

# How might emerging technology strengthen urban resilience?

3 July 2014 | London, United Kingdom

## WORKSHOP SUMMARY

*[Editor's Note: A few of the lead discussants and presenters shared Power Point presentations, and they are available at [tech4resilience.blogspot.com](http://tech4resilience.blogspot.com) on the [Workshop Outcomes](#) page.]*



Some 35 people, including technologists, humanitarians, journalists and researchers, gathered on 3 July at the head office of the GSMA (the association of mobile network operators) to discuss how emerging technologies might strengthen urban resilience. The session was part of an ongoing series of roundtable discussions organised to challenge the Red Cross/Red Crescent and its collaborators to think differently about the humanitarian applications of technology. Rather than a focus on how humanitarian organisations themselves can adopt and adapt new technologies for their work, the Red Cross is looking to strengthen the resilience of urban communities through consumer technologies, including solutions that are (or will become) directly accessible to individuals.

The welcome remarks encouraged participants to think beyond their organisations' needs, to look outside of mobile phones and apps, and to imagine the potential of emerging technologies that, in the future, could support decentralized urban disaster risk management and strengthen community resilience. As one presenter noted, climate change and urbanisation are increasing the risk and impact of disasters and rapid, haphazard urban development has been driving up urban risk. Mega-disasters are happening more frequently and so-called everyday crises and other stresses are heightening vulnerability and undermining coping capacities. This coupled with the growing urban populations makes it critical for organisations to better support community resilience so that people living in urban areas can help themselves, as frequent shocks and stresses become a common part of everyday life.



The Red Cross' Six Characteristics of a Safe and Resilient Community were shared, and the goal of the workshop was to consider how a variety of new and emerging technologies could enhance these characteristics in urban areas.

## A safe and resilient community...

1. ...is **knowledgeable and healthy**. It has the ability to assess, manage, and monitor its risks. It can learn new skills and build on past experiences.
2. ...is **organized**. It has the capacity to identify problems, establish priorities, and act.
3. ...is **connected**. It has relationships with external actors (family friends, faith groups, government) who provide a wider supportive environment, and supply goods and services when needed.
4. ...has **infrastructure and services**. It has strong housing, transport, power, water, and sanitation systems. It has the ability to maintain, repair, and renovate them.
5. ...has **economic opportunities**. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
6. ...can manage its **natural assets**. It recognizes their value and has the ability to protect, enhance and maintain them.

*(From "Understanding Community Resilience and Program Factors that Strengthen Them: A Comprehensive Study of Red Cross Red Crescent Societies Tsunami Operation. International Federation of Red Cross and Red Crescent Societies, 2012.)*

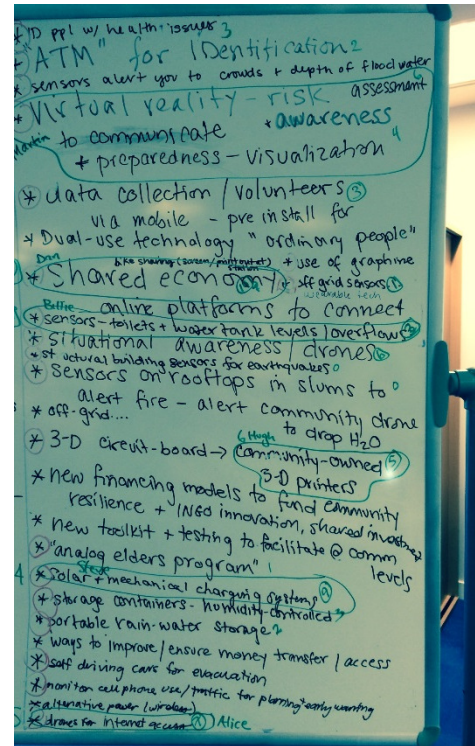
In order to ensure that the exploration started from real life situations, rather than starting with technology, participants shared some of the core needs and barriers that they have witnessed while working with urban communities facing disaster or potential disaster. These included a range of challenges, such as: food security, access to soil and green space, land rights, child protection and abuse, forced marriage, loss of education, health and nutrition, immunisation, water, refugee situations, chronic displacement and ongoing disasters.

Following a discussion on the core needs, lead discussants shared views on the changing role of mobile networks, the use of biometrics as a tool to identify beneficiaries and reduce corruption, and other new technologies that could play a role in strengthening community resilience and responding to future disaster situations. A key consideration was that in the future the mobile network would be increasingly seen as core infrastructure, and the role of humanitarian organisations may shift to facilitating recovery of the basic communication networks so that communities can better help themselves. Engaging the private sector that is developing various technologies, some of which may be applied to strengthening resilience and humanitarian response, was another key point, as was the need to think about which technologies would be accessible and useful for urban communities in the future, particularly the most vulnerable groups.



Participants were asked to think big about the potential of emerging technologies and to shout out some far-reaching and imaginative use cases of how these technologies might support urban resilience. These were listed and a vote was taken on the most interesting ideas. Each participant could vote three times, and the top ideas moved to a next stage where groups developed prototypes and explored the ideas more deeply, including addressing some of the challenges they might face if the ideas went to implementation.

Some of the key concerns and recommendations that came up during the use case brainstorming included: potential lack of trust from the community in the new technologies; diversity of capacities and languages; power and political struggles; potential conflicts among communities/community members; increased expectations for rapid response; regulatory shifts and spectrum changes; potential for technology to exacerbate vulnerabilities and divides; low levels of skill when it comes to communications and use of technology; resilience of the technology itself (and absence of 'redundant' or fallback systems); and limited power sources. Participants also emphasised the need to consider dual-purpose innovations and technologies so that they would be in people's hands already and not only useful during a disaster. This point is also vital in considering financing, a topic which needs to be addressed if emerging technologies are to be operationalised for disaster risk management and humanitarian response.




During the voting, six key ideas bubbled to the top: the use of virtual reality to better communicate risk and preparedness measures; building on existing shared economy ideas to improve disaster resilience; use of sensors for early warning; community owned 3D printers; solar charging of mobile phones and other appliances; and various uses of civilian drones.



Participants formed five groups (in the end no one joined the 3D printer group, so this was eliminated) and set to work. Each group received a persona (based on real people interviewed by the Red Cross in several countries) in order to help them stay focused on the potential users of the prototypes they were developing and to help ground the ideas. Groups worked for 45 minutes to develop their plans, and then all the groups came back together to share out their ideas.

Key uses of emerging technologies to support urban resilience included:

<p>A virtual reality platform that could support risk assessment. It would be geared towards supporting individual needs to access timely information on risks, but also feed into a wider system where larger patterns could be identified.</p>	<p>The use of shared economy systems that exist pre-disaster as systems to offer support post-disaster. This might include aspects such as tuition support, skills sharing, incentives, and insurance—all of which are needed in normal times. The shared economy systems could be then repurposed during times of disaster.</p>	
<p>A system of sensors that could measure noise and alert people to crowds and violence, allowing them to navigate around areas of higher potential for violence. The sensors could be useful in normal times to share traffic information, for example, and then convert to violence sensors, if a situation started to escalate.</p>	<p>A mobile charging solution that could be placed inside a motorcycle helmet with a solar panel on top. The charger would encourage motorcycle taxi drivers to wear helmets, and would help them earn money in normal times because passengers would choose them as drivers so that they could charge their phones during the ride. During an emergency, the helmet would also be available for charging phones to access information and support a community response.</p>	

Once participants shared out their ideas, the discussion turned to one of resourcing and implementation. “What would be needed to test out ideas?”, asked one participant. “What is the equity of humanitarian organisations and how can they better coordinate with the private sector to actually explore and pilot some of these ideas?” A missing element noted is a business model and a partnership model for private sector and humanitarian organisations to innovate in this area. One suggestion was that large humanitarian aid agencies have solid brands that can be leveraged to help develop trust in these new solutions. It was agreed that a follow-up discussion on potential business models would be useful to develop and cement partnerships.

In closing, participants were encouraged to continue the dialogue and explore how to move the ideas generated forward. Though the future is difficult to predict, it was agreed that organisations need to stay up to date, pick up new technologies more quickly, open to seeing their potential value and focus the solutions on community needs. To learn more about the next consultation in the series and how to help advance the questions and ideas reflected in the report, visit [tech4resilience.blogspot.com](http://tech4resilience.blogspot.com).