MONDAY
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KEY   Number of projects

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New
Technology
for Development

MONDAY DEVELOPMENTS

Monday Developments is published 11 times a year by InterAction, the largest alliance of U.S.-based international development and humanitarian non-governmental organizations. With more than 170 members operating in every developing country, InterAction works to overcome poverty, exclusion and suffering by advancing social justice and basic dignity for all.

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Community Contribution of Geospatial Data

New ways to use available technology and mapping to improve data collection and empower local communities.

BY ANUEJA GOPALAKRISHNAM, PUBLIC HEALTH ANALYST, WORLD VISION; MIKEL MARON, BOARD MEMBER, OPENSTREETMAP FOUNDATION; AND NEIL PENMAN, IT ARCHITECT, IBM

DECISION-MAKERS NEED good information, whether they are governments, aid agencies, businesses or individuals. Advances in technology such as the Internet, GPS, satellite pictures and databases have rapidly increased the volume and quality of information available. However, it is still often fragmented and difficult to access. This article considers a technical and social trend that can address these issues and significantly improve the ability to use information for effective aid delivery: increased community sharing of location-based information supported by low-cost mapping tools.

Lack of access to accurate data keeps many communities from achieving their full development potential. Providing the capacity to collect, understand, represent and share information helps communities become more independent in achieving and sustaining their development. It also helps outside individuals and organizations understand the community's needs and where they can make useful contributions.

Cost is also a limiting factor. While the cost of buying hardware is a small component of this, the cost of licenses, applications, program upgrades and service support are far more significant. In addition, effective user access is limited by issues such as data ownership, data management, timely access to the data, and the ability to interpret that data.

Maps are an important source of information for development. According to a November 2006 report in *Data Science Journal*, the World Bank commits $2.6 billion per year to road transportation projects; however only a small percentage of roads in developing countries appear on readily available and accurate maps. The report goes on to describe areas in which accurate, publicly available maps in developing regions would provide notable benefits:

- Network analysis for resource allocation;
- Vehicle routing and tracking;
- Emergency planning and impact assessment;
- Medium and long term planning;
- Poverty and inequality issues;
- Rural transportation;
- Land use modeling; and
- Bio-diversity management.

Any single organization, government, commercial or community will only ever collect one element of the data puzzle. Google Earth is a good example of how valuable having a comprehensive high quality set of data for the whole planet can be. However, once you descend from the satellites and start gathering more detailed data, the task on a global basis is beyond the capabilities of any single organization.

Already, in many developing countries the best available maps are ones developed by communities using low cost mapping tools rather than by cor-▷
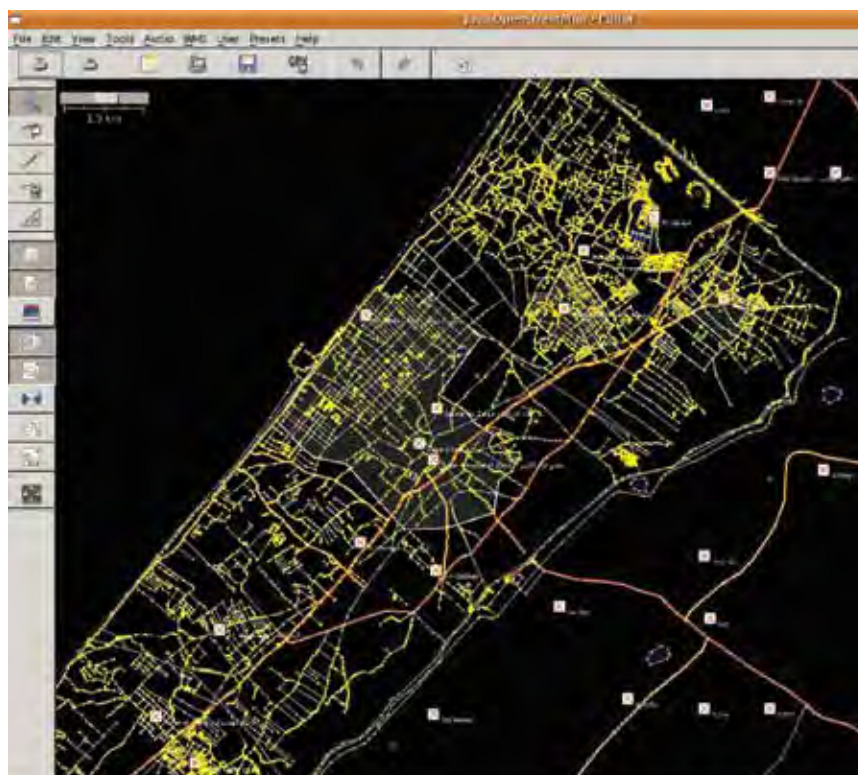

Photo: Neil Penman

Gaza in "JOSM", the open source OSM editor.

porations or governments. (See, e.g., the mapping case study below.) Because the underlying data is available under an open source license, it can also be accessed directly, analyzed and linked to other information, thereby making it much more useful than fragmented data sets.

This approach is not limited to traditional map making. For example, the health case study below describes a pilot project to collect and use a broad range of data.

The availability of open source, Web-based mapping applications, free to the public, has provided a platform to make data more accessible to communities that could previously not afford it. As data collection techniques and tools become more affordable, people in developing countries become better able to collect, understand and share information about their communities in real time. This in turn, increases the accuracy of data collected, and improves the dissemination and availability of that data.

Case Study: Mapping in Gaza

As the Gaza crisis escalated in January 2009, it became clear that very little geographic data for Gaza existed anywhere. Though blocked from entering Gaza, the UN and aid organizations were preparing potential operations to serve the growing humanitarian crisis; while media articles relied on very basic and often inaccurate maps, bringing just a little context to a chaotic situation.

OpenStreetMap was far from complete in Gaza when the crisis began. OpenStreetMap is a project to create a free and open map of the entire world, through volunteers surveying with GPS, digitizing aerial imagery, and working to make existing government data sources publicly available. These sources are processed with open source software, and contributed to a freely available Web-based database. In short, OSM is like Wikipedia for maps. When the crisis broke out, the call for maps in Gaza quickly spread throughout the OSM community, echoed by prominent humanitarian bloggers, Reuters AlertNet, and the humanitarian NGO and UN communities.

GPS surveying was out of the question during the height of the crisis,

since outside volunteers could not enter Gaza and the danger to locals was too high. Fortunately, Yahoo! Maps aerial imagery had sufficient detail over southern Gaza to trace and derive map features. (OSM has an agreement with Yahoo! to freely digitize data from their imagery.) With shocking speed, geographic features of southern Gaza were completely extracted and put into OSM mapping. However, this left unmapped northern Gaza, where the majority of the conflict was playing out. OSM turned to Digital Globe, commercial suppliers of satellite imagery. Once purchased, the imagery was made available to the core of Gaza mappers, and the digitized data of all of Gaza was then available to all.

the data is open, it is useful during the crisis, during recovery, and in the future (a hopefully peaceful future).

Case Study: Health Surveillance

Many NGOs that work in developing countries conduct their field surveying activities on paper. Paper is cheap, but relevant technologies are becoming more accessible and affordable. To explore the emerging possibilities, World Vision is embarking on a pilot study, to be conducted during a baseline field survey for a child nutrition project in Cambodia scheduled for May. The pilot study will test the viability of using mobile phones as to collect the data. The data will be collected by the local community.

Lack of access to accurate data keeps many communities from achieving their full development potential.

Coordination for the effort largely took place through the OSM wiki [http://wiki.openstreetmap.org/wiki/WikiProject_Palestine_Gaza]. Volunteers registered their intention to help, divided up regions to map, reported completeness measurements, catalogued existing data sources, and collected news reports. Many existing data sources, particularly media sources, disagreed about names and locations, but through rapid, internet-based, collaborative research (also called crowdsourcing), the OSM team compiled a comprehensive, consistent catalog of Gaza data sources.

Now that the crisis has subsided, volunteers are in Gaza working with locals to complete the map. In the West Bank, JumpStart International has been sponsoring OSM mapping, in partnership with organizations including the Palestinian Central Bureau of Statistics, and Applied Research Institute of Jerusalem, and they have brought the JumpStart network to focus on Gaza. Inside Gaza, students from University College of Applied Sciences in Gaza City have been adding street names and points of interest. These combined efforts have produced extensive placenaming and points of interest in the nearly complete map. As

Surveyors will collect child nutrition data from households randomly selected in the community. Two surveyors will approach each household with identical surveys; one will collect data using paper and the other using a mobile phone. The mobile phone will have GPS capacity, and the data collected during the survey will be uploaded onto a copy of the OpenStreetMap database.

Data collection tools such as mobile phones with GPS technology are becoming more affordable and accessible to communities in developing countries. As this happens, in collaboration with free access open source mapping technology, these tools provide a way for communities to collect, update, record and map social, economic, demographic and health data across their community.

In the case of the Cambodian nutrition survey, we hope to use this technology to exemplify the advantages associated with its use, such as community empowerment, community ownership of data, reductions in data handling time, and data security. In particular, mapping a community's nutrition status lets us construct a more accurate understanding of where child under-nutrition is more prevalent within a community. **MD**

JUST AFTER EVENING PRAYERS on a cool spring night in February, thousands of Bangladeshis young and old tumbled into a village schoolyard, chattering excitedly. Sitakunda, a community of 5,000 people in the country's poorest province, has no electricity, and the arrival of a cinema truck promising an evening's entertainment generated a great deal of local buzz.

The story was the same in scores of villages across the country, where IREX Europe's Mobile Cinema Project drew capacity crowds to watch a documentary featuring young Bangladeshis speaking in their own words about issues that matter the most to them. Each showing of the 45-minute film was followed by a lively moderated discussion on democracy, Islam, education, justice and related topics.

With limited opportunities in education and employment, and a lack of practical access to democratic processes and media, many Bangladeshi youth lack the means to participate in the kinds of public debates that shape their country's future. IREX and its partner IREX Europe looked for an effective way to connect stories and facilitate meaningful national dialogue about common concerns among Bangladeshis—many of whom seldom receive any information from outside their own village.

The result was the Mobile Cinema Project, supported by the British High Commission in Dhaka through the Global Opportunities Fund of the Foreign & Commonwealth Office. As part of its work in education, media and civil society development, IREX has been implementing projects that use information technology (IT) for development for over 15 years and worked with IREX Europe to design a project to use simple IT methods to create a significant impact.

The goal was to get firsthand perspectives from rural Bangladeshis about what drives young people toward extremism and alienates them from democracy, and fundamental human rights such as women's equality and the right to education for women, and to use their comments to launch a larger discussion about how to address those issues.

The first step of the project was to

Bringing Rural Voices Into a National Debate

Mobile cinema brings constructive dialogue to Bangladesh's "media dark space".

BY DRUSILLA MENAKER, ASSOCIATE DIRECTOR, IREX EUROPE; AND
KEITH MELLNICK, COMMUNICATIONS MANAGER, IREX

Setting up the mobile cinema in a Bangladeshi village.

create a documentary showcasing diverse voices of young Bangladeshis. A UK-based director joined with Bangladeshi filmmakers and community organizations to produce the film. Traveling thousands of miles and conducting hundreds of interviews, the team heard Bangladeshis talk with pride about their hard-fought independence, cultural diversity and rich history.

However, many of those interviewed in the 11-25 year-old age group expressed some frustration with the direction the country is taking. Access to education and to justice topped the list of their concerns, but worries about other subjects such as the dowry system, terrorism, underage marriage, the gender gap, and unemployment also emerged. For example, a young motorcycle mechanic in Sylhet lamented that he was unable to attend univer-

sity to study engineering. A 20-year-old mother of three girls in Rajshahi wanted nothing more than for her daughters to attend school. A young student in Rangpur was adamant that the dowry system be abolished.

The interviewers met with a diverse range of people, including students in schools, young shopkeepers in the bazaar, farmers in their fields, shepherds tending their flocks, women in textile factories, and squatters living two meters from railroad track. Their travels took them to the regions of Sylhet, Chittagong, Rangpur and Rajshahi.

Once the film, *In Search of Freedom,* was completed, IREX Europe coordinated 60 viewing locations throughout the country and arranged for moderated discussions after each showing. Many villages in these regions exist in "media dark spaces," with no electric- ▷

ity and largely out of the reach of radio and television. It can be extremely difficult for citizens in such areas to participate in the national dialogue. Yet with just a van, large collapsible screen, sound system, an LCD projector, a laptop, and a generator to power it all, *In Search of Freedom* would reach out to almost 100,000 Bangladeshis.

Local partner Interspeed would arrive in a screening area early in the morning, before the villagers left for their fields to begin their day's work. They would pass out handbills advertising the coming evening's program and drive around making announcements on a mobile public address system attached to their transport van, or in some cases just a bicycle-powered rickshaw. They would not only advertise the evening's program in the village where the actual screening would take place, but in surrounding villages as well.

The first screening would begin just after evening prayers at sundown, often in the village schoolyard and drawing as many as 3,000 people. After each

The goal was to get firsthand perspectives from rural Bangladeshis about what drives young people toward extremism and alienates them from democracy.

screening, IREX Europe-trained Bangladeshi facilitators gathered people in classrooms for group discussions about the themes presented in the film and the role of ordinary citizens.

During these discussions, many topics were debated, but the biggest frustrations for men were poverty, high unemployment, and access to justice. For women, the main frustrations were gender gap issues and the dowry system, as well as access to education for their children and themselves.

Following one showing, a 22-year-old man from the Sylhet division village of Gowainghat told IREX, "The film did a wonderful job of addressing the issues that most people are frustrated about, but no one is talking about. We need to begin to talk about these problems if

we are ever going to organize ourselves to fix them."

At the end of the mobile cinema tour, with the assistance of the British High Commission in Dhaka, the film was broadcast in its entirety on Bangladesh's RTV Channel. IREX Europe also engaged the British Bangladeshi community through showings and discussions in the United Kingdom. The film is now available in its entirety on IREX's YouTube page, www.youtube.com/irexdc and continues to spark dialogue.

By giving young people opportunities to speak candidly, engaging entire communities and putting these subjects on the tips of everyone's tongues, IREX hopes that the dialogue continues in rural Bangladesh long after the mobile cinema has left the village. **MD**