3 Preparedness
Building communities' resilience

The introduction highlighted the distinctions between different stages with respect to the onset of a disaster or conflict. Being prepared beforehand is one of these distinct stages. Early warning, the subject of the previous section, is a narrow aspect of the information needs for preparing communities. In this section, we look at the technologies and types of communication that can create preparedness and resilience in a broader sense in the event of an emergency. This requires long-term planning, investment, and education. Less progress has been made on this front than on the narrower aspect of preparedness represented by early warning systems, but new technological developments offer new potential for improving preparedness within populations at risk.

The purpose of people-centered early warning is to enable local communities to get out of harm's way or to otherwise cope as effectively as possible.[37] Meeting the information needs of communities before the onset of emergencies—perhaps long before—is an important way to build community preparedness and resilience.

Markku Niskala, Secretary General of the International Federation of Red Cross and Red Crescent Societies (IFRC) said, "Information bestows power," and at-risk communities need "information as much as water, food and medicine, or shelter," before (and during) disasters.[38] Hence, disaster is first of all seen as a crisis in communicating within a community—that is, as a difficulty for someone to get informed and to inform others.[39] The torrent of information generated before and during crises can be hard to access and understand.

At the same time, the increasingly widespread use of mobile and online technologies present new potential information lifelines in times of crisis.

From the perspective of local communities, new platforms like Ushahidi, described later in this section, have the potential to improve awareness as an emergency unfolds by *crowdsourcing* crisis information. Crowdsourcing—a name derived from 'outsourcing'—is a term coined by *Wired*

journalist Jeff Howe to describe when tasks are opened up to anyone as a way to "tap the talent of the crowd."[40] Anyone with access can contribute his or her solutions. Crowdsourcing platforms can use information sent via mobile phone, email, or the web to create dynamic online maps.

However, this innovation raises some important concerns regarding the reliability of the information presented. *The tension between wider sharing of information and confidence in its reliability is heightened by new technologies.* This theme recurs throughout this report. Information needs to be prepared and disseminated. To be useful, it must be accurate and trusted

> **"If effective, preparedness equips the population to be as self sufficient as possible and makes external relief more effective. Importantly, it can also pre-empt emergencies."**

and it must be understood and used by the community.

As noted above, the December 2004 Indian Ocean tsunami was the trigger for a re-evaluation of the role of information, and stimulated the first steps toward the more effective use of information in emergencies. The 2009 *World Disasters Report* from the IFRC has built on the earlier progress by emphasizing the importance for effective early warning systems of the 'last mile,' which means preparing people in communities at risk. Communities must own the risk assessment process and early actions in disaster response if the impacts are to be minimized. According to the report, "Early warning is not only the production of technically accurate warnings but also a system that requires an understanding of risk and a link between producers and consumers of warning information."[41]

This section gives examples of different ways of covering that last mile in order to be prepared. The first is the existing broadcast media, especially radio, which is available almost everywhere and is a powerful tool for dissemination.

Public education and the role of the media

Broadcasting is useful both in public education and disaster preparedness and in disseminating advice in the aftermath of a crisis. Lisa Robinson of the BBC World Service Trust was the co-author with Imogen Wall of a recent study on the role of information in humanitarian response.[42] She says that many organizations in the field struggle to communicate with affected populations because this requires specific skills they have not traditionally needed.

The World Service Trust report argues that the priorities to get information provision recognized by humanitarian agencies as a standard part of both preparedness and aid delivery should be:

- preparing off-the-shelf material agreed between humanitarian and aid agencies (what to do in an earthquake, basic sanitation advice, for example);
- training humanitarian agencies in communication skills, including receiving and using feedback from communities; and
- including a wind-up radio in aid packages.

Mark Frohardt of Internews advocates capacity building among the local media so that journalists who understand the local situation can disseminate information effectively.

> **Those who are in the business of providing information must expect to have much greater engagement than in the past with people affected by a disaster or conflict, and to be doing so in a context of the wider availability of other information sources.**

"The message needs to tell a story, to engage emotions, in order to affect people's behavior," he says. This is clearly a long-term activity that needs to predate any emergency.

Money spent on formal public information campaigns is less effective because these are so much less engaging, he argues. Humanitarian organizations need to provide good, consistent, and accurate information, with local capacity to disseminate it.

"The humanitarian community had previously come to look at information as something it shared within itself," Mark Frohardt says. *But information can now be much more widely shared.* The scope for direct contact with people affected by conflict or disaster has been revolutionized: for example, many have mobile phones and many have contact with diaspora communities overseas.

Just as in other contexts, the increasing access to new technologies is changing audiences' expectations of the broadcast media. Those who are in the business of providing information must expect to have much greater engagement than in the past with people affected by a disaster or conflict, and to be doing so in a context of the wider availability of other information sources, which may be more trusted even though informal.

While the broadcast media are unparalleled in their potential for disseminating information along the last mile in ways that connect powerfully with their audiences, and while people will seek information from many sources, there is an increased need for authoritative official information. We turn next to recent developments, both institutional and technological, in official alert and preparedness systems.

Global alert and preparedness systems

There is a need to aggregate reliable and timely information to enhance preparedness. A number of important recent initiatives focus on this. Three very different initiatives are described here. The UN's Global Impact and Vulnerability

People-centered communications practice at Save the Children

The perspective on communication in the humanitarian community has shifted significantly in the past year or two. Save the Children has actively focused during this time on making information one of the key aid deliverables. Jon Bugge of Save the Children says, "The communication has to be two-way. You can't just turn up and deliver anything."

He thinks changes in the technology of communications have increased awareness of information needs, but the methods used can be very simple—posters on a notice board will often be enough, or simple printed leaflets with advice.

Information needs should be built into the initial assessment in an emergency, he says, because it will help the people affected start to be the architects of their own recovery. Agencies need to coordinate the advice they hand out so people are not receiving conflicting information. And they need to include feedback mechanisms, which are invaluable for making programs more effective.

One early innovative information mechanism used by Save the Children was the children's feedback committees they set up in Zimbabwe in 2003. These gave children, selected through a careful process, a role in monitoring and reporting on food distribution. The children were trained, and the committees helped target food distribution better and uncovered other issues affecting children.

Credit: Save the Children

In a more recent example, Save the Children developed with the World Service Trust a five- minute daily bulletin in Burmese that was broadcast on the BBC Burmese service after Cyclone Nargis. The scripts covered basic health and sanitation advice and aimed also to provide some psychological comfort.

The agency also set up Information Centres at every distribution point, giving advice but also answering questions and handling feedback and complaints. Save the Children Myanmar is piloting a feedback management process specifically for children, through Child Friendly Spaces and Early Childhood Development Centres.

According to Jon Bugge, there is some resistance in the humanitarian community to the recent emphasis on the importance of information and communication—mainly because it is complicated and there isn't enough time to deal with the community in this way in an emergency.

However, he thinks the transition to two-way communication as an integral part of humanitarian efforts is reaching critical mass. There is now an inter-agency working group looking at the issues involved, particularly the coordination of advice.

The agenda is nevertheless challenging. Issues to be considered include:

- The development of appropriate communications skills in humanitarian agencies
- Establishing effective feedback mechanisms
- Ensuring messages from different agencies are not contradictory
- Ensuring the accuracy of information and keeping it up-to-date
- Local capacity building

Alert System (GIVAS) website was launched in September 2009 and will make maximum use of new media and digital technologies for information collection and crisis alerts.[43]

The Joint Research Centre (JRC) of the European Commission has developed the European Media Monitor (EMM), a news clustering and collection tool for global monitoring and analysis. Finally, The World Food Programme's (WFP) Emergency Preparedness Integration Center (EPIC) aims to create a platform integrating operational information from a variety of sources into one tool available to all humanitarian workers.

Global Impact and Vulnerability Alert System (GIVAS)

Over the past decade, the international community has put in place a number of sector- specific global early warning mechanisms. However, there are few mechanisms that are able to report across sectors on the immediate impacts that global shocks have on the lives of the poorest and most vulnerable populations. There is an information gap between the point when a global crisis impacts vulnerable populations and when solid quantitative information reaches decision-makers.

Recognizing this gap, the UN Secretary-General has called on the UN System — drawing on the expertise of outside partners — to establish a global impact and vulnerability alert system that provides decision makers with real-time information and analysis to ensure that responses to global crises take appropriate account of the needs of the most vulnerable populations.

The GIVAS is currently in its design phase with a first prototype planned for June 2010. It will build on the wealth of existing early warning systems and data bases, and fill real time data gaps where necessary. The added-value of the Alert will be the compilation of quick time data from a variety of reliable sources covering multiple dimensions of vulnerability that will help the international community understand new emerging vulnerabilities and the interaction between different threats and crises. The Alert System will be triggered when a crisis becomes global in scope and there are first subtle signs it will affect the most vulnerable and least well-prepared populations.

While guided by an ambitious vision, the GIVAS will be implemented in a phased approach. It hopes to leverage the expertise of many UN and non-UN organizations — ranging from vulnerability analysis to technology and design — to ensure that the needs of the most vulnerable are an integral part of the international community's crisis response.[45]

Credit: UN Foundation/Nothing But Nets

> **"...aggregated information that portrays a complete picture of humanitarian activities in a region or country does not yet exist."**

Credit: UN Foundation

European Media Monitor (EMM)

The second example is a monitoring system created by the European Commission's Joint Research Centre (JRC). The JRC is a research and development center that caters to the needs of the European Union's policy makers, such as on issues of international security. Its European Media Monitor (EMM) automatically 'reads' news articles using statistics and language technology. The platform specifically monitors non-static content on the Web, such as news sites, discussion forums, and publications. EMM searches more than 4,000 websites from 1,600 key news portals around the world plus 20 commercial news feeds. It is able to collect over 80,000 news articles per day in more than 40 different languages and classifies them according to hundreds of subjects and countries. EMM can extract information about locations, persons, and organizations covered in the media. Users can receive customized alerts by email and SMS. The system thus detects events in near real-time, in support of internal European policy making.

Toward the end of 2009, EMM was renamed OPTIMA (Open Source Text Information Mining and Analysis) to reflect the growing applications of the platform. The JRC recently partnered with the African Union to develop, deploy, and operate the Continental Early Warning System (CEWS). In 2010, OPTIMA will integrate a blog-monitoring feature and a sentiment detection system to follow public opinion.

Emergency Preparedness Information Centre (EPIC)

In contrast to the monitoring function provided by GIVAS and EMM, the WFP's Emergency Preparedness Information Centre (EPIC) is developing an operational management tool for aggregating region- and country-specific information on a range of activities. Different agencies use a variety of operational management tools for distinct purposes,

ranging from fleet management to food pipeline management. But aggregated information that portrays a complete picture of humanitarian activities in a region or country does not yet exist. Managers currently make decisions based on unstructured and fast-evolving information. There is thus an obvious need for a tool that can aggregate existing information into a single place that will present decision makers with a simple and efficient way to access all operational emergency information.

During EPIC's three years of development, its main activities will include the development and piloting of remote data collection and links to primary logistic systems, the addition of unstructured data, the establishment of field pilots, the integration of data from other organizations, and the expansion of geographic coverage. Finally, a Competency Centre will be built that handles applications, develops interfaces, integrates data, and supports the system globally.[46]

The EPIC project seeks to develop a toolbox that will aggregate information from a variety of sources into a unified visual tool. Humanitarian workers will be able to input data to, access, and query this tool from their operational area through computers, mobile devices, and satellite phones. In addition, the team is working on developing radio networks that can be integrated as another source of information. In cooperation with Motorola, WFP has tested a new generation of digital radio technology (Mototrbo) that in addition to providing secure voice communications can also carry data. Work is now underway to equip a standard mobile device with a compatible radio so that EPIC services can be

Credit: Télécoms Sans Frontières

transmitted over this network.

WFP is also exploring the potential use of World Vision's Last Mile Mobile Solution (LMMS). This initiative combines mobile computing technologies with improved humanitarian business practices to "promote greater efficiencies and heighten accountability in food aid programming at the last mile of our humanitarian work."[47] LMMS is an interactive and automated platform that uses real-time photo verification to document humanitarian response.

Finally, the WFP runs twice-yearly training programs on the use of information and communications technologies (ICTs) in disaster preparedness and response that are open to the global community of humanitarian aid workers. The ICT Emergency Preparedness and Response Management Training, funded by The Vodafone Foundation and the UN Foundation, is designed to standardize the use of communications technologies in disasters.

Using geospatial technologies to support preparedness

At the height of the Cold War, U.S. President Dwight Eisenhower called for the creation of a UN aerial surveillance service to detect preparations for attack.[48] In 1960, he

pledged that the United States would "do everything in its power to contribute to the rapid organization and successful operation of such international surveillance."[49] While no such center for conflict early warning was established then, today's geospatial technologies have considerable potential to support preparedness and early warning activities in a number of contexts.

Geospatial technologies include "a range of modern tools, such as satellite images, geographic information systems (GIS), and global positioning systems (GPS) that allow for mapping and analysis of multiple layers of georeferenced data."[50] The data can be analyzed to identify crisis patterns and to show evidence of military preparations. Satellite imagery can provide evidence to corroborate field reports of escalating conflicts and disasters, as was recently done in Sri Lanka (see Section 4).

The EU's JRC mentioned previously has a Geo-Spatial Information Analysis for Global Security and Stability Program that includes a number of projects relevant to preparedness and early warning.[51] For example, one new tool can automatically identify built-up urban areas using high- or very high-resolution satellite data. This is particularly important for measuring vulnerability and risk for disaster

preparedness because field-based data are often not available. The analysis can even be produced rapidly at the global and regional level to provide real-time data, which means that hot spots can be quickly identified and responded to in a timelier manner. Section 4 provides some examples.

In contrast to the top-down and external perspective of these applications are new tools that source information from the people affected by a crisis.

Crowdsourcing crisis information

Humanitarian information management systems typically follow a strict information collection and reporting protocol. However, if only designated officials have permission to report information, this reduces the amount available, in contrast to an open system in which everyone can share information. While data validation is important, information is perishable and risks becoming obsolete. Thus information collection and sharing represents a significant development.

Ushahidi, meaning 'witness' in Swahili, is a free and open source platform that combines SMS, Twitter, and Google Maps to crowdsource crisis information. Ushahidi was developed by Kenyan bloggers in response to the violence after the December 2007 elections. Anyone with

a mobile phone could text a dedicated number to report human rights abuses, or incidents could be reported and mapped on the website directly. Ushahidi has since been used in Afghanistan, Colombia, the Democratic Republic of the Congo (DRC), Gaza, India, and Lebanon, and will be used in Mozambique.

Traditional humanitarian information management systems are typically closed and controlled. Ushahidi is open and decentralized. Opening the reporting of crisis information to anyone with access to technology presents exciting opportunities and important challenges.

Compared with traditional humanitarian information management systems, Ushahidi also 'closes the feedback loop,' such that information collected can be communicated directly to those who most need to use it. Communities have little use for early warnings that do not reach them. Ushahidi includes a subscription option that allows individuals to subscribe to alerts in specific locations. These can be communicated by email and SMS. In other words, Ushahidi's innovative approach allows for 'crowdfeeding' as well as crowdsourcing crisis information.[52]

That said, crowdsourcing also presents some serious challenges. The most important is how to verify rapidly the information collected and posted. Some of the incidents re-
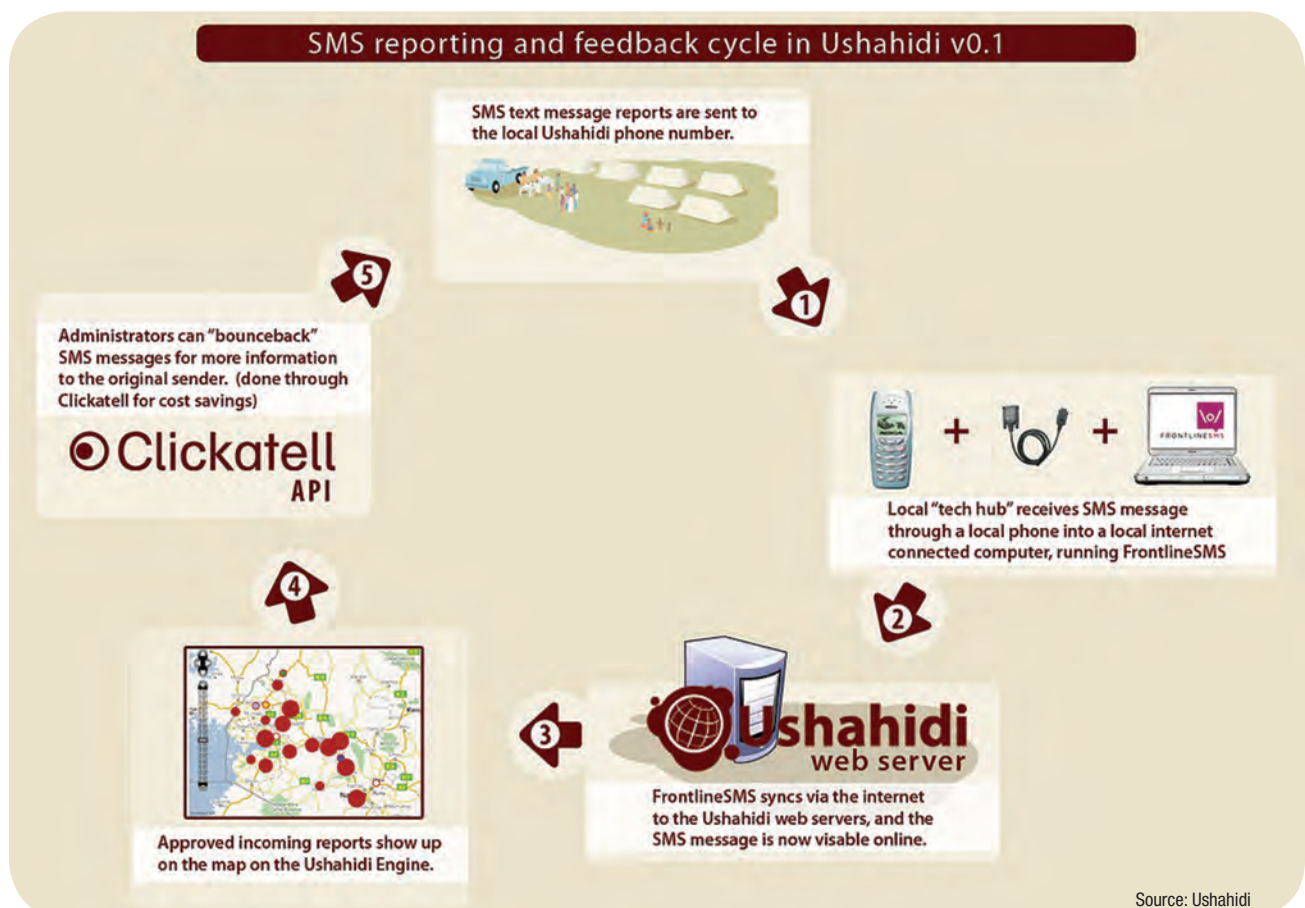
Source: Ushahidi

Deployment of the Ushahidi platform around the world
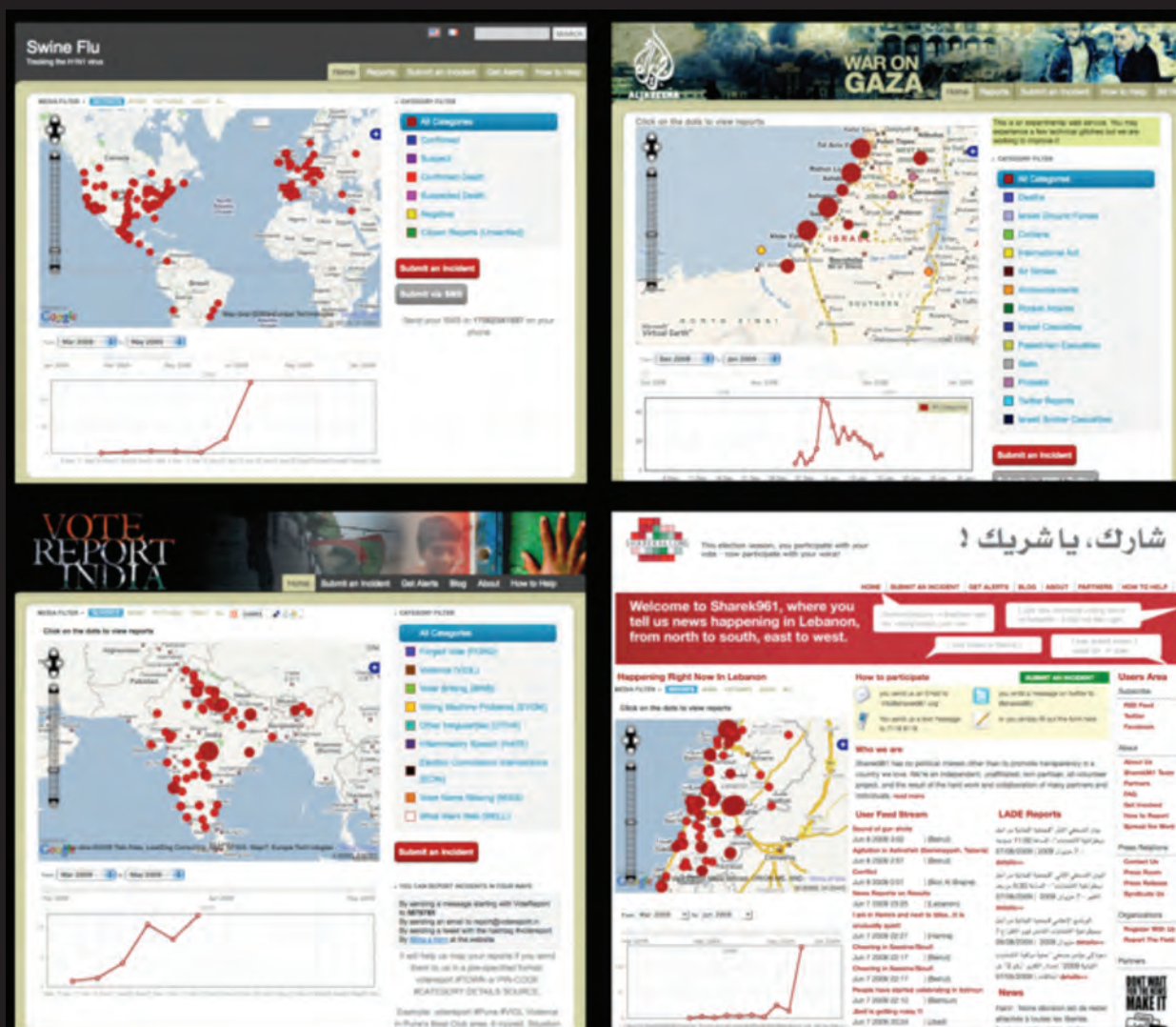
Source: Ushahidi

ported might have been wrong or even deliberately misleading. Hence effective crowdsourced information requires near real-time validation techniques, otherwise the advantage of speed is lost.

There are a number of options for validation. Users of the Ushahidi platform could be informed whether the alerts they have subscribed to receive have been verified. The submission of information to Ushahidi could be restricted to trusted individuals. Al-Jazeera used Ushahidi to cover Israel's attack on Gaza; only its own journalists contributed to the near real-time reporting. This approach could be described as 'bounded' crowdsourcing.

Ushahidi also allows pictures to be geo-referenced and reported in almost real-time directly from phone cameras. Pictures are relatively harder to fabricate than simple text messages. Moreover, if several different pictures of the same incident were submitted, the multiple sources offer some validation. If text messages describing the same event depicted on the photographs were also reported on Ushahidi, there would be even more 'auto-validation.' In other words, the more information that can be collected across different media, the easier it is to verify. Ushahidi is now launching a new project called Swift River, which will use this logic to filter the torrent of information generated online during any crisis.

Conclusions

As noted at the start of this report, *if information means survival for communities in crisis, then communication technologies are their lifelines.*

The idea of preparedness extends beyond simply having

effective early warning systems. *Meeting the information needs of communities before the onset of emergencies is an important way to build preparedness and resilience.*

Communications technology will help humanitarian agencies create preparedness and resilience in the event of an emergency. However, the collection and use of information does not just depend on technological innovation. The technologies need to be widely adopted and used properly, thus making people-centered approaches more effective.

More progress is needed on the provision of accurate and consistent information to vulnerable communities. Traditional media are an effective means of reaching large numbers of people in ways that will get important messages across. *Nongovernmental organizations (NGOs) and humanitarian agencies could make more effective use of both traditional and new media to reach the communities they aim to serve.*

Preparedness also requires the international humanitarian community to be able to act on the information and analysis enabled by these emerging systems. Innovations in information systems serving the international humanitarian community hold out the promise of improved opportunities to empower vulnerable communities. *Preparedness also requires the international humanitarian community to be able to act themselves on the information and analysis enabled by these emerging systems.*

There is a trade-off between the authoritativeness of information and its timeliness. Humanitarian information systems have traditionally been authoritative but lagging urgent developments. New real-time approaches are changing this, offering the potential for using multiple reports in different formats to cross check. *But the issue of validation remains a significant challenge.*

Information and misinformation in Kenya

One example of the scope for the spread of misinformation is provided by the December 2007 elections in Kenya. The official results of the election gave the lead to incumbent President Mwai Kibaki, despite initial results that suggested opposition candidate Raila Odinga was well ahead. The outcome was disputed and six weeks of violence followed, with more than 1,000 deaths and perhaps half a million Kenyans displaced from their homes.

One of the outcomes was the extensive use of mobile phones, for SMS messaging, and online tools both to organize peaceful protest, and unrest, and to report on events. The text describes the development of Ushahidi for collating reports of violence. Media outlets also asked for SMS or email updates; the BBC received about 4,000 text messages from Kenyans.

A number of groups mobilized to send text messages aiming to prevent violence, including an emergency response scheme provide by Oxfam GB.[53] There were also some 'chain' text messages encouraging ethnic hatred. Safaricom sent messages to its subscribers urging them to be calm and warning of possible prosecution if they sent SMS messages that might cause public unrest.[54]

There is clearly the need for a broad public debate about the potential to use new technologies for malicious purposes, including the applicability of existing media law to new media. Screening of text message and social network content in some countries seems increasingly likely, which is a double-edged trend depending on the intent of the authorities.

However, this is not a problem confined to new technologies; traditional media can play the same role. The best-known precedent was set by Radio Milles Collines, a popular radio station that encouraged hatred during the 1994 Rwandan genocide. Criticism of some local language radio stations occurred in Kenya in early 2008. Furthermore, as one study of Kenya noted, "Since SMS, unlike radio, is a multi-directional tool, there is also hope that voices of moderation can make themselves heard." [55]

Credit: Nick Rain