

STABILITY OPERATIONS

ENGAGING PARTNERS GLOBALLY FOR STABILITY, PEACE & DEVELOPMENT

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INNOVATIONS IN HUMANITARIAN RESPONSE

A CONVERSATION WITH
NANCY LINDBORG

DISASTERS? THERE IS AN
APP FOR THAT

THE PSYCHOLOGICAL
HEALTH OF PSCs

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FEATURE

Innovations in Humanitarian Response

New Ideas in the Face of Classic Challenges

Photo: Image from ISERV Pathfinder on the space station, intended as an engineering exercise, with the long-term goal of developing a system for providing imagery to developing nations as they monitor natural disasters and environmental concerns. Credit: NASA



HUMANITARIAN EMERGENCIES can occur anytime, anywhere. No matter how prepared a family, village, or entire country is, a massive crisis will require a huge effort to help victims and start the path to recovery. Multiple actors across sectors will arrive from all over the world. These actors will bring many tools—from the simplest water purifier, to the most complex sensor. These tools constantly evolve as implementers tackle age-old problems with new technologies and new processes. Every day, these actors search for the next great innovation to find ways to do it better and save more lives.

Innovations aren't always in the form of something you can touch or feel. Many times, it is a new way to achieve an end. **Ambassa-**

dor (Ret.) David C. Litt and Dr. Steve Hicks begin this feature with a review of the Disaster Response Integrated Logistics (DRIL) exercise, held last Fall. The disaster simulation put a diverse group of actors up against a complex and realistic scenario in order to identify the synergies among them. Their conclusions spell out a series of innovations in collaboration.

Those actors will arrive on the scene of a disaster and need practical and easy solutions to every day problems. **Joel Lowther** highlights innovations in mobile app development for disaster relief and the challenge of collaboration between the implementing community and talented app developers around the world.

Continuing on the importance of electronic communications, **David Becker and John Crowley** discuss the challenge of data coordination in disaster response. They point to the development of a new common data language as a major milestone innovation that would lead to a speedier response and better coordination of effort across the defense and nongovernmental communities.

Finally, **Michael Pollack** provides a comprehensive overview of the myriad of innovations in satellite communications. These technologies serve as great collaboration tools among actors, in addition to providing unparalleled access to information in the most austere of environments. ■

Disasters? There is an app for that

Innovations from the Mobile Revolution

Joel Lowther



PREPAREDNESS and effective relief operations play a crucial role in limiting the consequences that disasters have upon populations. The Transformative Innovation for Development and Emergency Support (TIDES) research team is exploring ways to enhance emergency response operations to make them even more effective.

TIDES is a research project at the Center for Technology and National Security Policy (CTNSP) at the National Defense University (NDU) in Washington, D.C. We conduct research, provide analysis, and are dedicated to open-source knowledge sharing to promote sustainable support to populations under severe stress. Our experience in providing reach back support for disaster relief operations has shown that there is a greater need for faster and more effective methods of activating relief efforts. Applications, or “apps” for short,

provide users quick access to vital information and services. These systems are often designed to operate with limited bandwidth and can be accessed through mobile cellular devices, personal computers (PCs), and simple Short System Messaging (SMS). Apps allow for the innovative use of technology for humanitarian assistance and disaster relief operations around the world and address some of the most pressing challenges in a post-disaster environment.

Through internet searches and referrals from members of the TIDES network, we compiled a list of nearly 100 disaster apps. We found that apps designed for emergency responders often address the logistical and operational challenges that follow a natural disaster, while the apps designed for the civilian population focus on self-organization, highlighting crowdsourcing, and simple communication capabilities. We further broke down our list by

examining the functions of the apps and cataloged them according to what we believe to be the top five disaster management challenges: logistics of donations, coordination of volunteers, coordination of responders, people finding, and damage and safety reporting.

The TIDES research team has set out to learn more about how these apps are being used in the field and determine the strengths and limitations of this software. Our research shows that there are a number of advantages to using apps in a disaster setting. Apps provide quick access to vital information and can be a cheap alternative to expensive operating systems. Apps are designed to be user-friendly and often facilitate better communication between responders and civilians. This creates a two-way feedback loop and allows responders to hear directly from the population and formulate relief operations based on the actual needs of

Joel Lowther is a Research Intern at The Center for Technology and National Security Policy at the National Defense University

Photo: Responders use mobile phones to send alerts in Haiti. Credit: DFID - UK Department for International Development

Apps allow for the innovative use of technology for humanitarian assistance and disaster relief operations around the world and address some of the most pressing challenges in a post-disaster environment

the people. Apps also provide a means for civilians to coordinate with one another, thus empowering the local populations and creating true resilience networks. This scenario is becoming more and more common, especially in the days immediately following a disaster when relief services are often still unavailable. We have also observed a number of shortcomings in the development of disaster response apps. In recent years programmers have developed numerous apps, but finding and using the right apps during or just prior to a crisis is a hit or miss proposition. In order for these apps to be truly effective in the field, first responders and civilians need to be aware of their existence and functionality before a natural disaster strikes. Furthermore, apps are often being developed by programmers during or immediately after a disaster, making it difficult to pre-train operators on the system and alert the public of their functions. Generally speaking, the right disaster app can also be difficult to find in an overcrowded market, as software is constantly being modified and often functionally conflicts with similar apps.

One way to address these shortcomings would



be to develop a comprehensive directory for disaster relief apps. The initiative would allow programmers to upload their apps and promote the software they developed. This initiative could further encourage collaboration between programmers and possibly lead to the development of apps that complement one

another in the field. A directory would allow responders to identify and pre-train with specific software and could feature a user based rating and review system. This initiative would greatly enhance the effectiveness of these applications in a post-disaster setting and further promote public-private partnerships for emergency response. TIDES has collaborated extensively with digital volunteer organizations such as CrisisMappers, Code for America, and Geeks Without Bounds on this issue and will continue to consult these organizations for technical advice and support during our research.

It is evident that apps can play a significant role in disaster relief operations and that increased collaboration is essential to the success of these programs in the field. Unfortunately technology alone is never enough, but it can lead to more efficient response and help save lives when the next disaster hits.

If you would like to learn more about TIDES and our work on disaster response apps please visit www.star-tides.net. ■

Photo Credit: Christopher Herwig, UN

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Disaster Communications

Humanitarian Information Exchange Language

David Becker and John Crowley



OUT OF THE CHAOS of the Haitian earthquake, there is a new effort to better coordinate humanitarian efforts in future large disasters. The UN has proposed a simple and cheap way to improve data exchange with governments, UN agencies, and hundreds of non-governmental organizations working in the field of disaster response and reconstruction. Elaborate and expensive software or hardware solutions do not appeal to most NGOs so the UN has begun implementing a new standard data exchange protocol (Humanitarian Exchange Language – HXL) that will improve response times and coordination in crises, without imposing new time and personnel costs on others or requiring new software systems.

Problem

Haiti was a wakeup call to the disaster response community. A coordination system designed for 20-30 professional response organizations to sort out who does what in a refugee crisis in Sudan or Somalia did not work nearly as well when 800 NGOs descended on UN's Office for Coordination of Humanitarian Assistance (OCHA) in the first three weeks following the earthquake.

The overloaded system generated long meetings and little useful information for decisions affecting the 1 or 2 million survivors, although many NGOs were surveying, counting and estimating as fast as they could. Many of

the NGOs had better data connections back to their headquarters in Europe or the US than they did with the UN agencies in the next tent over. Passing papers in meetings, or even sending PDF documents via e mails posted on websites, did not allow speedy collection and sorting of the information that was being gathered. Data was often out of date before it could be compiled. And few had the time to exhaustively review what was being collected.

In this information environment the organization formally responsible for coordination—UN OCHA—is asked to perform its work without the authority to impose rules on the system. While OCHA is underfunded and overstretched, it is trying a new way forward using a proven

David Becker is the Director for Civil Military Activities Integration at the Center for Technology and National Security Policy at the National Defense University. John Crowley is a Research Associate with CTNSP.

Photo: Offloading supplies during the Haiti response. Credit: Logan Abassi, UN

approach from other arenas: establishing open data standards with key players in the ecosystem. This approach seeks to establish the data standards to describe humanitarian actions using the Semantic Web (aka Web 3.0). In this way, organizations could continue to use their existing information systems with a HXL "adapter" to enable the systems to a) describe their data schema, and b) exchange and transform data between each other's systems using the W3C's Resource Description Format or RDF. OCHA has already built tools with UNHCR to describe human migration (i.e., focused on populations) using this new RDF standard, called the Humanitarian Exchange Language (HXL). It is now building support for the HXL platform for subsequent partnerships. To move this work forward, the UN will need the network effects of other major agencies adopting the standard, thereby making it more attractive for others to join in.

We propose that this effort be extended into another area where coordination is crucial: logistics. Again, Haiti was the crucible where the need for improved coordination became clear, as dozens of different organizations fought to get their planeloads of supplies into the airport, only to find that they still had no coordinated way to move supplies off the airfield, nor was it always clear which supplies should be going where once out of the airport, combined with supplies coming in by land or sea.



While OCHA is underfunded and overstretched, it is trying a new way forward using a proven approach from other arenas: establishing open data standards with key players in the ecosystem

If the HXL language were built out to include logistics terms, with the imprimatur of the UN and the World Food Program (WFP) it could become a lingua franca for many different organizations to share information on manifests, contents, locations and other requirements. For the US government, this may be particularly useful for the Department of Defense, as the Combatant Commands are called in for large disasters and

suddenly have to coordinate actions with multiple players as they pick up and drop off supplies from multiple locations, juggle the priorities and work with the NGO community to deliver in the best and cheapest way. Using a common data protocol allows everyone from DOD to the smallest NGO to establish data exchanges, rather than rely on phone calls and e mails via a

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Photo: Relief supplies in Timor's flood-hit towns. Credit: Martine Pierre, UN



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The Fleet Week Association's Board of Directors, consisting completely of unpaid volunteers, worked 9 months to plan and prepare for Fleet Week, including working with San Francisco's Department of Emergency Management to plan and conduct 2 exercises in August. The first was a live, functional exercise to identify gaps in communications interoperability among twenty-four civilian and military organizations that will definitely have to work together during a disaster relief operation. The second was a table-top exercise to examine issues to evaluate tactical emergency route opening activities that would have to take place 72 hours after a disaster occurred.

During Fleet Week, a number of activities take place for the benefit of both the local first-responders and the military. Examples include the San Francisco Fire Department providing Urban Search and Rescue Training for Marines and sailors; and the Navy, in return, training the

firefighters in shipboard firefighting. Other aspects of the Fleet Week program include a Humanitarian Assistance Village on the Marina Green which features static displays of both civilian and military disaster response capabilities such as the Marine Corps' expeditionary water purification capabilities, demonstrated by

canines can search earthquake debris to locate victims. They even demonstrated how dogs help wounded warriors to deal with Post Traumatic Stress.

Again this year, Fleet Week included a 2-day Senior Leader Seminar (SLS) on disaster preparedness aboard the USS Makin Island. The Seminar provided a forum for civilian and military responders to continue to work together on Defense Support for Civil Authorities (DSCA), the process of how the military will work with civilians to respond to a disaster. Speakers this year included Vice Admiral Mathew Nathan USN, the Navy Surgeon General, General

Charles Jacoby, Jr. USA, the Commander of U.S Northern Command, former Secretary of Defense William Perry. Attending and participating in all of these events was our honorary Fleet Week Co-Chair, Former Secretary of State George P. Shultz.

The world's most capable humanitarian assistance organization is the United States military. It consistently provides humanitarian relief around the globe, saving thousands of lives in natural disasters

letting some of the crowd drink some of the purified water that had been pumped out of the Bay.

A special event for Fleet Week was the 'military working dog' demonstrations, including how

Disaster Communications
Continued from page 13

network that has to be established and re-established with every disaster. And frankly, an open standard with DoD as a node in the ecosystem is far less threatening to NGOs than having to use a DoD portal on a USG server.

As such, we at CTNSP have begun exploring if DoD should foster both the adoption of HXL and the growth of the open data ecosystem around HXL by supporting this standard for HADR logistics requests. If WFP and OCHA can implement HXL for logistics, and build support for its use, there is an increased likelihood that DoD personnel or host governments or others managing ports and airports would have clear manifests of NGO shipments before they arrive for offloading and distribution.

For example, if DoD has increased visibility into shipment manifests, it will also become possible to publish shipment status/location to NGO

recipients using an open, unclassified protocol instead of phone calls and emails. Partners could build apps that could provide additional



visibility into shipment status. Given that the Semantic Web provides for additional support for unattended smart devices, it would be possible for the UN, NGOs or the local

government to add sensors in supply chains, landing zones, and hospitals which could report on traffic jams, local weather conditions, and the like, without having these sensors be any one operator's property. They could be an open standard that NGOs could choose to implement so that they can have more effective operations. And this data could be instantly available to users of all types, to overlay on their maps, or feed into their systems.

Three points are key:

- 1) HXL allows hundreds of independent organizations to continue to use their preferred systems.
- 2) Using HXL will not require staff in a crisis zone to spend time filling out more forms or going to new websites for information.
- 3) This is already being developed for reporting on populations, but we need to go further and begin development and adoption for the HXL common data protocol for logistics to truly make a difference in the next big disaster. ■

Photo: Relief supplies delivered to Haiti. Credit: Marco Dominggo, UN.