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International Federation of Red Cross and Red Crescent Societies

Strengthening Urban Resilience with Technology Summit

STANFORD PACS
CENTER ON PHILANTHROPY AND CIVIL SOCIETY

June 26, 2014 | Bechtel Conference Center at Encina Hall

SUMMARY REPORT

Wearables, 3D printers, drones, sensors and sharing economies were just a few of the advanced technologies discussed at Stanford University on June 26, 2014, when some 70 technology experts, humanitarian responders, academics and Silicon valley supporters and volunteers gathered at the "Strengthening Urban Resilience with Technology" Summit.

Opening

The Summit kicked off a two-year process whereby the Red Cross/Red Crescent is facilitating a series of exercises aimed at collaboratively exploring, informing and adapting emerging technologies that could support community-focused solutions for urban resilience.

As the speakers at the opening session of the Summit emphasized, without immediate and appropriate action, a volatile mix of population growth, unplanned urbanization and climate change will magnify disasters and health risks in the very near future. These will have an exponential, catastrophic impact on people's lives around the world. Demographics show the population shifting towards cities, often rapidly developed, unplanned and unregulated urban areas such as slums. By 2050, the UN expects 70 percent of the world's population to live in urban areas. Disasters are increasing in frequency, severity, unpredictability and economic cost, pushed forward by climate change, and the so-called 'developed' countries are not immune from the impact of more frequent natural disasters. In addition, low-level, small-scale emergency and disaster situations happen all over the world with little media attention, and these ongoing kinds of shocks can also set back urban dwellers significantly.

The rapidly changing situation points to the need for a collaborative partnership among key players. Government, humanitarian and development organizations, businesses and technology developers, researchers, community organizations and community members themselves all play a critical role in ensuring that communities and households have access to accurate and timely information, good healthcare, social support networks and economic opportunities that are less vulnerable to hazards and faster able to recover from shocks and stress.

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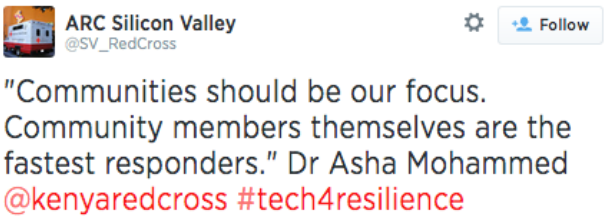

As first responders, local organizations and communities play a vital role and need to be better equipped with new and emerging tools that can help them prepare for emergencies, respond to increasing risks, and bounce back more quickly. Technology is a powerful enabler, and digital tools along with new ways of working offer an opportunity for those affected by disaster to identify and voice their own needs. They can also design their own solutions and improve their coping strategies if they have access to use new technology tools and the capacity and motivation to use them.

Framing

A second set of morning panelists provided framing for the meeting, emphasizing how changes are happening quickly and sharing case studies that showed how emerging technologies are being used in disaster preparedness, response and recovery. A key focus was how organizations like the Red Cross/Red Crescent can support the Six Characteristics of a Safe and Resilient Community.

(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.)

Two core aspects from the morning session included the importance of community social networks and the benefits provided by electronic, cloud-based health records. Community self-help has been amplified through social media, as one panelist noted. Following Hurricane Sandy, for example, people in New York used social media to share information about where mobile phones could be charged so that they could then use their phones to access other information and stay connected to family and friends. Cloud-based health records served a vital purpose during a series of tornadoes in Joplin, Missouri. Even though medical care was being provided in tents, health workers could access records of those who came in for care and patients with prescriptions were able to collect them the next day.

Another core point from the morning panel was that the intersection of urban resilience and humanitarian technology is timely and overdue, which is unfortunate, according to one panelist, as it is rapidly emerging, democratizing, transcendent and scalable/replicable at multiple levels. He urged Summit participants to develop partnerships to carry the work forward and address systemic issues that can hold back advances in this area. Lastly, the role of design thinking and importance of 'user-centered' design was emphasized. "How can we make drones more human-centric?" asked one panelist. "How can we change perceptions and extend control of drones to new users for different purposes?"

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Past, current and future approaches to disaster and resilience building

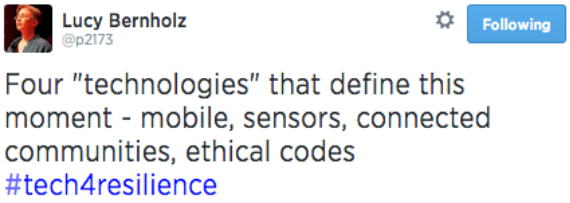
A core part of the day was examining the needs and challenges associated with disaster and resilience building in the past, present and future through the lens of different technologies available at different times.

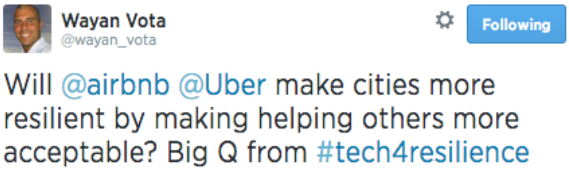
The past

Setting the stage for the past, participants were taken through a series of older technologies such as the GameBoy, the landline telephone, HAM radios, snail mail, cassette tapes, and Emergency Broadcast Systems that operated through television and radio. Panelists discussed how people coped in the past and what strategies worked. Again the importance of social networks of family, friends and those with similar language and cultural backgrounds was a key point. Following the Indian Ocean tsunami of ten years ago, people were reduced to basic communication and connectivity because power was out. Advances in communication technology to allow greater communication and access to information as well as people's ability to contact those in power more directly to ask questions and provide feedback on disaster response were also noted as key for greater resilience. Questions came up, however, and some wondered if reliance on technology, electricity and connectivity were making people less resilient.

The present

It has only been four years since the massive earthquake in Haiti, one panelist reminded the group, and the Haiti disaster heralded a moment where the role of information and communication technologies shifted from "the new and the cool" to the "expected and established." Humanitarian aid workers and community members now expect the presence of mobile phones and a functioning mobile network. In addition, the possibility of greater 'beneficiary feedback' through technology is being seen, and this can allow municipalities in urban areas to connect more with the populations they govern. In addition, new devices are making their way into disaster work. Of note is the increasing presence of sensors and other technologies that collect data without an individual always being aware of it, for example satellites, intelligent infrastructure and radio-frequency identification (RFID). These data collecting tools are present in everything from phones to drones, and they bring with them a new set of 'digital dilemmas,' as one panelist called them, including transparency and meaningful disclosure, consent around use of personal data, and over collection/over storage of data.





Another notable trend is the idea of networked people and the 'shared economy'. Companies and platforms like lodging or ride sharing services could play a stronger role in disaster preparedness, response and recovery, according to one panelist.

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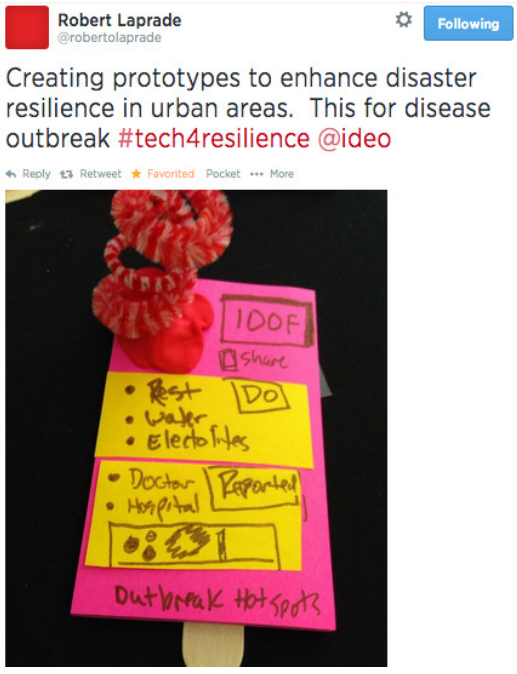
The future

Afternoon sessions opened with a panel about the future. Seventy percent of the global population will live in cities by 2050, said one panelist, and exposure to disasters is rapidly increasing. Developing countries will have 80 percent of the world's population and most urban populations will be in coastal areas. Mega-cities have mega-slums with fragile metabolisms and increased risk of infectious disease. In addition to these trends, communities are more empowered because of greater access to information and communication with one another. Linking communities to accurate and timely information will be key to supporting them build the necessary resilience to take care of themselves. One panelist reminded, disasters extended beyond natural hazards, and armed conflict also needs to be considered in the mix. She emphasized the responsibility and capacities of children and youth, who tend to feel that they are inheriting a difficult situation from the current generation, yet have faith that through technology and their contributions, surviving in the future is not an insurmountable challenge. Technology, science and youth capacity to organize, prepare and respond to disaster will be key. A number of future-looking efforts are already in the works, noted the final panelist, and these can be expanded to billions of people.

Design thinking for resilient futures

With a great deal of information and new ideas under their belts, participants gathered in groups and set about addressing a concrete design challenge. An introduction to design thinking and the focus on viability, feasibility and desirability offered a methodology to follow. Each group considered a persona (based on real people interviewed by the Red Cross/Red Crescent in several countries) and a specific emergency situation. The participants used a variety of materials to design the prototype of a new solution geared towards enhanced urban resilience. Most of the groups focused on the first characteristic of a safe and resilient community—knowledge—and designed communications-related solutions that leveraged mobile devices.



Ideas included:

A radio/television/mobile alert that informs people that there is a disease outbreak in their neighborhood and provides feedback and instructions based on the type of outbreak. The mobile app has a smart thermometer sensor to track fevers, a needle to take and analyze blood samples through a test strip that's photographed and sent in for analysis. If supplies or vaccines are needed, they are delivered by drone.	*A shared transportation solution that would help people organize and arrive safety in a time of political unrest. The system would allow peer-to-peer communication around the best place to meet to find a ride and the best routes out of town.*
An app that is used to respond to an epidemic, predicted based on big data exhaust from a variety of sites and companies, and that provides users with a customized response based on pre-populated personal information that pro-actively engages people based on location and skills.	*An application that will push instantaneous news out on disasters and link to various resources based on geo-location, complete with an "I'm OK," "I need help" and "I'm losing consciousness" buttons.*

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Ideas continued:

A pre-loaded mobile application that uses low-cost solar power to stay charged, and which can alert people of where to go in a time of political unrest, alerts to hotspots to avoid, group chats with the whole network, information on safe spaces, a flash light, a way to find family members and loved ones, and a safe place game that a user can play to support education on safe evacuation.	*A notification system for floods that would use multiple channels to alert people to go to pre-determined safe shelters.*
A low-tech, solar-powered solution that allows responders to know that disaster has hit and helps them have electricity to power bullhorns, lights and mobile charging stations so that they can find and rescue vulnerable people.	*An antenna for a church or community center that is equipped with HAM radio and that helps ensure mobile networks among peers can support with information flows among volunteers.*

Many of the ideas generated in this session built upon known solutions that have been successful in developed countries and included enhanced designs for low-resource populations and/or addressed a barrier that is currently limiting the tools' wider use.

Closing and next steps

To close out the day, calls for collaboration were made among participants who had shared challenges and issues around which they wanted to find partners. Leaders of the Red Cross/Red Crescent initiative gave information on the next steps for the initiative, including details on the global dialogue that will take place in London, Seoul, Buenos Aires, Nairobi, Dublin and San Francisco. In each of these locations, a community consultation will take place as well as a roundtable discussion to engage peer organizations and develop priorities for pilot projects in 2015. Each Summit participant will be included in ongoing discussions and communication so that they can contribute along the way. Hosts from the Stanford Center on Philanthropy and Civil Society and the Red Cross/Red Crescent encouraged participants to stay involved in the initiative and keep the discussions alive by sharing ideas with their organizations and other potential partners.

Additional resources

Several of the speakers shared Power Point presentations, and they are available at tech4resilience.blogspot.com. Additionally, video clips and photos from the event are also available on the Workshop Outcomes page.

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