



## Technology and community-centred humanitarian action

Technology is changing how humanitarian disasters are prepared for, responded to and recovered from. More importantly, it is changing how local communities, who inevitably are the first responders, react and improve their actions. Both the directly affected populations and the institutions that pledge to support them are finding new ways to connect, enabling them to better attempt to prevent catastrophes, save lives and rebuild communities.

Despite living in Chicago, more than 9,700 kilometres (6,000 miles) from his native Syria, Zaher Sahloul, a medical doctor, has been busy the last two years helping to treat patients in his war-torn country of origin. He has made six trips on medical missions to refugee camps in Jordan and Turkey and to camps for displaced people inside Syria. In the United States, he has used social media to organize medical supplies and donations worth more than US\$ 5 million from the Syrian diaspora in the United States. He has also filmed and uploaded tutorial videos (SAMS, 2012) in Arabic to YouTube that give physicians inside Syria advice on how to treat external bleeding, clean wounds and sew injuries common to warfare. And he has been using a computerized barcode system to track medical supplies and ensure they arrive safely at their intended locations inside Syria (Sahloul, personal communication, 2013).

Regardless of the regular phone and internet blackouts and non-secure communication channels in Syria (Reuters, 2013), Sahloul has been able to communicate with medical personnel on the ground. This has been made possible thanks to internet system engineers like Salah Mamdouh (name changed to preserve real identity), who works with an international non-governmental organization (NGO) that preferred not to be named to preserve their identity. Mamdouh, a Syrian who was forced to flee the country, has helped to establish encryption tools and virtual private network (VPN) accounts, to create secure ways for Syrians inside the country to communicate via the internet (Mamdouh, personal communication, 2013).

Mamdouh says Syrians who manage to get online head to YouTube to share footage of the humanitarian disaster they are witnessing. They also flock to Skype to communicate with family members and to get information and requests to the humanitarian community. Having open channels for Skype calls has allowed Sahloul to connect with hospitals and doctors, some of them former classmates from medical school in Damascus. His organization, Syrian American Medical Society, has collaborated with both local organizations inside Syria and international humanitarian agencies, like the International Rescue Committee and the

This refugee from Darfur listens to Radio Sila in a Chadian camp. Internews, a media NGO, trained local journalists and built radio stations for people displaced from Darfur and host communities. Radio is effective in getting social action messages to a population that is largely illiterate.  
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International Committee of the Red Cross, to coordinate aid and make sure the right kind of assistance is reaching refugee camps and into Syria.

Enabling Syrians to use YouTube, Skype and other online tools has been a useful way for people inside Syria to organize, coordinate and respond to their own problems, and for outside actors, particularly when humanitarian access has been so limited, to try to ascertain need and organize and provide humanitarian assistance.

## Your mobile, your life

The collapse of the Rana Plaza garment factory in Dhaka, Bangladesh on 24 April 2013, is another testament to the use of information and communication technologies – in this instance, mobile phones – as a tool for post-disaster recovery. While searching through the rubble of the Rana Plaza, looking for survivors after the building collapsed, civilian rescuer Saydia Gulrukh noticed that many individuals had died clutching identity cards and mobile phones (Gulrukh, personal communication, 2013).

Gulrukh says this response can be tied to another factory disaster in November 2012, where a fire tore through the Tazreen garment factory, also in Dhaka, killing more than 100 people. Government estimates of the missing were low, in part because many families had no records of their loved ones to help identify them. This made it difficult for them to claim bodies and prove that they qualified for benefits.

Gulrukh, a trained anthropologist who heads a small organization called Activist Anthropologist, was also doing research as she helped with the initial recovery at the Rana Plaza building. She wanted to try and get an independent count of the dead, communicate with their families and establish how many people were still missing. Gulrukh did this by accessing SIM cards of the deceased, putting them into a second phone and calling a number from the address book, eventually connecting with someone who could confirm the identity of the person. Activist Anthropologist is trying to hold the government of Bangladesh, in particular the Ministry of Labour and Employment, and the Bangladeshi Garment Manufacturers and Exporters Association (BGMEA) more accountable through a parallel investigation. By connecting with families of those affected or missing, the organization aims to force the government to publish more accurate numbers for missing workers and, as a result, offer proper compensation amounts for their families.

Imogen Wall, the coordinator for communications with affected communities at the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), would not be surprised by the creative use of Skype in Syria's war zone or that of mobile phones in response to the Bangladesh factory disaster.

“These tools are amplifying the capacity of disaster survivors to find resources and to find what they need to get them out of whatever situation they’re in,” says Wall. “Whether that’s being able to call a family member to dig them out or rescue them in a boat in a flood, or the capacity to connect immediately to someone overseas who might be able to send money, or family reunification, or being able to just pull a community together to respond really fast” (Wall, personal communication, 2013).

### Are we listening enough?

New technologies – mobile phones, SMS, crisis mapping and social media – increase the capacity for affected communities, diaspora groups and ordinary citizens to access, produce, share and disseminate useful and actionable information and also demand accountability outside the traditional humanitarian circuit (Wall and Chéry, 2011).

Humanitarian actors have begun to adopt some of these tools more systematically in their work, relying on input from affected populations. Yet the question remains: are we listening enough (Quintanilla, 2013)? And, even more critically, what happens to those who fall through the cracks of the digital and age divide? Since the earthquake that shook Japan in March 2011, concerns have been expressed about those individuals who live beyond that last mile of existing communication infrastructure, who nevertheless can experience the full range of consequences of a disaster (Internews, 2013).

There has been important progress, including the birth of the Communicating with Disaster Affected Communities (CDAC) Network, a group of organizations established in 2009 to promote more effective engagement with communities affected by crisis, and the Infosaid project which ran from 2010 to 2012 and aimed to improve information exchange in crisis situations, by making more accurate and timely information available to both humanitarian responders and crisis-affected populations. Yet the humanitarian community has yet to fully realize that communication is one of the most powerful forms of aid and that humanitarian responses are often still undermined precisely because people’s information needs are considered a low priority.

**BOX 2.1** *Voix des Kivus*: crowdseeding event data in eastern DRC

In 2009, New York's Columbia University launched a pilot project called *Voix des Kivus* in the war-torn province of South Kivu in the Democratic Republic of the Congo (DRC). The project sought to examine how mobile phone technology could be used to gather representative data about conflict events in real time.

Data collection projects based on mobile phone technology have become very popular, and often use a 'crowdsourcing' approach in which anyone with the interest and ability can send an SMS message to a central platform. The *Voix des Kivus* project chose to use 'crowdseeding', i.e., it selected villages through random sampling and identified specific reporters in each village. These were given mobile phones, credit and training, and were invited to contribute to the system. This approach has three benefits for data quality. First, people can participate that otherwise would not, particularly in areas such as the DRC, where the crowd may be small: many live in hard-to-access villages and lack a mobile phone or the funds to send an SMS. Second, by selecting a random sample, the information received is representative of a wider population. Finally, there is reduced scope for faking reports. A crowdseeding system builds a relationship with the reporters, increases incentives to report truthfully and offers the opportunity to verify reports.

The project operated in 18 villages. After villagers agreed to participate, three reporters were selected: the chief of the village, the head of the women's association and one reporter elected by the community. Reporters were trained and provided with a phone and a codesheet that listed possible events. Reporters automatically received a weekly phone credit that they could freely use and were reimbursed for the number of messages sent, but did not receive private benefits for sending messages. Sending messages to the system was, therefore, both free and voluntary. The reporters served as representatives of their villages and could relay information on public events witnessed by others. There was 100 per cent consent (0 per cent non-response) at both the village and the reporter levels.

On the receiving side, a standard mobile phone linked to a laptop comprises the necessary equipment. With freely available software (FrontlineSMS, R and LaTeX), messages received were automatically filtered, coded for content, cleaned to remove duplication and merged into a database. Translations of non-coded text messages (generally from Swahili) were undertaken manually.

Uptake was enthusiastic. In 18 months the reporters sent more than 4,000 pre-coded messages about public events and some 1,000 text messages. Moreover, individual rates of sending showed no signs of abating. The data generated were rich, including regular reports of conflict events (abductions, looting, shootings, sexual violence, etc.) and non-conflict events (crop failures, flooding, etc.). Qualitative verification and cross-validation between reporters suggest that the data are of good quality. The system was demonstrably cheap and workable.

Much of the data received, such as information on violence perpetrated by different actors, was sensitive in nature and this had implications for data dissemination and project scale.

In contrast to a crowdsourcing system, where information is received from an unidentified, anonymous public, a crowdseeding system makes use of identifiable users. This characteristic had three

implications. First, to ensure that subjects were not harmed, *Voix des Kivus* did not make all the event data public and more sensitive data were only shared with trusted actors in a position to respond. In practice, data were disseminated through a weekly bulletin in two versions – a non-sensitive version shared broadly and posted on the web, and a sensitive version shared with development and relief organizations in the region. Second, although collective participation in a system like *Voix des Kivus* has the potential for disparate villages to engage with each other more directly and coordinate on concerted action, the project's concern with the protection of participants prevented this type of networking since participating villages remained mutually anonymous. Finally, *Voix des Kivus* only worked on a small scale. If brought to scale, more people – among others, violent groups – would be more likely to hear about the project which might create risks for reporters.

Experience with *Voix des Kivus* shows the feasibility of implementing a crowdseeding system to collect high-quality representative data in real time. However, while proof of concept for the data collection strategy exists, there is no proof of concept that the data collected are actionable. In the 18 months of operation, the project is not aware of any instances in which developmental or humanitarian agencies responded to incidents or issues raised by the reporters. It is possible that the weak reaction was because of the project's small scale. *Voix des Kivus* operated in only 18 villages and the researchers did not want to scale up for security reasons. These problems might be mitigated if the project were implemented by an NGO that can respond and is able to take responsibility for risks to reporters. ■

## Mobile information

There are currently 6.8 billion mobile phone subscriptions in the world, according to the International Telecommunication Union (ITU, 2013). That's almost one mobile phone subscription per person, a milestone that should be reached by 2014. Mobile phone penetration rates are more than 100 per cent in high-income countries and around 89 per cent in low- and middle-income countries, as even the most impoverished and isolated citizens now find ways to obtain mobile phones and pay for basic coverage.

This proliferation of mobile phones has enabled aid providers to connect with a volume of affected populations and at a speed that was unimaginable ten years ago. In Sierra Leone, where 60 to 70 per cent of the 6 million residents are connected via mobile phone, the IFRC has launched the Trilogy Emergency Relief Application (TERA) project in collaboration with local telecom providers. TERA allows the Sierra Leone Red Cross Society and IFRC to target specific cell towers around the country, sending humanitarian information via SMS to communities in crisis, allowing the agency to connect instantly with affected communities about floods, wildfires and disease outbreaks.

The IFRC's beneficiary communications delegate Sharon Reader helped introduce the TERA project with the Sierra Leone Red Cross Society: "We can SMS up to 36,000 people per hour to tell them that there's a fire happening in this

community or this town, where it's happening, so they can avoid it and not get stuck in the middle of it" (Reader, personal communication, 2013).

The Sierra Leone Red Cross is looking to use TERA for prevention outreach too, by sending a series of daily text messages with information about disease prevention and disaster preparedness. For example, as the rainy season approaches and the risk of malaria increases, TERA could be used to introduce the topic to SMS recipients, explain how to prevent it, what the symptoms are and what to do if they become ill.

In the Philippines, with a population of 94 million, there are already more mobile phone subscriptions than people, driving a culture of connectivity in this nation of islands where Facebook and Twitter, most commonly accessed by phones, have become part of everyday life. In December 2012 the government of the Philippines turned to social media to help prepare for the oncoming Typhoon Bopha (also called Typhoon Pablo). Before the category 5 storm – the most severe – descended with 258 kph (160 mph) winds, flooding and mudslides, officials began alerting citizens via television, internet and radio; and they created a special Twitter hashtag for the storm, #PabloPH, and a mobile-friendly disaster information page that helped people locate disaster shelters and other assistance (Tech in Asia, 2012).

OCHA's Imogen Wall was in the Philippines as part of the humanitarian response to Typhoon Bopha. She says that the reason the tech approach to assisting citizens in the storm was successful was that it was homegrown and made use of communication channels that were already widely used in the country. "Technology is just making visible to us what would have happened anyway," she says. "Communities talk to each other, connect to each other and try to leverage resources to get themselves out of the situation they face. That has always been the case, but when people do it electronically – like in the Philippines where they posted messages on Twitter saying 'Stuck here. Help.' – that makes it visible to us" (Wall, personal communication, 2013).

## **New media/old media**

In October 2012, Hurricane Sandy hit the eastern seaboard of the United States with a ferocity for which few were prepared, including governments, businesses, utility companies, aid agencies, transport authorities and residents. Hundreds of thousands of people lost access to basic resources for weeks. Some residents in the hardest-hit areas, such as Staten Island, Brooklyn and the New Jersey shoreline, lost everything.

In Brooklyn's Red Hook neighbourhood, a small enclave that sits on the Atlantic Ocean and includes that borough's largest social housing community, residents were taken unawares. Tide waters rose up and flooded the neighbourhood, filling not only basements, but first floors of buildings. Thousands of people lost power, heat and water, and the main local food outlets were inoperable or completely destroyed.

For weeks, debris littered the streets of Red Hook, while inhabitants queued for food aid and the US federal government and aid agencies set up offices in trailers to help those in need. And this was in New York City, one of the most resource-rich places in the world.

Ulyses Bermudez, aged 57, did not evacuate his apartment when the mayor of New York, Michael Bloomberg, gave warning of the potential damage a day before Sandy hit. It is the only home he has ever known, and he rarely leaves his tight-knit neighbourhood. Bermudez spent the first week after the hurricane in the dark, as ocean waters had flooded the basement of his building, wrecking its electrical system. Afraid that his apartment might get looted if he left it, Bermudez stayed put, lit candles and listened to his battery-powered radio, waiting for news of the arrival of assistance in Red Hook. Bermudez felt isolated. He had a mobile phone, but not a smartphone, no computer and no electricity for a television. His only source of local news was simply talking to the other residents who stayed behind and messages taped by volunteers to the doors of his building with phone numbers to call for various forms of aid. While Bermudez sat in his apartment listening to the radio, the impact of the storm was being documented and identified on the internet, and a substantial relief response was being organized online. One Red Hook community organization was even developing a crisis map for the neighbourhood. But Ulyses Bermudez was clearly never going to access any kind of aid that relied on him being online (Bermudez, personal communication, 2012).

In the wake of the disaster that hit Japan in March 2011, similar scenarios were commonplace. Japan is a media- and information-rich, digitally enabled society, but the regions worst hit by the tsunami – Iwate, Miyagi and Fukushima – were predominantly fishing and rural areas with declining populations, 30 per cent of whom were over 60 years old. Many of the inhabitants were, like Bermudez in Brooklyn's Red Hook, unaccustomed to accessing information online, unfamiliar with social media networks and, therefore, unaware of the relief resources available to them.

Knowing what information people need, what channels people use and – very importantly – trust, and how they communicate within their own communities and with the outside world is the first step to providing aid more effectively.

Kyla Reid is the head of disaster response for the GSMA, a mobile phone industry association that brings together more than 800 of the world's mobile providers. Reid specializes in ensuring mobile networks are available as essential tools in the wake of crises. She is well aware that technology is not always a saviour, or even an available tool, in a disaster situation. "You can prepare the networks as much as you want," she says, "but if you get a 100-year storm or a really severe earthquake,



there are going to be interruptions – service interruptions and other kinds of problems. And often, it's actually congestion on the networks of people calling in and calling out than actual damage to the infrastructure" (Reid, personal communication, 2013).

In addition, communities and responders must also remain acutely aware of the likelihood of a technology blackout and are often obliged to come up with strategies to work around the absence of information and communication. In October 2012, in the Brooklyn neighbourhood of Rockaways – hard hit by Hurricane Sandy – Elizabeth Knafo worked as part of Occupy Sandy, a relief effort organized out of funds and networks left over from the resistance movement Occupy Wall Street. While many 'occupiers' were busy making sure affected residents were dry, safe and had basic necessities, Knafo and a small group of other responders went out with notepads and pens and began to do field research. Knafo says there was no consistent information available to the affected communities and, with mobile phones and internet down, people were, literally, in the dark. So she and her colleagues began to organize the information that seemed most essential and in demand from locals, and they created a bulletin dedicated to what storm-affected communities needed to know. "It seemed obvious that, in a place that had no electricity and no phones, the little information that was out there was not going to be acceptable. We just wanted to get as much of that info as we could and print it onto paper. We also wanted to create a little more coherence," she says (Knafo, personal communication, 2013).

The *Sandy Relief Bulletin* was born and included information about recovery, shelter, food, transportation, clean-up, emergency benefits and more. Some 50,000 copies were printed, using funds supplied from the Occupy movements own Occuprint printing collective, and were distributed in Rockaways, Red Hook and Staten Island, some of New York's hardest-hit areas. The bulletins were deposited at aid distribution hubs and made available along with other assistance. A second bulletin was printed a week later and included a map of recovery centres and aid agency outposts. It also published information about disaster unemployment insurance and advice on how to stay warm as temperatures dropped.

Knafo and her colleagues received e-mails from the US Federal Emergency Management Agency and the American Red Cross, inquiring if the group planned to print more copies. She says many of the more essential recovery agencies and the city and federal governments had their forms and deadlines for assistance available only online, where many could not access them due to lack of electricity or internet access.

Knafo's experience in New York is corroborated by that of Hiroyuki Takeuchi, editor of the *Hibi Shimbun*, a local newspaper in the Ishinomaki area of Japan. Immediately after the tsunami in 2011, with his newspaper's offices flooded, no power and the printer broken, Takeuchi sent his six reporters to gather information from the city

hall and affected areas, which they reached on foot. The day after the earthquake, reporters handwrote headlines on a giant piece of paper. "People were so hungry for information we could barely stick the paper on the wall at relief sites. If there is no information after a disaster people become even more stressed and anxious. Old media works best in emergencies," he says.

According to Keiichi Saito, a community radio station manager in Tome, Japan, who got back on the air immediately after the disaster by relocating his broadcasts to the hill where his antenna was located: "People act more calmly with a radio. With visual information, people may panic more easily. Also, a radio is good because it is portable and even old people know how to use it." In the first few days after the disaster, Saito's broadcasts helped people get the information they needed about the scale of the destruction, basic resources like food and water, and updates on the local electrical grid.

Japanese citizens outside the impact zones were able to use all kinds of different media to search for loved ones, including the popular Google Person Finder. But Saito says being connected online was a luxury for those who were safe and sound. "The internet is useful for people outside of the disaster area, but inside the area, the power and network are often cut, so it's not useful right after the disaster, when we really need information. In addition, too much information can lead to confusion" (Saito, personal communication, 2013).

In addition to advances in technology, it is necessary to continue to use and support more traditional methods of information and communication, such as community radio stations. Their crucial role is under-acknowledged, however, and funding for them is very limited.

#### **BOX 2.2** Communications, technology and crowdsourcing during the 2011 Japanese earthquake

As a leader in both disaster preparedness and advanced technology, Japan's civil society used everyday tools in unique ways to communicate and share information in the wake of the March 2011 earthquake and ensuing tsunami and nuclear accident. Examples of such platforms include Twitter and Sinsai.info.

Some of the worst-affected areas were without power or access to phones and internet for weeks, but in other areas internet services remained accessible even where mobile phone networks were down. Japan is the third-largest user of Twitter after the United States and Brazil, and Twitter use rose from an average of 3,000 inter-country messages per minute to 11,000 on the day of the earthquake (Kondo, 2011). These tweets included urgent pleas for assistance, which were organized by a hashtag spontaneously created by a Japanese user and re-tweeted across Japan; those who saw the messages contacted rescue centres. Others tweeted assistance requests directly to top officials including the US ambassador to Japan and the deputy governor of Tokyo, and quickly got their attention (Appelby, 2013; Sternberg, 2011). Twitter is by nature public, so even if the officials themselves did not notice the tweets

initially, others around them could bring them to their attention. Before the age of Twitter, it would have been almost impossible for the average citizen to mobilize critical resources so quickly through top officials with just a few taps on a smartphone.

Sinsai.info is the Japanese version of Ushahidi, an open-source crowdsourcing platform that was originally created to document and map eyewitness reports of violence after the 2007 Kenyan presidential election. It was also used after the 2010 Haiti earthquake where survivors texted requests for assistance, which were in turn translated, organized and mapped by a team of volunteers in Boston (Heinzelman and Waters, 2010). Sinsai.info was launched four hours after the earthquake, and volunteers manually geo-tagged and mapped more than 12,000 reports mostly from Twitter feeds using OpenStreetMap and satellite imagery provided by the Japan Aerospace Exploration Agency, categorizing them into types of resources such as evacuation shelters, open food stores, gas (petrol) stations and mobile phone charging centres (Kato, 2011; Inoue and Seki, 2011). It also mapped requests for assistance from survivors stranded at nursing homes and hospitals.

In a crisis, individuals need to be able to navigate quickly through information and access what is relevant for them. For the end user, whether a survivor searching for evacuation shelters or a responder searching to rescue people stranded in flooded buildings, information must be organized in such a way that it is intuitive to navigate and offers actionable data. Sinsai.info's effort to map reports made it easy for users to visualize quickly what was happening where, thus enhancing situational awareness. While Sinsai.info may not have been used as often by those hardest hit by the disaster, possibly due to issues including limited internet access, lower digital literacy in a more elderly population and low familiarity with the system (Appelby, 2013), there is great potential for these tools to be used in the future to conduct needs assessments rapidly and map locations of passable roads and evacuation centres and hospitals with their updated needs.

On the other hand, whether the user actually makes decisions based on the visualized information depends on a number of factors, including familiarity and level of trust in the system. In terms of disaster-affected populations in Tohoku, the most frequently used communication tool on the day of the earthquake was radio (68 per cent), while 38 per cent reported using non-smartphone mobile phones, 20 per cent used internet on personal computers, and only 6 per cent used smartphones (Information Support, 2011). Internet use increased to 55 per cent within the first week, but usage of smartphones remained at 7 per cent and none of the survivors interviewed by a field research team was aware of the Sinsai.info crisis map (Appelby, 2013). In the worst-affected areas, 26 per cent of the population is aged over 65 (Statistic Bureau, 2012) – a vulnerable, elderly population with, probably, low levels of digital literacy. Radios offered real-time local information that affected decision-making. In Haiti, SMS texts were used to send information and the Ushahidi team could contact the sender to verify information. In Japan, however, texting is not commonly used, so Sinsai.info mapped tweets, many of which were not directly from people in the worst-affected areas, but were secondary or tertiary information from people who had heard from the Tohoku survivors (Asakawa, 2011). Thus, the information was not necessarily real time, and there was no system to confirm the accuracy of the information.

Sinsai.info's effectiveness cannot be measured based on its impact on operational decisions, as it was intended not to transmit information, but to select and organize it (Kato, 2011). However,

it is still important to consider its role and implications. As was the case after the Haiti earthquake, it is difficult to measure the actual impact of crowdsourced mapping. For Sinsai.info, more than 500,000 users accessed the site, and there were reports of individuals responding to requests for assistance by connecting them with the Japanese Self Defense Forces (Inoue and Seki, 2011). However, no direct line of communication existed between those running Sinsai.info and assistance teams. By comparison, the Ushahidi team had established relationships with responders before the Haiti earthquake (OCHA, UN Foundation and Vodaphone Foundation, 2011), and there was a system of flagging urgent medical needs and communicating those needs through a direct line of communication with the US marines (Heinzelman and Waters, 2010).

Crowdsourced mapping can be a powerful tool to guide decision-making in humanitarian assistance. In setting up such a platform, it is important to consider carefully its role, purposes and strategic partnerships with different stakeholders before the disaster strikes. While low-tech tools such as radios remain an important lifeline in disasters, in the future, they need to be combined with newer technology, including crowdsourced mapping, to improve disaster response. It is also essential to establish a link between volunteer technical communities, local and national emergency management agencies and disaster responders. ■

## Giving and supporting differently

An estimated US\$ 43 million was donated by people in the United States via SMS to help with relief in the aftermath of Haiti's 2010 earthquake. According to *Real Time Charitable Giving*, a Pew Internet Project and Knight Foundation report (Smith, 2012), most of these donations were made through mobile phones, with a majority of donors using that method for the first time. Since then, around half of those original donors donated again in the wake of the 2011 Japan earthquake and tsunami. People in the United Kingdom have also been donating millions of pounds to disaster relief in places like Somalia and Syria through mobile and online networks.

But mobile giving is not only a Western innovation for disaster response. In fact, it has caught on equally fast, if not faster, in low- and middle-income countries. Pointing to the Haiti earthquake, the GSMA's Reid says mobile money transfers also flowed from diaspora communities who could give directly to friends and relatives.

She also says local communities in low- and middle-income countries have found mobile money transfer a way to support people in their country of origin. "I think that there is a reality more important than allowing people to connect with responders, but now it is allowing people to connect within their own communities before any outside help arrives" (Reid, personal communication, 2013).

During the 2011 famine in East Africa, a coalition of Kenyan government, civil society groups and businesses set up and promoted a mobile transfer initiative to help farmers in the north of the country. Asking for the equivalent of 10 US

cents from donors, they were able to raise hundreds of thousands of dollars in relief (BBC, 2011). A similar initiative was launched in Turkey, where 100,000 SMS messages were sent in a campaign to raise funds for Somalis affected by famine (World Bulletin, 2011).

Indeed, Kenya has become a world leader in the use of technology as a development tool, including through the widespread use of mobile money transfer. “More than 16 million adults in the country utilize M-PESA and majority are in the rural areas,” says Nicholas Wasunna, a mobile money expert in a leading telecommunications company in Kenya. Wasunna says it is not just people buying essentials and sharing money with friends and family. He says users in rural areas, specifically women, have also found mobile money to be a community development tool, “let’s get together and raise some funds to dig a borehole in our community, or let’s build a school, or let’s build a dispensary or hospital, or let’s put some money together to buy some fertilizer for our produce, or medicine for our families or livestock. Within those communities you’ll find groupings of 5, or 50, or 100 women, collecting money using different means and mobile money has provided a useful avenue for such collections” (Wasunna, personal communication, 2013). Electronic cash transfer is also a rapidly growing tool for humanitarian action, including payment of vouchers for food or shelter.

Increasingly, partnerships are being formed by relief organizations and local Kenyan telecoms to distribute aid more efficiently. The World Food Programme (WFP) is currently partnering with M-PESA to make sure drought-affected populations in northern Kenya are getting the food they need (WFP, 2012). Around 16,000 participating families were given a mobile phone, a SIM card and set up with M-PESA accounts as part of a three-month pilot programme. They receive about 3,000 Kenyan shillings a month (about US\$ 35) to buy groceries at local markets. Sara Belfrage, WFP programme officer, says there was some concern that handing over money, instead of food, might backfire. “Of course you can never be sure, but if you target right and reach food insecure people, their first need is to buy food. Women make up an 80 per cent majority of the beneficiaries. We also monitor the projects and those reports show that they are spending the majority of the money on the food” (Belfrage, personal communication, 2013).

### **BOX 2.3** The use of new technologies for cash transfer programming

In recent years, advances in new technology in low-income countries are leading to a growing interest in how they can best serve humanitarian responses (Smith et al., 2011). The world now has more mobile-connected devices (mostly phones) than it has people and mobile penetration in Africa is about 70 per cent, reaching 735 million subscribers in 2012, up from 4 million in 1998 (OCHA, 2013). Technology is considered to have the potential to detect needs earlier, enable greater

scale and speed of responses, enhance specificity of resource transfers to match needs and increase accountability while reducing opportunities for corruption and diversion.

The humanitarian sector has also experienced rapid uptake in the use of cash transfer programming (CTP) as a tool for humanitarian response. From 2007 to 2010, humanitarian aid spending on CTP increased from US\$ 1.8 million (0.7 per cent) to US\$ 52 million (25.9 per cent) (Global Humanitarian Assistance, 2012). This has, in part, been enabled by the advances, availability and adoption of appropriate technology, even in the most remote and insecure areas. The use of electronic transfers for CTP has increased significantly in the humanitarian sector and is becoming increasingly recognized as an effective intervention in emergency contexts. The World Food Programme, for example, in 2012 delivered 50 per cent of the US\$ 340 million of cash assistance it provided by electronic means.

CTP is an area where innovative ideas – including those involving new technologies – can have huge impact. The Cash Learning Partnership (CaLP), a consortium of Oxfam GB, the British Red Cross, Save the Children, the Norwegian Refugee Council and Action Against Hunger/ACF International, aims to improve the quality of emergency cash transfer and voucher programming across the humanitarian sector by raising awareness of CTP as an appropriate and effective mechanism for emergency response, building capacity in the use of cash and vouchers, gathering evidence through research and encouraging learning and knowledge-sharing among humanitarian actors. CaLP is at the forefront of efforts to improve guidance, provide tools and build capacity in the use of new technologies that support quality programming.

In 2011, CaLP commissioned and released a research report, *New Technologies in Cash Transfer Programming and Humanitarian Assistance* (Smith et al., 2011). Research was undertaken to explore preconditions for the use of technological mechanisms identified, user-friendliness of the technology for the recipient and the agency, issues concerning accountability and potential for wider impacts. Three types of technology currently being used in aid programming – electronic payment systems, use of mobile phones and digital data-gathering tools – were examined. The report outlines suggested actions to move towards more systematic adoption of effective and accountable technological solutions in humanitarian aid and concludes by making recommendations for humanitarian actors in differing technological environments.

There is now growing recognition that electronic payment (e-payment) systems have the potential to provide more efficient and reliable delivery for cash payments. Almost 50 per cent of social transfer programmes launched globally in the past decade (mostly in middle-income countries) use electronic payments (NAO, 2011). Manual payment arrangements are assumed to be inherently prone to inefficiency and risk, particularly in isolated rural areas, to divert staff from core responsibilities and to impose hidden costs. This change is partly driven by a desire to realize cost savings. An analysis to estimate the aggregate benefits that would accrue to the Indian government if it connected all poor households to an e-payment system found that automating all government payment flows could save up to US\$ 22.4 billion per year, or 8 per cent of total flows. Inefficiencies were found to be based on leakages (75–80 per cent of total losses), transaction costs (15–20 per cent of total losses) and administrative and overhead costs (5–10 per cent of total losses) (Lochan et al., 2010).

The report's three main conclusions are that where mobile connectivity is already established in an area and technological solutions exist, agencies and donors should develop standard approaches to support systematic adoption of new technology in programmes to improve efficiency and effectiveness of aid

provision. In areas where emergencies are chronic or recurrent, there should be a push to develop new financing models to meet costs of investment and for preparedness frameworks between donors, agencies and solutions' providers. When an area with limited infrastructure or technology is hit by a sudden-onset disaster, it is not the right time to start implementing new ways of working or try out new technology. However, the humanitarian community operating in these contexts should stay abreast of developments and seek to advance the development of such solutions and of network connectivity where possible.

In a context where technology is evolving rapidly, practitioners need to better understand what options are available, and when and how to access and utilize them. Underlying this is the need to ensure continued accountability – to both donors and affected populations – and to enable more systematic adoption of effective and accountable technological solutions in humanitarian aid. ■

## The 'exciting' (and unstoppable) world of two-way communication

The WFP office in Kenya, having given mobile phones to 16,000 families in drought-stricken northern Kenya, knew they had a captive audience. And they wanted to do more with the mobiles than just initiate their normal aid mechanism of providing assistance. They saw an opportunity for local community empowerment and capacity building, and for WFP, the potential for greater transparency and greater accountability.

Using a WFP mobile accountability pilot project in Pakistan as a model, Belfrage helped develop a feedback and comment hotline for Kenyan families already receiving the money transfers. Little by little, people began to call: "Complaints come in about delays in cash, questions about when people would receive cash, or technical issues. We had a few cases related to fraud and corruption that we also managed to solve" (Belfrage, personal communication, 2013).

All calls to the WFP feedback service go to a central hub in Kenya's capital, Nairobi, and once the problems and solutions are determined, WFP forwards the cases to regional partners who can then respond in person.

Pakistan-based WFP programme assistant Syeda Zahra manages the original pilot feedback project. Zahra cites a cash-for-work programme where Pakistani villagers did not receive payments promised for the road and bridge work they were doing. They contacted the WFP office through the feedback hotline and WFP was able to fix both the immediate payment problem and the longer-term problem of monitoring their local partner better (Zahra, personal communication, 2013).

This idea that humanitarian agencies are opening up to two-way communication channels with affected people is 'exciting' to many. Will Rogers, IFRC's global coordinator for beneficiary communications, says as local communities continue to

connect more, they also begin to assert themselves more with aid agencies. He says with access to mobile phones and the internet, affected people are already demanding more transparency and accountability (Rogers, personal communication, 2013).

“The days of silent, passive recipients of aid are over,” wrote Information and Communication Technologies for Development (ICT4D) expert Wayan Vota in May 2013. “In the future, probably even before 2018, communications in aid will be more from those in the middle of the crisis situation out to the world than any of us in development can imagine. What I can imagine is a future where those in a crisis tell us what they need and want- and don’t – and are loud and forceful enough in their communications that they drive the development process, not us.” Vota’s vision echoes that of Toby Porter, Save the Children’s emergencies director, who said in 2007 what today does not seem such an unachievable dream: “In the humanitarian operation of the future, beneficiaries of emergency aid will use technology to tell us what they need – cash, food or education – find out from us what to expect, and track its arrival, just as we track an order from Amazon.com now.”

International aid consultant Paul Currian says that while positive, this transition to hearing more from local communities may pose problems for humanitarian agencies. “Because more and more people have access to information, the same information we do, they can ask, now hold on, why did you decide to do that instead of that?” he says. “Now that criticism is good, it should open and increase our accountability, but I do believe we are just not prepared for it. We’re not looking



In Sri Lanka, a boy in an IDP camp looks at posters promoting *Lifeline*, a service run by media NGO Internews. *Lifeline*'s radio programmes and free newspaper carried news and information for IDPs and ensured their voices were heard.  
© Jacobo Quintanilla/Internews



at how to improve decision-making processes and accountability both upwards and downward in response to new pressures” (Curron, personal communication, 2013).

The American Red Cross released a survey in 2010 that showed respondents increasingly considered social media, e-mail and web sites as potential alternatives to dialling 911 (the emergency phone number in the United States) in an emergency (PR Newswire, 2010). Of those surveyed, 74 per cent said if they posted a call for help on Facebook or Twitter, they expected a professional response within an hour.

#### **BOX 2.4** Technology, communications and services during disaster

Social engagement has brought about a fundamental shift in the way people engage with each other and with organizations. It has also changed the way the American Red Cross does business: the Red Cross has committed to making social engagement part of its operational DNA, impacting outreach to the public, engagement with disaster-affected communities and operational decision-making processes.

One example is the American Red Cross Digital Operations Center (DigiDOC), which opened in March 2012. Funded by Dell computers, DigiDOC synthesizes ‘big data’ social conversations into situational awareness and, often, anticipatory awareness. It allows social media posts from the disaster-affected area to be tracked and integrated into response decision-making. While DigiDOC is often staffed by the social engagement team, trained digital volunteers work remotely to engage with affected people, providing information, real-time tips, resources, comfort and confidence via social media tools. By routing requests for assistance received through social media to the disaster relief operation on the ground, the centre has opened up an easy-to-use channel for affected populations to communicate directly with the American Red Cross. Their input can be used by decision-makers in real time to determine the best course of action.

When Hurricane Sandy (although it was no longer technically a hurricane, but a superstorm when it made landfall) hit the north-eastern coast of the United States in October 2012, DigiDOC’s team had already been at work for hours, sharing storm safety tips and providing support to those waiting for the storm to make landfall. For six weeks, 31 digital volunteers, along with American Red Cross staff, tagged and categorized more than 10,000 social media posts, responding to 2,386 of them. In total, more than 2 million posts were tracked. The team responded to hundreds of additional posts on the American Red Cross Facebook page and message box. Online conversations informed national headquarters teams about specific needs on the ground, resulting in adjustments in service delivery plans where needed. The team also pushed out information on service locations to help community members find the services they needed. In areas where the American Red Cross’s physical reach was limited, the DigiDOC team helped facilitate neighbour-to-neighbour conversations and direct people to local resources, empowering communities to help each other and themselves.

The American Red Cross has also used technology to engage with people through a suite of preparedness apps. Beginning with the First Aid app, which was adapted from the British Red

Cross, the American Red Cross released apps for hurricanes, earthquakes, tornadoes and wildfires that have helped put critical information into the public's hands before, during and after emergencies or disasters. Available on both Apple and Android platforms, the apps have been downloaded nearly 3 million times in less than a year, and most have received a 4- or 4.5-star (out of 5) rating for usefulness, content, user experience and ability to save lives.

Before and during Hurricane Sandy, users of the Hurricane app read preparedness information, tracked the storm's direction, checked American Red Cross shelter locations and shared early warning messages via social media. Immediately after the storm made landfall, app users could search for open shelters and let loved ones know that they were safe. The American Red Cross later added recovery information to the app, including locations of American Red Cross vehicles carrying food and water, locations of government-run disaster recovery centres and open gas (petrol) stations. The ability to update and add content in direct response to users' specific needs was a key component of the Hurricane app platform, and distinguished it from others.



Screenshots from the American Red Cross Hurricane app.  
© American Red Cross

To expand the utility of similar tools, the Global Disaster Preparedness Center, established by the American Red Cross and the IFRC, is piloting a platform to allow Red Cross Red Crescent societies to localize apps, with translation, content changes, image swapping and branding. This 'universal app approach' will provide access to existing apps to other National Societies that are interested in accessing the technology for their own use, providing efficient and cost-effective access to app development. This will be of interest to countries with large urban centres and a high penetration of mobile subscriptions, but these apps can also provide life-saving information for millions of people in hard-to-reach places.

The American Red Cross is also developing a cash grant system for use in international emergency relief operations. Using mobile banking, this system will provide individuals with increased decision-making power and flexibility by providing cash grants in place of relief items. Although many people in low- and middle-income countries may not have traditional bank accounts, a growing proportion does have mobile phones. Mobile banking allows individuals to send and receive funds securely, pay for goods and services, and withdraw cash using technology that they already own and use.

In 2013, the American Red Cross is piloting the use of mobile phones for cash transfers in East Africa in partnership with the IFRC and regional National Societies. This builds on previous programming in Haiti that began in 2010, when the Red Cross used SMS texts and remittance companies to deliver cash grants to thousands of earthquake survivors. Using a unique PIN number sent by SMS and government-issued identification, affected people collected cash grants directly from remittance companies. American Red Cross staff also used mobile devices to monitor the programme, which allowed for real-time aggregation and reporting of monitoring information.

Through social media and mobile devices, the American Red Cross's response to Hurricane Sandy had a virtual presence to support its presence on the ground. This kept individuals informed and provided critical data that helped inform relief operations. While volunteers provided traditional disaster response services, apps and digital volunteers provided information to affected populations at a speed and reach unimaginable before social media and mobile devices became ubiquitous. Internationally, the American Red Cross is also using the power of mobile devices, particularly phones, by making important information and aid itself, in the form of cash, available to disaster-affected people at the touch of a finger. ■

The IFRC's Will Rogers says this kind of expectation is precarious, especially when considering almost everyone now has access to a mobile phone. If an organization solicits requests too openly, it also risks creating expectations that it cannot fulfil.

### **Tools to the people: DIY**

Graphic designer and developer Samia Kallidis says modern humanitarian disasters are a reminder that governments and aid agencies cannot determine or cover every need, especially when the volume is so great. "For many little things, individuals can have the tools and power to do or get help for themselves" (Kallidis, personal communication, 2013). She says in a lot of ways, local citizens, connecting with local businesses and resources, can get some of the important recovery work done. After Hurricane Sandy hit, the New York-based Kallidis began spending time in local disaster zones, talking to residents, volunteers, local organizations and aid managers. What she saw was an amazing desire and energy from communities themselves to become problem-solvers, but a lack of organization and streamlined process to put people and skills to good use.

From this experience Kallidis created a mobile application called Jointly, which helps connect people affected by disaster directly with volunteers who can help. The start screen invites users to 'get help' or 'give help'. Moving forward through the application, people can select the specific help they need or skill they have, and then put a call out to get connected. "It will not solve every problem, but it gives people tools so they are able to start doing small things that really make the biggest difference in the recovery process. Even connecting people strengthens the community, being able to use resources more efficiently," she says.

Kallidis's theory behind Jointly is that communities are capable of dealing with many facets of disasters. Her app simply organizes the talents and needs available in a geographic area and mobilizes them. It also begins to build a community before disaster strikes, which enables the community to communicate, organize and get things done quicker after the event.

Consultant Paul Currión says it is increasingly clear that communities are better equipped to communicate and share important information with each other. "In the last five years, humanitarian organizations have become less important, particularly in politicized emergencies" (Currión, personal communication, 2013). Whether it is sending information, remittances, clothes, building materials or food, diasporas and local citizens, aided by technology, are increasingly creating a do-it-yourself approach, in some ways competing with humanitarian agencies.

When tornadoes devastated parts of Oklahoma in May 2013, groups of citizens from New York City areas damaged by Hurricane Sandy jumped in trucks to transport donations and relief materials to the affected areas. Currión says that enthusiasm to 'pitch in' is a positive trend in many ways. And although he does not foresee the humanitarian sector becoming totally obsolete, he does worry that a diminished professional humanitarian presence is problematic in other ways. "I think the humanitarian sector is not a delivery mechanism for humanitarian assistance, it's a delivery mechanism for humanitarian values. But, if our role of deliverers of humanitarian assistance is put by the wayside, becomes less important and we become less relevant, then we can no longer deliver humanitarian values. So we face this problem: at the same time [as] people are able to help themselves more, the basis of humanitarianism as we understand it, as a principled approach to helping people, could itself become eroded" (Currión, personal communication, 2013).

But this debate about who will provide humanitarian assistance in the future has more than two potential scenarios. Messages of resilience and empowerment – and information as a form of assistance – are often best delivered by individuals who have connections to both local communities and humanitarian agencies.

In the summer of 2008, as Sri Lanka's decades-long civil war became more heated, Ramanan Santhirasegaramoorthy's voice became more and more crucial. He was the chief editor and host of a daily radio programme, *Lifeline*, that broadcast news and information for people displaced by war about their situation, where to find basic resources, how to stay safe and how to connect with humanitarian and government agencies that could help them. Internews, an international media development NGO, trained Santhirasegaramoorthy and his newsroom on humanitarian principles, how to cover disasters, how to liaise professionally with government officials, military and humanitarian organizations and how to connect and interact with listeners in need. When the war ended, Santhirasegaramoorthy, like many other Sri Lankans, decided to leave the country, settling in Toronto, Canada, home to one of the largest Sri Lankan Tamil diaspora populations in the world.

A year ago, Santhirasegaramoorthy began broadcasting again, on a new Toronto-based Tamil language station, Vannakam FM. In addition to providing music and entertainment, he started some programming reminiscent of the *Lifeline* show that got people through the war.

His new call-in programme tackles resettlement issues: how to adjust to life in Canada and how to deal with the stress of living and working in a Western society.

#### **BOX 2.5** Combining local radio, SMS and crisis mapping

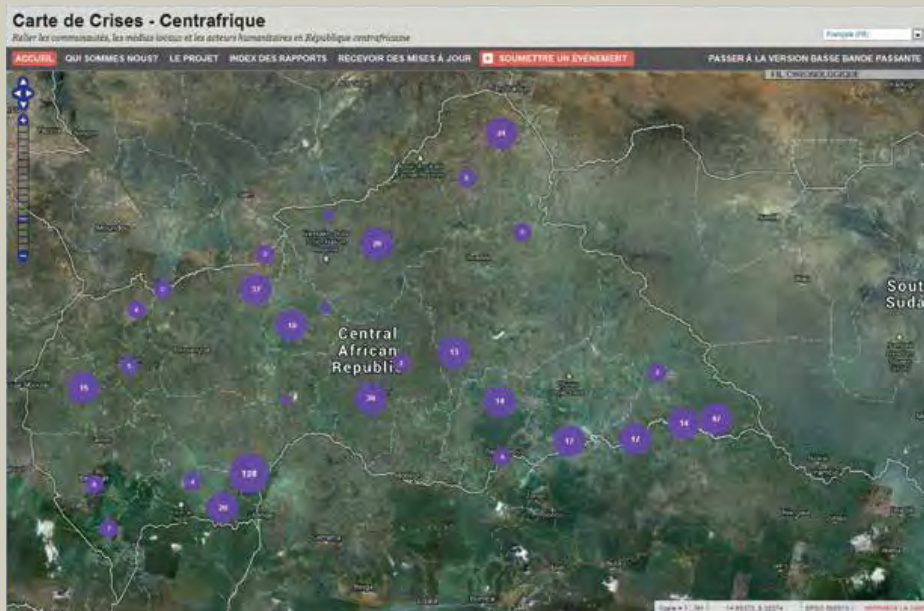
The Central African Republic is one of the United Nations' 34 least developed countries and faces endemic crises, corruption and inexistent infrastructure. In 2012, Internews and its local partner, the Association of Journalists for Human Rights, launched a crisis map in partnership with Ushahidi (a non-profit software company) and OCHA to gather real-time, first-hand information from populations across the country through an enclosed network of trusted local media organizations and community correspondents.

While half of the humanitarians interviewed at the end of the project consulted the map on a regular basis, all reported improvement in their relations with media, leading to increased contacts and collaboration. Journalists reported improvement in information collection and sharing.

Humanitarians, however, played a mainly passive role. They consulted the reports and maps, but contributed little. Of 346 messages featured on the humanitarian map between February and August 2012, only two were issued by humanitarian organizations. The information from the map and reports did not directly influence decisions or actions. This is partly due to their reliance on their own information networks and to mistrust of media and crowdsourced data on the grounds of validity and risks.

The journalists' contribution to the humanitarian map also varied greatly. Half of the radios involved in the project did not send any messages. The lack of training in handling the system, and more

generally in journalism, were major issues. However, 4 of the 11 radios involved in the programme received more than 100 SMS a month from their listeners between May and July 2012. These messages, once verified and vetted, were sent on to the crisis map.



A crisis map of the Central African Republic was created based on information gathered by a network of local media organizations and community correspondents.  
© Internews

The problems encountered in achieving the project's goal of improved communications with affected communities had less to do with technology than with the relations between actors and capacity development. Changing behaviours and ways of thinking and doing are, however, always difficult.

The Internews project, entitled 'Integrating local media and ICTs (information and communication technologies) into humanitarian response in Central African Republic', and its crisis map of the country, were cited as good examples of improving information for and communication with affected populations in an innovative way in the *State of the Humanitarian System 2012* report published by the Active Learning Network for Accountability and Performance. ■

Santhirasegaramoorthy says he has been getting calls from listeners telling him they used to listen to his programmes in Sri Lanka and that it's comforting them to hear his voice in their new home, giving them information of the same quality that they can use to help themselves in their new homes (Santhirasegaramoorthy, personal communication, 2013).

## Conclusions

To understand the local information 'ecosystem', responders need to determine what technologies and platforms might be useful before, during and after disasters. They must listen to and understand the local environment. The answer may well include local radio, community mobilizers, SMS or crisis mapping. Responders will also need to foster coherent communication with local communities in need, by linking up with the people affected by the crisis, local media, government, business and civic groups, and by listening to how people on the ground are communicating with each other. Does the local community radio station have a loyal base? Or is the small newspaper considered a more reliable information source? Who are the local mobile phone providers? Are they already working on ways to get messaging out? If not, what can be done to help restore different communication networks?

This reaffirms Paul Currion's advice that the humanitarian sector needs to keep an eye on what is effective in terms of technology and communication, not just what is new. In other words, what matters is communication, while the choice of tools is secondary. New media may not always be more appropriate. It is also important to avoid using technologies in post-emergency settings in ways that exacerbate inequalities and create divisions based on levels of technology and access to information.

This further points to the need to 'keeping it simple'. Communicating via radio, print and even word of mouth remains highly efficient. Getting the message out in a disaster should use all available means. OCHA's Imogen Wall says that, ultimately, introducing new technologies without listening first to local communities, especially after an emergency has already occurred, can complicate matters. "In the first days and weeks, if you actually want to talk to people, it is most effective to default to old-fashioned, simple, straight-forward low-tech stuff (Wall, personal communication, 2013).

The greatest implication of opening up new and more accessible methods of communication and opportunities to inform affected people is that humanitarian agencies will be more scrutinized. IFRC's Will Rogers says that while the aid sector might open up to two-way conversations, agencies also need to be prepared when the questions, and complaints, come in (Rogers, personal communication, 2013). At the same time, there is a risk of raising expectations and possibly frustrations among affected populations.

This type of communication will require effective collaboration and coordination among humanitarian agencies, media development organizations and technology groups, and with local governments. It must also take into consideration more effective partnerships with the private sector. GSMA's Kyla Reid says

that it is time for these kinds of private–public partnerships to become more common, between humanitarian actors, governments and technology and telecom businesses. “I think it’s in everyone’s interest, especially [that] of the private sector, to have those partnerships developed before a disaster occurs because nobody in the immediate aftermath wants to be dealing with MOUs [memoranda of understanding] and figuring out the right people to talk to in different agencies. That kind of preparedness and professionalization make those relationships more sustainable and more predictable when disasters do happen” (Reid, personal communication, 2013).

In this sense, it is important to note the role played by the CDAC Network, a ground-breaking cross-sector initiative between aid agencies, UN organizations, the Red Cross Red Crescent Movement and media development organizations, that recognizes information and two-way communication as key humanitarian deliverables.

Ultimately, the best way to create empowerment and resilience within disaster-affected communities is by investing in developing the capacity of community members to be the responders and organizers of their own relief. When Port-au-Prince, Haiti was hit by the 2010 earthquake, one of the most effective responses was by a radio DJ, Carel Pedre, who realized his station’s signal was still working, got on the air and, within days, had improvised an internationally accessed family reunification system, using the radio, Facebook, Twitter and a small staff to locate loved ones around Haiti (Wall, personal communication, 2013). Pedre was sharing information gathered from the humanitarian sector and was the ideal messenger, because he was a local voice, with a built-in audience and community trust.

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