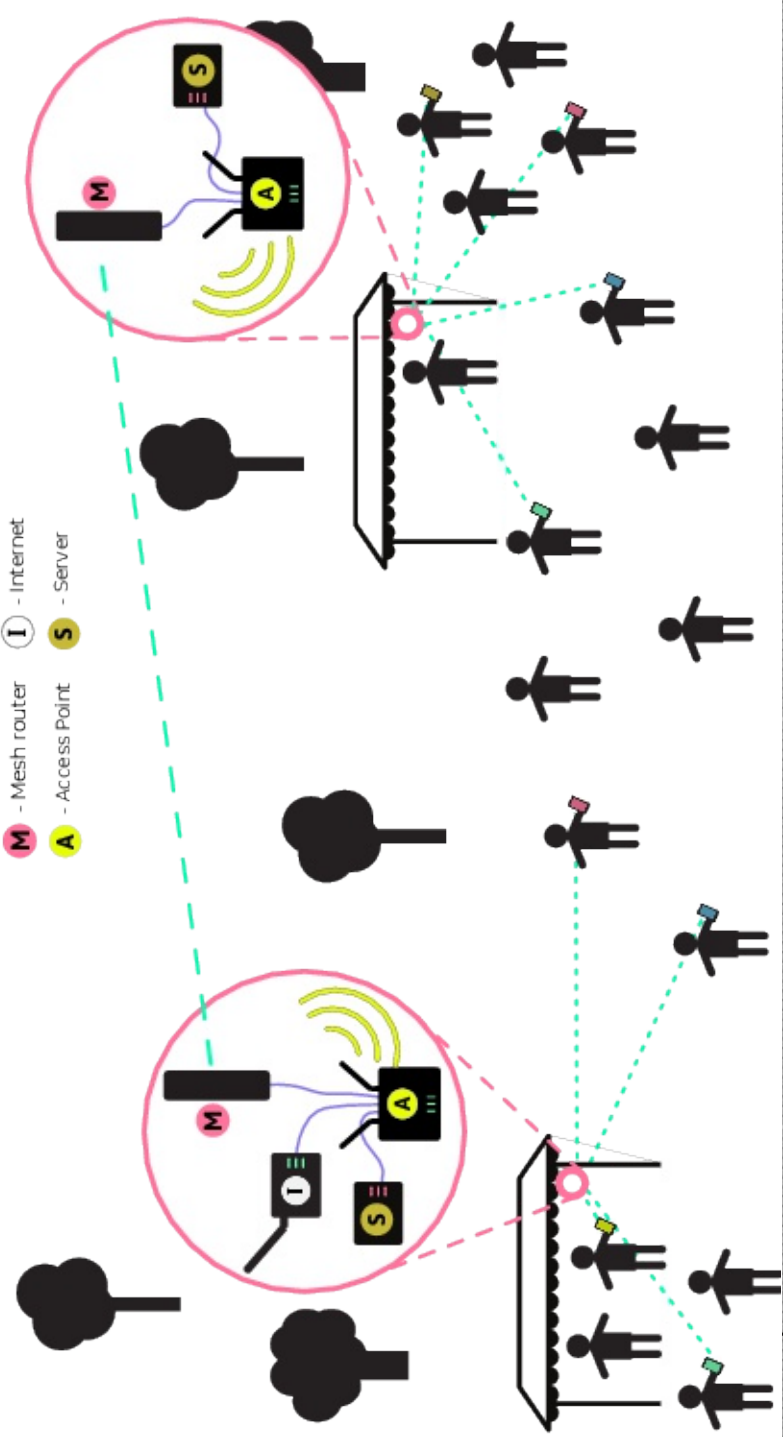
DESIGN: BEMESH
FALANSTER, MINK, BELARUS

Falanster's BeMesh club builds networks at festivals to provide Internet access and services on Raspberry Pi microservers. These networks consist of a few longer distance routers (such as NanoStation M2 units), running Commotion, to connect areas of the festival. These links are often obstructed with trees or many people, so the directional antennas help to make the links stronger.

Festival participants connect to the network through Access Point routers, and can use the Internet or low-power servers hosting collaborative software such as Etherpad and Wiki platforms. BeMesh club members host a tent or table at the festival to discuss the networks: how they work; and why they are important.

YOUTH MESH MEDIA IS TRAINING YOUNG MEDIA-MAKERS AND STORYTELLERS. AND, CONNECTING MAUBISSE WITH A WIRELESS NETWORK!

NGUYỄN
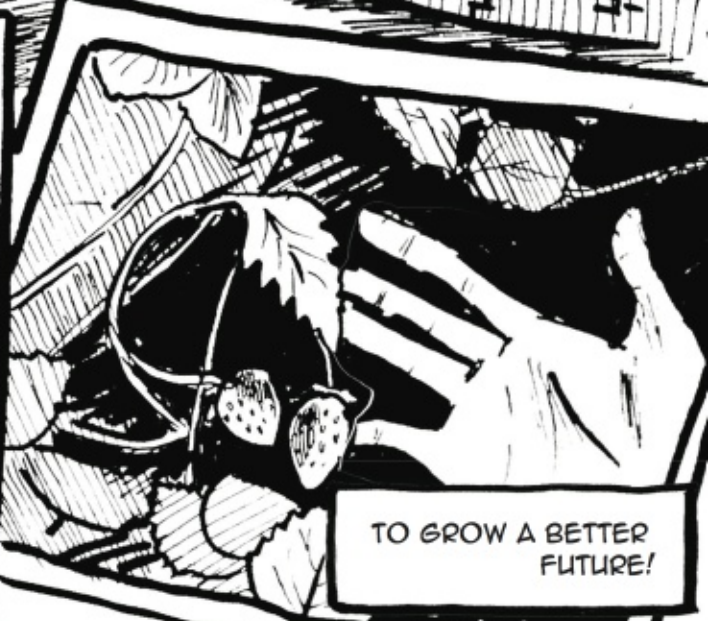
TO GROW A BETTER FUTURE!

Youth Mesh Media - Timor Leste

Bella Galhos and Iram Saeed, Santana Unipessoal

The Youth Mesh Media is a project to share stories and information about the Maubisse area, local culture, and environmentally sustainable living. Once fully functional it will be available for all in Maubisse, including for tourists who can use the information to guide their visit to the area.

Timor-Leste is a young country where more than 60 percent population is under the age of 20. The country's economy mostly depends on its oil reserves and at present there is not much manufacturing carried out. For these reasons, in Timor Leste there are not many opportunities for employment. Due to the absence of livelihood options and lack of entertainment, the youth from rural areas are attracted to the capital city, Dili and end up taking up low paying jobs, living poor quality lives, and engaging in risky behaviors. Through the Mesh project, via the green school participation, we aim to involve youth not only in creative work but also to support them in sharing the stories of their lives and the history of the land. This will help youth to express and communicate but also strengthen their bond with the land, and reduce migration to Dili.

The network will be an intranet to collect photographs, videos, music, stories, artwork, maps and other content from community members and from the children who participate in Green School activities. As part of the project, community members and participating children will learn the art of media making and improve their computer skills.

Leublora Green School teachers and students will also benefit from the project during their courses. An offline Wikipedia site will host educational materials that they can use for an interactive classroom experience. Young people who will be attending Green

school camps and activities will be connected to the Mesh project as well. Besides this project will be encouraging other young people who are out of school to act as volunteers and support Green school activities.

All these young people who will be part of Green camp activities will have access to the Wi-Fi network. Some of them, depending on their interest, will record stories about their lives and about the history of the land. The youth will also learn digital storytelling skills to share their stories. They will also learn how to interview members of their community in order to preserve traditional knowledge. Media pieces they produce will include photographs, audio, video peces and visual art. They can also map historical points of interest. Participating youth who learn digital storytelling skills will share their stories with each other and over the network.

Youth will also learn how to interview members of their community in order to preserve traditional knowledge. Media pieces they produce will include photographs, audio, video pieces and visual art. They can also map historical points of interest in their area that can be uploaded on the site. Through this process, students will also learn to be literate in computer and digital media, as most of them will not have used a computer before or made media using electronic tools.

The shared intranet connection will also connect the eco-school, local women's cooperative, an eco-hotel, and those who visit the area including customers and suppliers from outside the area. Maubisse is an area opening itself to tourism and this will help small businesses connect to more opportunities. The intranet will be a way to share local stories and histories with visitors who enter the Mesh zone. In a later phase of the project, the other arms of eco-tourism including women's cooperative members and nearby school teachers will also participate by accessing educational materials on the intranet.

East Timor - Youth Media Mesh

A - Access Point
S - Server
C - Client
I - Internet
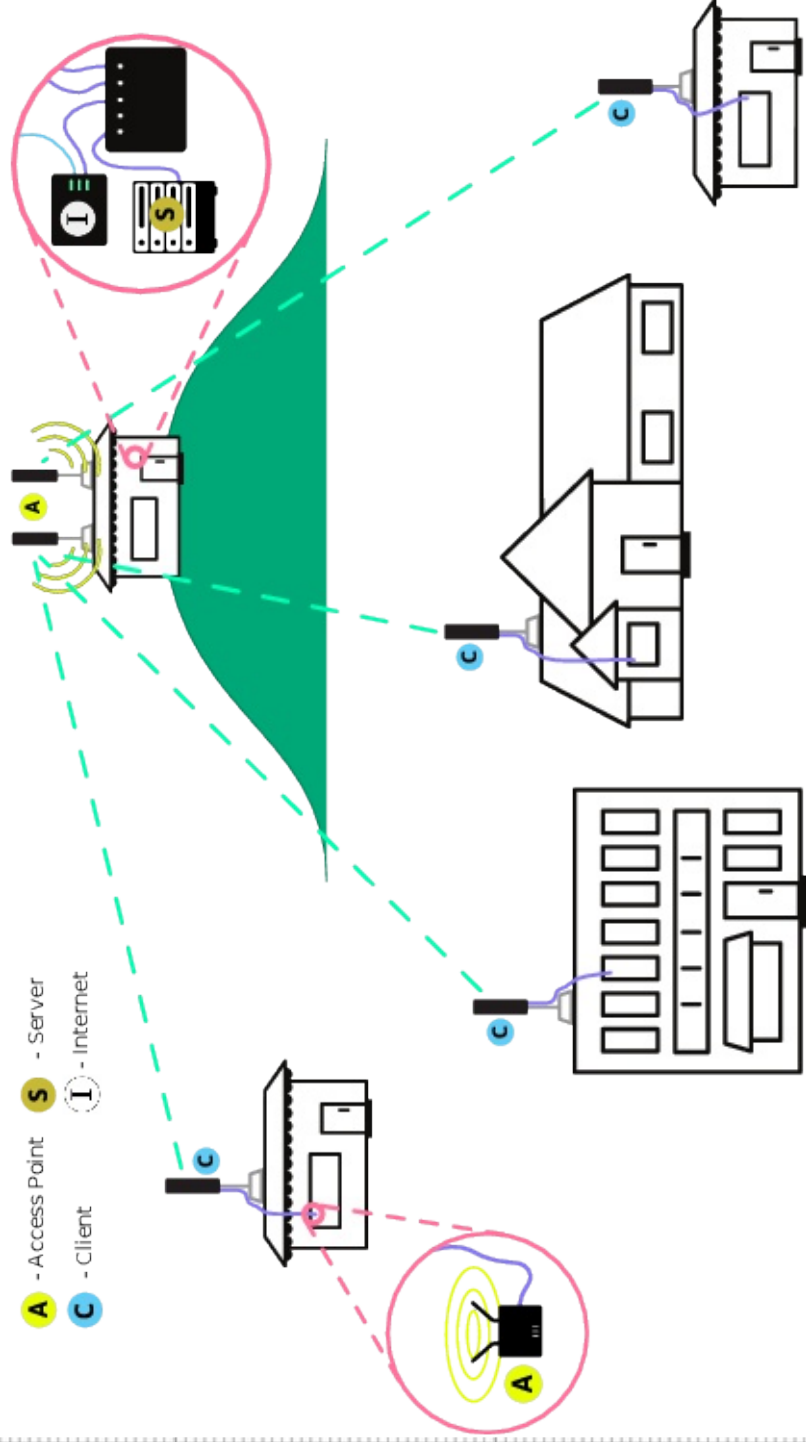
Design: Youth Mesh Media
Santana Unipessoal, East Timor

The Youth Media Mesh connects multiple sites in the town of Maubisse, Timor Leste. Rather than using a mesh structure, it uses what is known as "Point to Multi-Point", or PtMP. With two routers with directional antennas on top of a hill, other directional routers can point back as Clients and connect together.

This network is used to share media created by the youth at the Leublora Green School. It also shares an Internet connection from the guest house on top of the hill with other organizations in town. The equipment used could be either Ubiquiti NanoStation M5 or TP-Link CPE510 directional routers.

PiFiTV – Combining New Media Models

COWMesh
Arjun Venkatraman, Mojolab

Wi-Fi, (802.11) is a deregulated medium in most countries. Most Internet users are familiar with Wi-Fi networks and most mobile devices today come equipped with an inbuilt Wi-Fi adapter. Typically Wi-Fi is set up in a hub and spoke configuration, where one Wi-Fi hub provides connectivity to many clients. The hub acts as a gateway to process all traffic on the network and in order to communicate with peers on the network a user must go through the gateway. This is analogous to the service provider model of communications and Wi-Fi has a strong use case as a means to share a single internet connection between multiple users.

While Wi-Fi has predominantly been used as a means of last mile connectivity to service providers, most Wi-Fi enabled devices can also be used in peer to peer mode, i.e. to communicate directly with other devices, without the intervention of a service provider or gateway. This ability can be used to build a peer to peer based network topology called a mesh. A mesh network is different from a hub-and-spoke network in that there can be many paths between two points on the network. As a result, members of a mesh network share a peer or peer-like relationship.

The Internet itself is a mesh of meshes as it does not depend on any single service provider and service providers become peers from the point of view of the internet. Reducing costs of Wi-Fi equipment and new developments in networking software have made it possible to build low cost, community owned and operated mesh networks and lately this form of network is becoming a popular alternative to the cloud, particularly for low income and rural communities. Multiple meshes can be connected to each other and to the internet in innovative ways such as

 physical transfer of bulk data (Data Muling) and by pooling low bandwidth connections available on the mesh.

RASPBERRYPI

The RaspberryPi is a $35 (USD) single board computer. The Pi comes with 512 MB of RAM and a 1GHz processor, making it comparable in performance to a netbook or a cheap desktop computer.

The Pi is more than adequate for:
• Basic web browsing
• Multimedia Access
• Basic Knowledge processing tasks

The Pi can use an HDMI or S-Video interface for a display,

meaning that it can even be connected to old CRT based TV sets, which are quite popular in rural and urban low income households. With a USB Wi-Fi adapter and a keyboard, the Pi can convert any TV into a PiFiTV.

FEATURES

The PiFiTV model holds the possibility of putting even rural and low income user groups at par with users of high end interactive television. PiFiTV can use even basic CRT based television sets over the S-Video interface besides supporting newer high definition TVs via HDMI. Moreover, the RaspberryPi is a low power device (5V, 1A) and can even be powered with a cheap solar panel, adding almost no extra cost to the household's power budget. The addition of a simple wireless mouse makes the Pi a two way interaction device, where users can not only select the program they want to watch but also interact with it if the content is so designed. With a battery operated speaker, it can be used as a Wi-Fi radio during power cuts.

We are currently exploring the feasibility of using low power display devices such as pico projectors as well. From a provider standpoint, the PiFiTV model is similar to the local cable operator model recently phased out by digital cable, combined with the possibility of multiple content providers on the same network. This means significantly lower content hosting and dissemination costs for providers since the underlying network is relatively small scale, community owned and entails a lower over-all cost of operation. In fact any provider can join the network as a peer and host content by simply operating or sponsoring the operation of some member devices.

COLLABORATION

We are very keen to partner with content providers such as independent artists, writers, bloggers, performers and other

interested parties who are keen to acquire a user segment in areas beyond the pale of connectivity Partners are welcome to engage with us by:

• Wholly or partly supporting community Wi-Fi network build outs in low/no connectivity areas
• Providing content for delivery on Wi-Fi networks that we are already setting up through one of our existing partners.
• Visiting the deployment zone and conducting agenda/content specific workshops that have a clear follow on the network
• We are also open to other interesting ideas for collaboration

PROOF OF CONCEPT

We are working on a project in collaboration with Janastu हैकर gram to build and test a Community Owned Wi-Fi mesh network connecting 5 villages in the Devarayanadurga area in Karnataka. The project is called COWDev and is supported by the Open Technology Institute. The region is interesting as it has a large underserved population in terms of connectivity, owing to its position inside a forest reserve where getting permissions to set up cell phone towers is hard. We are keen to focus on women and young people as primary users and operators of this network PiFiTV is one of the key services we will be piloting on this network.

The initial PiFiTV demo system is set up at the residence of Renu and Mukunda Rao ji of Janastu, who have been living among the community in Hale Kote (one of the villages in the region) for a number of years. Janastu is the host organization and community connect partner for हैकर gram in Hale Kote.

CowMesh - PiTV

P - Raspberry Pi computer

M - Mesh router
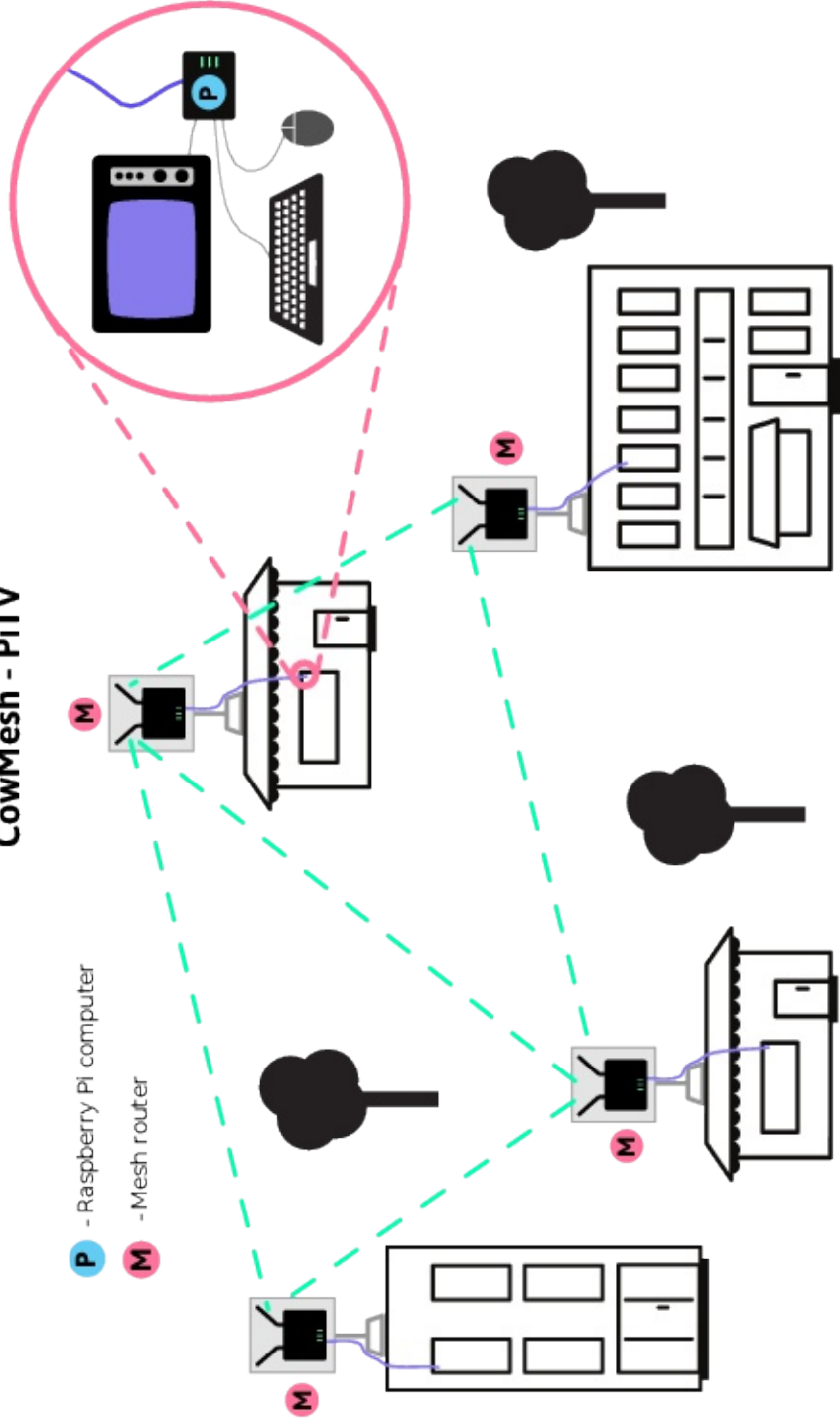
DESIGN: COWMESH
JANASTU, MOJOLAB FOUNDATION, HACKERGRAM
HALE KOTE, INDIA

The CowMesh network uses indoor wireless routers (such as TP-Link WDR3600 routers) inside of weatherproof enclosures. These are often at the top of metal or bamboo poles, supported with wires. The power supply wiring is extended and run along with the Ethernet cable up the pole. The routers original operating systems was replaced with open source firmware to allow the routers to route information across the village.

Each home also has a Raspberry Pi minicomputer connected to a TV with an HDMI input. By connecting a keyboard and mouse, each house can have a computer connected to the mesh for less than $60 USD. These are dubbed PiFiTV computers, and also share media, documents, and websites with the other PiFiTV units on the network.

HANDMADE WOODEN TOWER FOR MOUNTING ROUTERS

Radio tower built by ASORCOM

ALTERNATIVE SOLUTION FOR RURAL COMMUNITIES (ASORCOM)

THUKLAI, CHIN STATE, BURMA

VISION
Change the community to be a better healthy sustainable society.

MISSION
1. Solve communication barer among villages in Chin state and international communities.
2. Establish inclusive informal education including knowledge, skills and information sharing.

**GOAL**
We want to install 60 new devices (Ubiquiti 2.4/5 GHZ Standard Wifi Antennas) connecting 20 villages to MAINTAIN and EXTENT our existing pilot project. Because we:
1. want stable services under very hot, rainy, humidly of various weather conditions and fluctuated electricity.
2. want to expand our services (intranet) to local virtual learning system and local communication system (VOIP).

ASORCOM Rural Networks

A - Access Point

C - Client
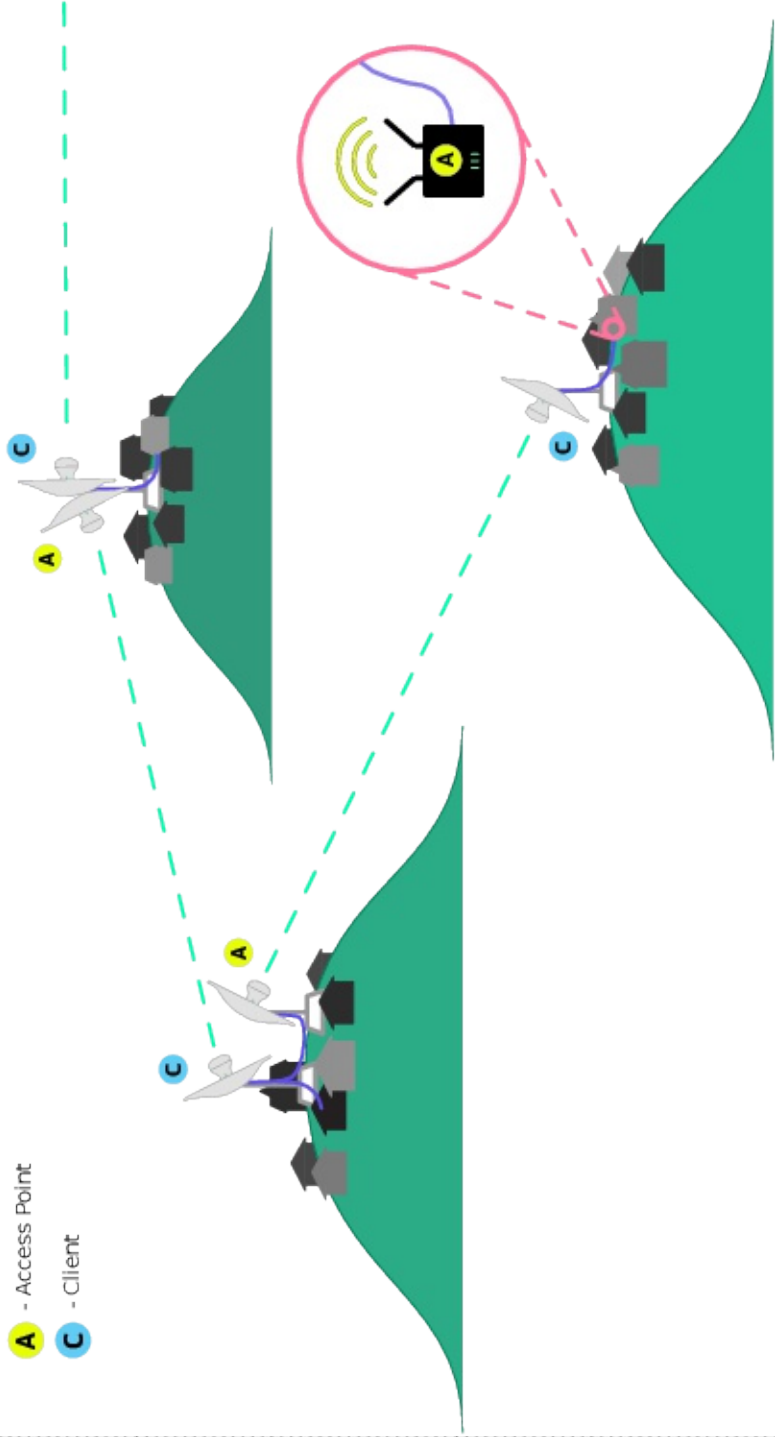
DESIGN: ALTERNATIVE SOLUTIONS FOR RURAL COMMUNITIES
MYANMAR

The Alternative Solutions For Rural Communities (ASORCOM) project in Chin state is a series of long distance point-to-point (PtP) connecting ridge-top villages. These towns are not served by Internet service or mobile providers.

To reach these locations, a series of highly directional Wi-Fi routers (such as Ubiquiti NanoBridge devices) connect across valleys, forming a virtual "cable" between villages. These links then connect to local Access Points for people to connect to the Internet.

In this manner, people are connected to distance learning services, Voice over IP phone connections, and more.

Carlos Rey-Moreno, who helped start Zenzeleni Networks Mankosi, introduces wireless concepts in Eenhana.

CONNECTING EENHANA

SCHOOL OF COMPUTING UNIVERSITY OF NAMIBIA (UNAM) &
GLOWDOM EDUCATIONAL FOUNDATION (GEF)
EENHANA, NAMIBIA

Staff and students at UNAM are in partnership with GEF, an NGO that works to support learning amongst community members of the small town of Eenhana and surrounding villages. The project aims to support generating and sharing local content and to increase access of schools to educational content, including for learners and students at a Special school for Deaf learners. It also enables UNAM's students to apply their technical knowledge in the real world in supporting local technological empowerment. The evolving network includes an intranet of digital content, analog telephony, a digital noticeboard and solar-powered nodes.

GEF's mission is "To fight illiteracy and discrimination, enhance life long learning and education for all, off education scholarship, tutoring and resources to at-risk children, youth and young adults in Namibia." Current operations focus on Ohangwena region in Namibia and have provided specialized teaching for Deaf people.

Connecting Eenhana will serve a range of needs surrounding Eenhana, including enabling:

1. Residents of villages and schools to access text-based information that is currently completely inaccessible due to cost and transport difficulties. Repositiories will be hosted on the server at Glowdom Educational Centre (GDC) and contain information on regional governance, health and education (e.g. local council minutes, general council information, calls for grant applications; HIV prevention information, maternity care, teenage pregnancy; past examinations, scholarships and bursaries. government and healthcare). GEF regularly collates council documents for the foundations own purposes,is asked by NGOs and healthcare etc., to help in disemination and has a partnership with Namibia's Ministry of Education.

2. Residents of Eenhana and villages to use text-based chat and VoIP communication between villages and with GDC to significantly improve communications due to cost and transport difficulties that make frequent communication impossible for community members.

3. Members of the Deaf community, including members residing at school in Eenhana and their home villages, to communicate in sign-language using asynchronous and synchronous communication applications.

4. School students and members of the Deaf community to share local content. This will include, for instance, small digital story activities that enable people with varying literacies and sensory abilities to author and share information. For instance, members of the Deaf communities, that GEF has worked with, can share their challenges and stories using text-photo based stories; while people with low literacy can share stories using small voice segments and photos.

Connecting Eenhana

M - Mesh router

A - Access Point

S - Server
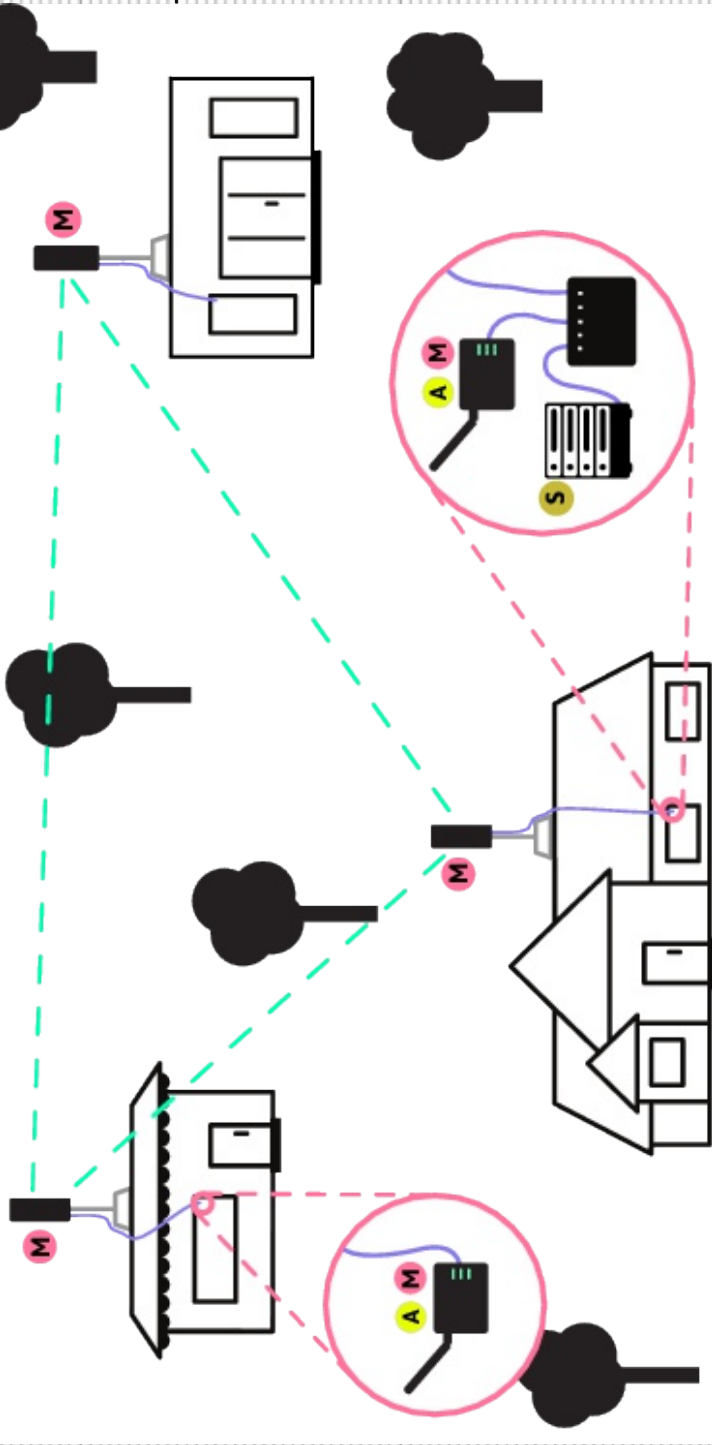
DESIGN: CONNECTING EENHANA
UNIVERSITY OF NAMIBIA & GLOWDOM EDU FOUNDATION
EENHANA, NAMIBIA

The Connecting Eenhana network in Namibia combines indoor and rooftop routers to form a mesh network. The purpose of the network is to connect schools, a community center, and municipal buildings together and provide phone service using VoIP, as well as access to applications on a local server.

The equipment used consists of Ubiquiti NanoStation Loco routers for outdoor use, and Village Telco Mesh Potato "MP2" routers for indoor use. The MP2 devices have the unique feature of supporting voice service using "softphones" that run on Android and other smartphones, as well as traditional handset phones. These phones can plug directly into the routers and be assigned phone numbers on the mesh network. Both types of routers run the Village Telco SECN firmware. This firmware creates a single mesh "cloud" between all of the devices.
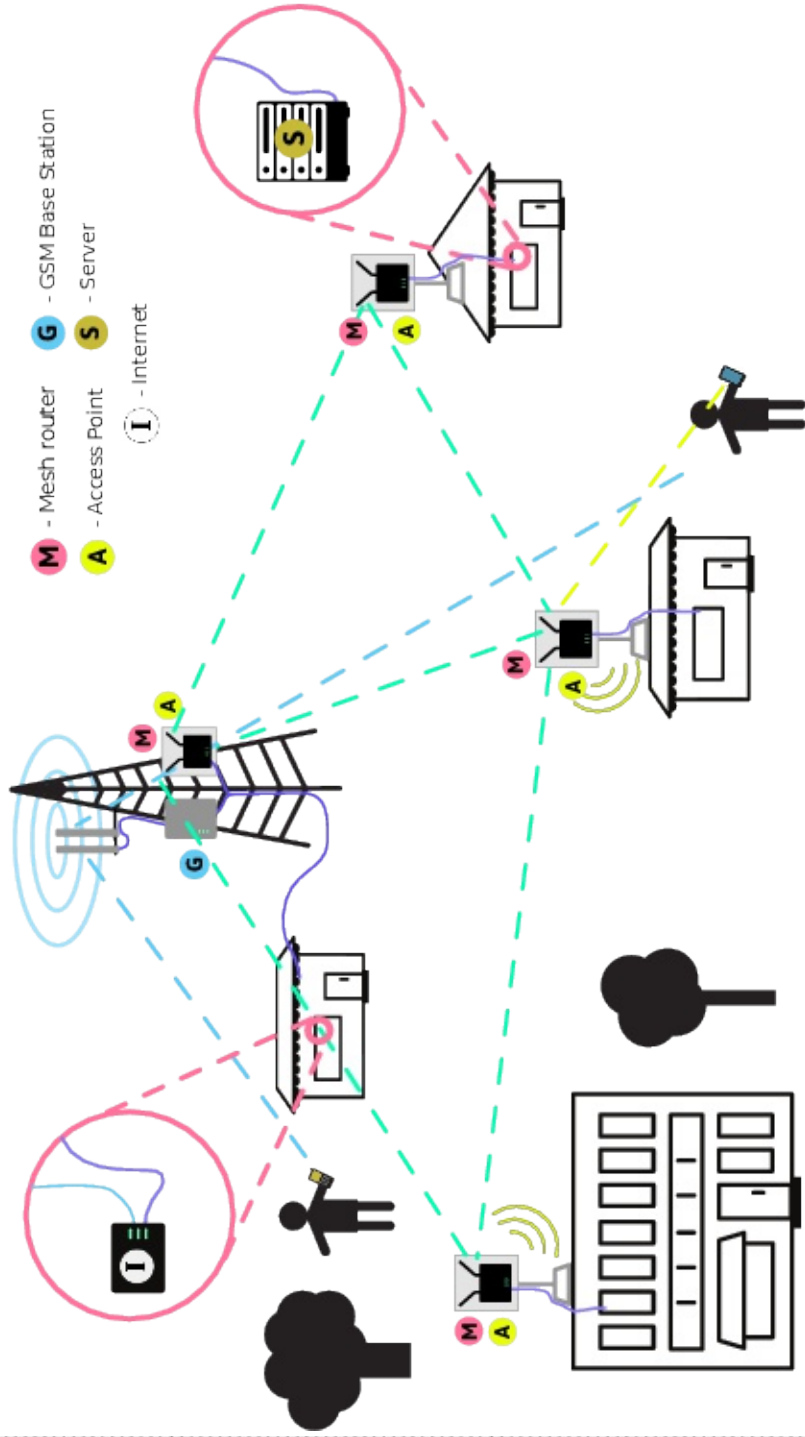
Fumaça Data Springs, Brazil.

FUMAÇA DATA SPRINGS

BRUNO VIANA, NUVEM

Even though the village of Fumaça is locate near the most developed areas in Brazil, it lacks communications with the outside world. None of the houses has a land line, and no cell phone carrier showed interest in install a tower for the town, no matter how many petitions the neighbors signed. The only connection are a few payphones, which most of the time do not work, and a public wifi network, installed by the state government. Therefore, this project is meant to address the lack of communications of the village by expanding the coverage of the wifi network to other areas, and by setting up an autonomous cell phone network that will take advantage of the wifi Internet for voip calls.

However, the greatest goal of the project is not the creation of a telecommunications infrastructure, but to foster autonomous practices among the neighbors. Life in the country, especially in an isolated community such as Fumaça, already proportionates some level of independence for fixing equipment, health issues, food production. By expanding these practices to the field of communications, we hope to create a stronger community.

Fumaça Data Springs

Legend:
- **M** - Mesh router
- **A** - Access Point
- **G** - GSM Base Station
- **S** - Server
- **I** - Internet

DESIGN: FUMAÇA DATA SPRINGS
NUVEM, FUMAÇA, BRAZIL

The Fumaça Data Springs network has both a Wi-Fi mesh network and a GSM mobile phone network. The mesh network uses the LibreMesh platform on indoor wireless routers (such as TP-Link WDR3600 units) inside weatherproof enclosures, and longer distance links using their homemade antennas or Ubiquiti NanoBridges. These are then mounted to poles and rooftops, and use Power over Ethernet to provide electricity to the units. The network distributes Internet access and local applications.

The GSM network uses antennas mounted on a tower in the center of town, connected to a base station from Nuran Wireless running Osmocom open source mobile phone controller software. This then connects over the mesh network to a server that allows an administrator to add mobile phones to the network so people can use it to call each other in town, or call long distance over the Internet using VoIP - Voice over Internet Protocol. Nuvem has applied for a GSM license from the Brazilian authorities.
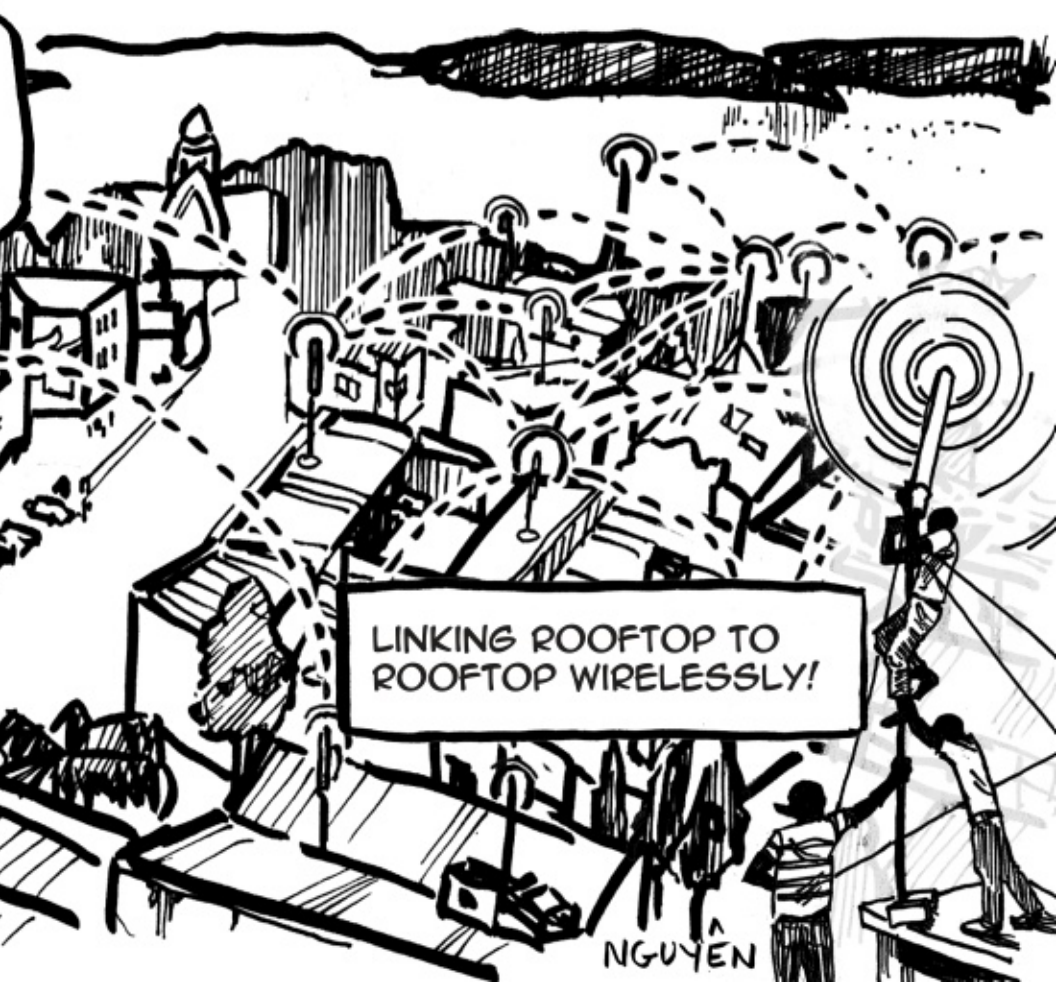
RADIO MAENDELEO

WAS FOUNDED IN BUKAVU, DEMOCRATIC REPUBLIC OF CONGO IN 1993. MESH BUKAVU STARTED IN 2015 AND IS ORGANIZED BY A COUNCIL OF ORGANIZATIONS (POINTÉ FOCALE) AND A GROUP OF VOLUNTEERS (DÉLÉGUÉ DIGITAL) THAT BUILDS AND MAINTAINS THE NETWORK.

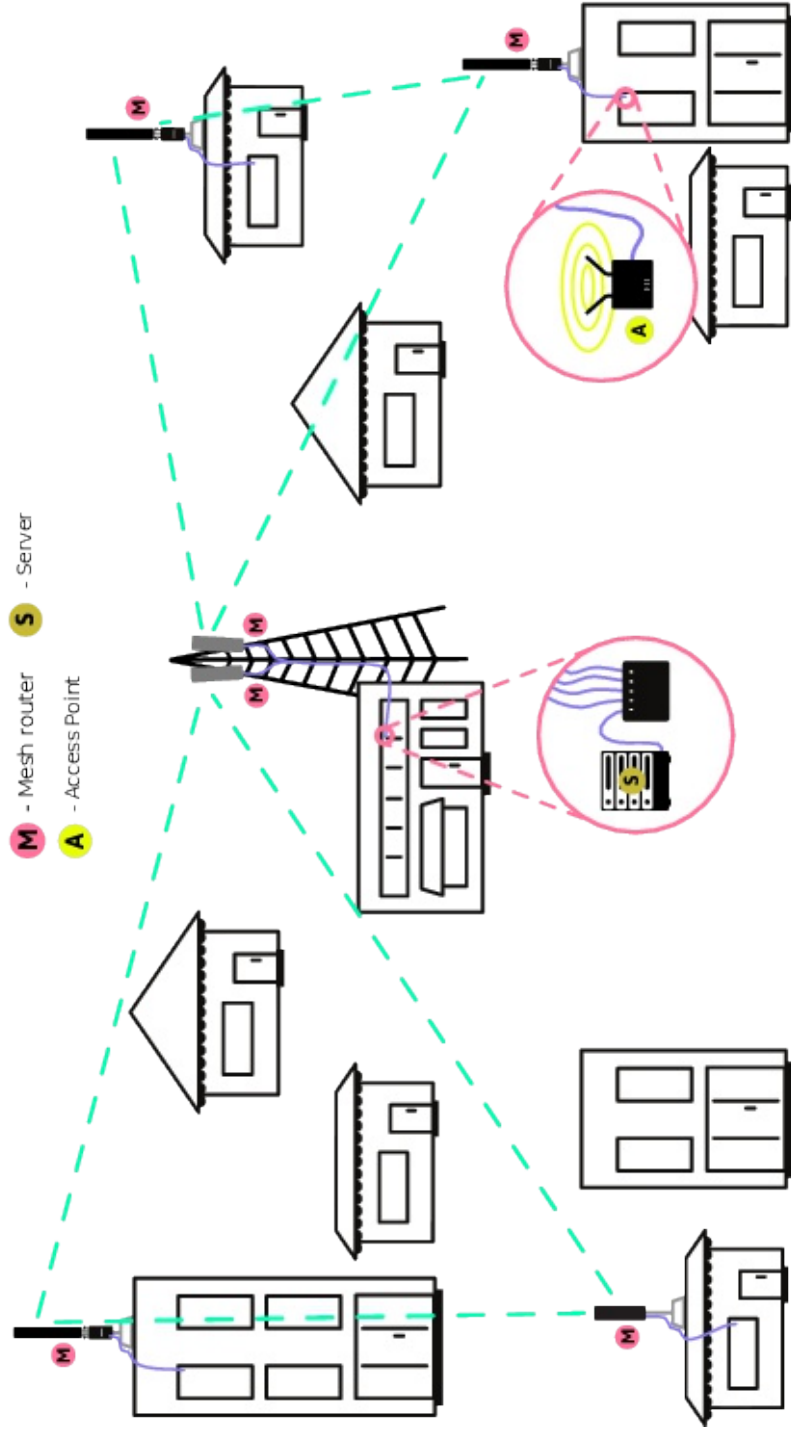OUR LOCAL SERVER HAS BOOKS, AUDIO CLASSES, WIKIPEDIA, AND A BLOG.

WE ARE NOW BUILDING COMMUNITY DIGITAL INFRASTRUCTURE...

LINKING ROOFTOP TO ROOFTOP WIRELESSLY!

NGUYÊN

Mesh Bukavu

M - Mesh router **S** - Server

A - Access Point

DESIGN: MESH BUKAVU
RADIO MAENDELEO, BUKAVU, DEMOCRATIC REPUBLIC OF THE CONGO

Mesh Bukavu is centered around the tower of community station Radio Maendeleo in Bukavu, Democratic Republic of Congo. The radio station is home to a local server which hosts a copy of Wikipedia, community blogs, XMPP chat, and other applications.

The network is built using Ubiquiti NanoStation and Rocket hardware running Commotion. These outdoor routers are mounted on the rooftops of other local NGOs, universities, and media organizations in the city. Each of these organizations was chosen based on their commitment to the principles of the network, and if backup power was available at the site. The electrical grid is very unstable in that region, and Mesh Bukavu has been considering moving all of the network hardware to solar power.

AlterMundi's QuintanaCamp

Isa, AlterMundi

Durante noviembre estuvimos en la Quintana haciendo diferentes talleres y encuentros, juntando diversas temáticas en lo que llamamos QuintanaCamp 2015. Aquí, una breve crónica de las jornadas.

El sábado 7 de noviebre dimos comienzo oficial al QuintanaCamp 2015, durante el Encuentro con los Saberes del Monte y Feria de Semillas en la plaza de la Quintana.

¿De quién son las semillas?

AlterMundi participó de este encuentro diverso con un juego-ronda-debate titulado "¿De quién son las semillas?".

En la ronda dividimos la gente en dos grupos, que asumieron actuando un papel: a favor o en contra de patentes y copyright, por ejemplo Monsanto, Microsoft, versus alternativas descentralizadas y comunitarias. Duró casi 3 horas y participaron más de 15 personas.

El Encuentro de Semillas, convocado por la Fundación Hölderlin,

● ● ●

fue un dia con mucha gente de Córdoba Capital y habitantes de la Quintana y alrededores. Hubo muchos talleres, charlas, y espacios para intercambiar semillas y saberes.

¿CÓMO USAMOS LA RED COMUNITARIA?

Al día siguiente, el domingo 8 de noviembre organizamos una reunión vecinal sobre la Red Comunitaria de Internet.

Participaron unas 10 personas, hombres y mujeres en igual proporción, con hijos e hijas que aportaron un ambiente familiar y divertido. La propuesta fue hacer una reunion para poner en común dudas, soluciones y posibilidades sobre el uso de la red (es decir, olvidándonos por un momento de los routers en si mismos, poder hablar de lo que hacemos con la red cuando está andando)

Citando a continuación la convocatoria original:

- *¿quién usa (y quién todavia no) el chat? ¿cómo resulta la experiencia?*
- *la gente que todavia no lo tiene, tendrá la oportunidad de instalarlo o aprender a usarlo con ayuda de otra gente de la red*
- *¿qué uso le damos (o no le damos) a facebook? ¿qué problemas tenemos, y qué problemas o riesgos no entendemos todavia?*
- *¿cómo compartimos archivos grandes entre computadoras? ¿cómo pasamos archivos entre celulares?*
- *repasar las diferentes herramientas y servicios locales que tenemos en la red (las gráficas de trafico, la web de autodiagnostico, etc)*
- *la idea también es generar un espacio para resolver problemas de software (la compu se cuelga, o no pueden instalar un programa en el celular): no hay garantias de que alguien lo vaya a resolver! pero pueden traerla y quizas alguien se anima a dar una mano*

Asique a la reunion deben traer sus celulares, laptops, tablets, *es decir todos los dispositivos que dispongan para conectarse.*

Un "consultorio tecnológico" comunitario, es decir que personas del pueblo que la tienen mas clara con compus, ayudan a otras que la tienen menos clara.

Esperamos se pueda acercar personas de la Quintana y alrededores, toda la gente que pueda de Nono! (como la última reunión técnica) y también de comunidades más lejanas, que están interesadas en ver como funcionan las redes acá, como para dar una mano y replicar la experiencia. Así, quien venga de lejos tendrá la oportunidad de conocer a la gente de las redes, poder ver "en primera persona" a la comunidad viva, y llevarse una primera impresión más allá de lo técnico ... y, claro, aportar sus conocimientos también!

Llegaron integrantes de San Isidro que estaban con algunos problemas técnicos en su segmento de red. Tuvieron entonces la posibilidad de discutir soluciones para su red junto con gente de la Quintana. Luego, le explicaron como funciona su red a dos personas "nuevas" que llegaron de Calamuchita con mucho interés en iniciar una red comunitaria, y varias dudas al respecto. Las participantes del QuintanaCamp tuvieron la oportunidad de presenciar la reunion de redes comunitarias, y para algunas fue el primer contacto con esta temática.

Sebastián Correra, del pueblo de Santa Rosa de Calamuchita, dijo: "Ha sido una alegría enorme compartir con uds la jornada del domingo. Nos volvimos muy entusiasmados (...) Doy clases en el Instituto Superior Santa Rosa de Calamuchita (...) de técnico superior de software... tienen la materia Redes en 3er año, y me parece muy bueno que puedan vivenciar el trabajo de AlterMundi. Varias veces al año, los estudiantes hacen salidas de estudio y podríamos organizar una para cuando haya otro taller"

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KIERU KAS: DE NOSOTR@S
Oswaldo Martínez y Santa María Yaviche por Rhizomatica

Dicen que una cosa lleva a la otra. En el año 2009 habíamos instalado con jóvenes zapotecas una Radiodifusora Ciudadana en la comunidad de Santa María Yaviche, en el Rincón de la Sierra Juárez. Nosotros enviábamos la palabra, pero nadie nos la devolvía, sólo se podía hacer a través de las casetas telefónicas existentes. En el programa radiofónico de una hora que hacíamos, alguien llamaba a la caseta y nos voceaban por la altavoz para contestar, acudíamos a la caseta y esperar a que volvieran a marcar, marcaban y la llamada era para enviar un saludo y poner una melodía. De esta manera se nos iba media hora en la devolución de la palabra.

Platicamos con las autoridades comunitarias y acudimos a oficinas de Telmex en Oaxaca, donde solicitábamos teléfonos domiciliarios. Nos decían que no era pueblo grande, era agencia municipal, por lo que no tenía personalidad jurídica. También decían que no había presupuesto, no entendíamos porque el dueño es el hombre más rico del mundo. Nos resignamos a que la comunicación no era para los pueblos.

Entonces conocimos la experiencia de Talea de Castro y en una de tantas Guelaguetzas radiales conocimos a Pedro de Rhizomatica. Le propusimos la idea de hacer otro experimento en Yaviche, ya que esa ha sido nuestra misión: experimentar, compartir y difundir con lo que tengamos y podemos hacer. Y así lo hicimos, comenzamos a operar.

En un principio todo fue gratis, y la gente decía "¿se puede gratis? ¿Por qué no le hacen así las otras?" Nosotros contestamos que estábamos en prueba, y después de casi un año comenzamos a armar la coperacha porque había que pagar la luz, el internet

para la larga distancia. Entonces cuando se les dijo 30 pesos mensuales, un niño dijo "un peso potr día". De manera local la gente podía hablar el tiempo que quisiera.

Los pueblos circunvecinos nos preguntaban que de dónde sacamos dinero para instalar la torre, que dónde estaba porque no lo veían y cómo le hicimos porque las grandes compañías en aquel entonces pedían cinco mil usuarios.

Les mostramos nuestra torre hecha de bambú, nuestro local hecho de adobe, el empeño de un coche viejito, y que nuestros usuarios eran en promedio 100. "¡Ah! Entonces es de ustedes", dijeron.

Luego llegaron quienes pedían una franquicia porque querían poner un establecimiento de venta de celulares.

Nosotros no entendíamos eso, porque buscábamos establecer un servicio que sirviera a las necesidades de la gente.

Era mucha la confusión de explicar qué tipo de telefonía celular éramos. En un principio dijimos comunitario, pero algunos decían que rebasaba el territorio comunitario pues llegaba a otras comunidades, entonces le pusimos ciudadano. De nuevo la gente, los de paso, los usuarios y usuarias, ni nosotros mismos entendíamos por qué hablábamos de ciudadanía, pues siempre llegaban preguntando a qué empresa pertenecíamos.

Entonces alguien dijo por ahí en zapoteco "KIERU KAS", es decir,

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"es de nosotr@s", por lo que es colectivo, no hay tuyo ni mío, sino de nosotros. Así, empezamos a explicar que nuestra telefonía celular es "Autónoma", con nuestros propios medios y con la ayuda de gente de buen corazón con la que buscamos alternativas a nuestras necesidades.

De esta forma, nosotros administramos nuestros propios medios, mandamos nuestros mensajes en nuestro zapoteco, con nuestros propios técnicos y compartiendo nuestra experiencia. Estamos en nuestro propio territorio zapoteco, y como pueblos podemos ejercer nuestros derechos en la vía de los hechos.

No se trata de hacer riqueza, porque para hacer riqueza hay que chingar como dicen los mexicanos.

Lo nuestro es para el servicio a la vida, una vida alegre, sencilla y sustentable, y parte del experimentar. Por eso a veces nuestra red tiene fallas porque ese es el camino: compartimos con lo que aprendemos y difundimos para que otros se animen a hacer lo propio. Hoy ya no nos aguanta una hora de un programa de radio para recibir mensajes y llamadas.

Free Geek! Techno Recycling

Laurenellen McCann & David Eads

Free Geek is a hub for community technology that was founded in Portland, Oregon in 2000, and which has since been modeled and replicated in 12 other cities in the US and Canada. Free Geeks operate independently of one another, but share a strategy: they collect old electronics parts and work with community volunteers to turn this e-waste into functional computers and other technologies. These electronics are then made available for "free" in exchange for community service time.

Free Geeks operate through co-creation. This means that everything from the organizational structure to the electronics provided to the educational programming a Free Geek offers is created in partnership with their community. In this way, Free Geeks do more than just provide cheap computers. They provide a foundation for community members to direct their own and support each other's skill development, creativity, and ownership of technology. How do they do it?

#1 Meet People Where They Are...

...Physically: Free Geeks usually have a physical presence in the form of a thrift store that they both use as a workshop and offer as community space. They tend to operate within neighborhoods with little access to in-home Internet and at hours that accommodate their community. They make participation attractive and welcoming by making it convenient.

...Socially: Although Free Geeks introduce new activities into their communities, they also show up for others. Free Geeks partner in, host, and otherwise participate in a whole variety of community activities, ranging from childcare to DJ nights to support groups to yoga -- whatever matches the social life of the people they are

and the community they support.

...Technically: Free Geek offers many pathways for personal and professional skill development alongside participation in core tech projects. This allows community members from all manner of backgrounds and experiences to chart their own paths to participation.

#2 Use One Tech to Teach Another

Free Geeks help make computers available to people who need them. Since community members "buy" these computers through volunteer time, Free Geeks offer the chance to "pay" for computers by volunteering to build new ones. If you choose this route, Free Geek will help train you in a variety of hardware, wiring, and refurbishing skills useful for making a wide range of electronics.

By starting with a short-term tangible project (recycling computers), Free Geek organizers are able to build relationships with their communities at the same time they build tech. This approach helps create the dialogue and creative confidence necessary to keep the core community tech project going and identify new opportunities for community tech work.

For example:
1. Along with supplying free hardware and electronics, Free Geek now also supplies software and offers basic digital skills training.
2. Along with supplying free software, some Free Geeks also offer training in coding, web design, and web development at a variety of different skill levels.
3. Along with everything you need to rock the web, some Free Geeks also support events, like CryptoParties, geared towards understanding and taking control of one's privacy and data online.

#3 Nurture Your Volunteers

This kind of dynamic, interlocking programming (and the associated community tech projects developed with and through them) isn't created overnight. It evolves through the process of intentionally inviting people into the core community tech process and creating a welcoming environment for them to experiment in.

Many Free Geek community trainings come from volunteers feeling ownership of the project and stepping up to share the skills they'd developed. Culturing a vibe that encourages this kind of participation is a task of facilitation. It requires a lot of relationship building, personal attention, and, crucially, a willingness to recognize all effort that people put in. Although you can volunteer to build computers to pay for your own or just support the organization, Free Geek doesn't value it's technical volunteers any more or less than others. In fact, it makes no differentiation between those who volunteer to refurbish tech, and those who choose to instead teach a class, sort donations, sweep the floors, or other tasks that help keep the facility open and online. Lifting up non-technical work, even in a technical process, and explicitly demonstrating that all your volunteers are seen and valued is essential to sustaining and strengthening the volunteer core of any project.

#4 Keep an Open Door (Literally!)

Community technology runs on community organizing. Even as Free Geeks go out into their communities, they also pay attention to the environment they create "at home". For many, that means keeping the door wide open whenever folks are in the shop. As you organize with your community, think about what doors you can leave open -- figuratively or literally -- to help your community feel welcome to join.
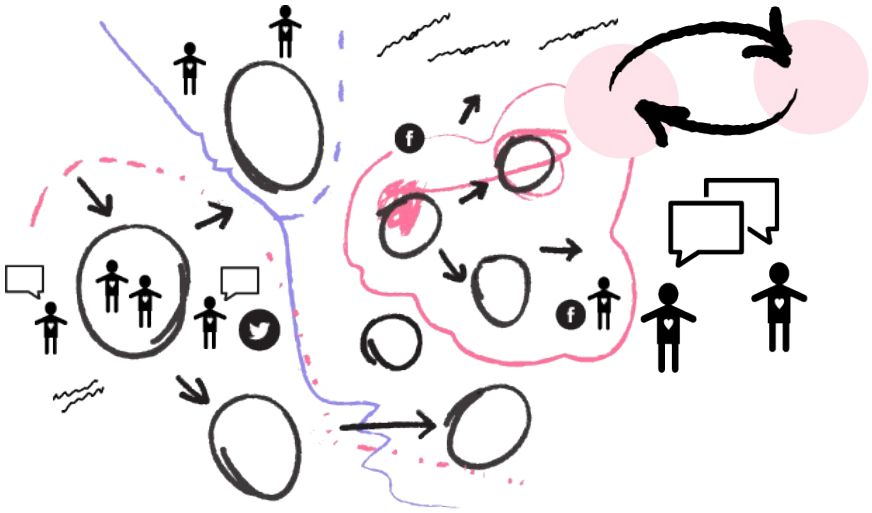
RESILIENT INFRASTRUCTURE

GRETA BYRUM & ANDY GUNN

Community-built infrastructure for communications should be designed to fit a need, for example connecting those who are disconnected. Many communities working towards this goal are also concerned about keeping communication flowing in the event of disaster, when normal channels such as mobile phone networks and the Internet may be disrupted or overloaded. These community-led resilience efforts have a number of common features and approaches that other organizations and projects can use.

Disasters and emergencies amplify everyday conditions: who is connected or disconnected; who is well-resourced or under-resourced. However, communities with strong social connections, regardless of how rich or poor those communities are, always do better in such situations. We work to help build resilience from the ground up starting from long-standing organizing networks and existing social connections. Since official preparedness planning usually leaves out the critical first response that happens in local

communities, this neighborhood level response should be "designed into" community technology projects.

TIPS FOR ORGANIZING
Build healthy local relationships.

FIRST AND FOREMOST, CONNECT WITH EXISTING COMMUNITY HUBS, BOTH ONLINE AND OFFLINE. Locally governed networks or infrastructure likely already include existing anchor organizations where people typically go for information or help - for example: libraries, community centers, cafes, etc. Think ahead: where are the hubs in your neighborhood? These existing hubs of person-to-person connections benefit from communications technology that are more robust, or utilize back-up systems to keep information flowing. This can allow organizers to tap into the global community that wants to help and provide assistance.

PLANNING FOR RESILIENCE SHOULD BE A PART OF ADDRESSING LARGER INEQUALITY ISSUES. Some people are more vulnerable in disasters than others - those who are isolated by language, poverty, physical access, and other issues. Build or facilitate relationships among organizations that work on these critical issues, local leadership (whether community or elected), and your community technology work. This can help address existing issues while building digital literacy and access to technology and communications. It is also an opportunity to create outreach and preparedness materials in multiple languages, and in print, web, audio, or video. Resilience measures could look like computer labs in existing community hubs that have information in many languages, trainings in SMS or Internet use for elders, putting together SMS or phone trees, or designing in multiple sources of bandwidth for a community network.

BUILD RELATIONSHIPS BEFORE DISASTER STRIKES. Many areas already have state and county emergency preparedness organizations such as

Volunteer Organizations Active in Disaster (VOADs), Community Emergency Response Teams (CERTs), or amateur radio clubs. Building a relationship between community-based resilience work and these other efforts can help you assist more vulnerable people and areas in the event of a major disaster. Have conversations with neighbors about what to do to support each other locally. Collect and print phone numbers and emergency shelter information (and maps), in case all communications system are down.

TECHNICAL CONSIDERATIONS

THINK ABOUT USING OR INTEGRATING TRIED-AND-TRUE TECHNOLOGIES. The simplest solution is often best. Many communications technologies, such as community radio stations and amateur (Ham) radio can be resilient, reach many people, and are already in use in many places. Community radio stations such as LPFM and college radio may enable broadcast of live bulletins and updates in multiple languages, to many communities at once. Public access (PEG) cable channels have a similar large reach, and often have many volunteers who can produce video programming quickly in multiple languages. Ham radio operators are often already involved in emergency and recovery operations planning on a volunteer basis. They are also usually very eager to teach others about amateur radio and emergency communications.

PLAN FOR LOSS OF ELECTRICITY. In many emergency scenarios, critical systems such as electricity may be unreliable or may fail completely. Consider what would happen if the power were out. What sources of backup power are available? If you are working with an always-on communications technology, such as a network, can any parts of it stay on and connected if the power goes out? Battery backup and solar power can be very expensive, but some individuals or organizations may have solar power already. Simple Uninterruptible Power Supply (UPS) systems can also help routers

or network equipment stay operational during short outages. Make sure people in your community have emergency radios - such as battery powered or hand-crank FM radios. Those hand-crank radios that have USB chargers are even better!

PLAN FOR THE UNEXPECTED. When planning and organizing your community technology project, take emergencies into account. When a disaster strikes, many people many need assistance all at once. Designing websites or services for general communications is important, as well as making sure these services can be used on mobile devices, such as smartphones. In an emergency, that may be all that is available to people. Think about types of risks beforehand -- is your neighborhood near water, where flooding is a risk? What services are people most likely to need, based on the types of disasters that may strike?
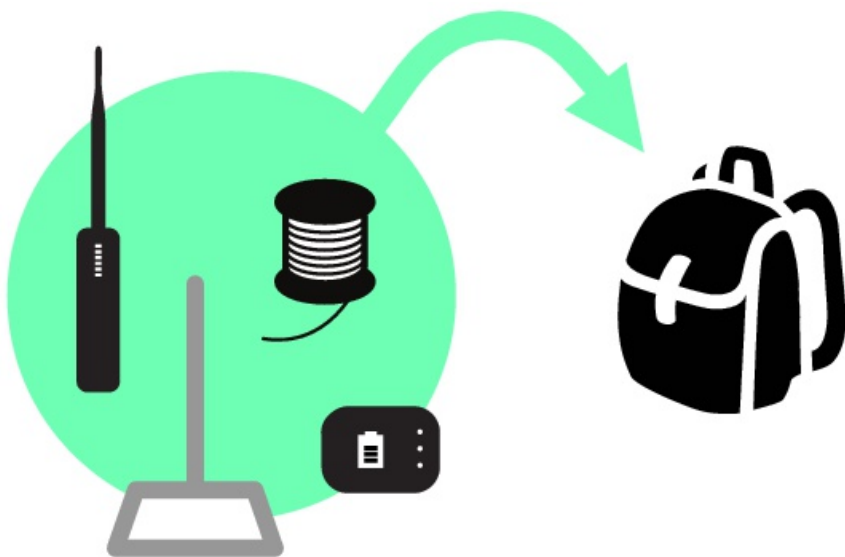
Images from "Every Community is Resilient," a participatory mapping module co-developed with social design group The Work Department

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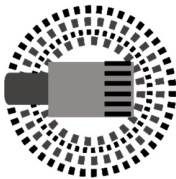Illustrations by: Nguyên Khôi Nguyễn (ngknguyen.com)

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