

GEOWORLD CASE STUDY:

American Red Cross Uses Trimble Technology and RDMS to Speed Hurricane Disaster Relief

PROJECT: Disaster relief with Trimble Nomad Handhelds and Global Relief Technologies' Rapid Data Management System (RDMS)

PROJECT DATE: July 2009

PROJECT HIGHLIGHTS:

- American Red Cross replaced paper-based damage assessment system with rugged, high performance Trimble Nomad handheld devices running Global Relief Technologies RDMS software
- 28,000 damage assessments collected immediately after Hurricane Gustav and Hurricane Ike in less than three weeks
- Field data can be uploaded directly to the RDMS back office site in order to be accessed immediately by analysts at American Red Cross national headquarters
- Red Cross volunteers like the Trimble Nomad handheld's large, bright, touch screen, stylus, and ease of use regardless of field experience

Since 1881, the American Red Cross has been the United State's premier emergency response organization. In addition to offering neutral humanitarian care to the victims of war, the American Red Cross also distinguishes itself by aiding victims of devastating natural disasters, from floods to earthquakes to hurricanes. Each year, in communities large and small, victims of some 70,000 disasters turn to neighbors familiar and new—the more than half a million volunteers and 35,000 employees of the Red Cross. Through over 700 locally supported chapters, more than 15 million people gain the skills they need to prepare for and respond to emergencies in their homes and communities throughout the world.

In 2007, American Red Cross Disaster Services started a pilot project aimed at streamlining its on-site disaster assessment process. The goals of the project were to evolve from its paper-based “street sheet” system of collecting dwelling damage details, to an electronic system that would allow for more rapid, accurate, and precise data collection. The organization was also looking to gain more flexibility to adapt and calibrate their response efforts in order to provide the best relief and disaster support services possible.

The organization's previous paper-based system was functional, but it also had its limitations. Assigned to specific routes, trained volunteers would drive, or in some cases, walk the disaster scene and collect relevant information about each dwelling via hand-written notes on a Red Cross form. Information collected included: severity of the damage, dwelling type, addresses, a description of the location, and more. Once complete, this information would be hand-keyed into the Red Cross Client Assistance System (CAS), but could be slowed by limited data-entry staff or computer access. From here, client case workers reviewed collected information and made determinations on services needed such as, blankets, feeding, housing assistance, etc.



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Looking to improve this process, Red Cross teamed up with Global Relief Technologies (GRT), a company based in Portsmouth, New Hampshire that specializes in providing disaster relief technologies to humanitarian organizations, emergency management professionals, and other groups focused on aiding and reconstructing communities.

GRT has developed the innovative Windows Mobile®-based Rapid Data Management System™ (RDMS) which is used for emergency response management, relief and reconstruction efforts, military operations, oil, gas and minerals projects, and much more.

In 2008 the American Red Cross responded to Hurricane Gustav, which hit Cuba, Jamaica, and Louisiana, and also Hurricane Ike, which made landfall in Galveston, Texas. As part of the emergency response effort, the Red Cross disaster assessment teams put into action their new electronic-based, on-site disaster assessment process powered by Trimble® Nomad™ series handhelds and data collection software from Global Relief Technologies. In fact, during the Hurricane Gustav relief efforts in Louisiana, American Red Cross disaster assessment volunteers used 25 Trimble Nomad handhelds to collect 17,000 damage assessments in less than two weeks. The following week during Hurricane Ike, the volunteers used 14 Trimble Nomad handhelds to collect an additional 11,000 damage assessments in Galveston, Texas.

Edward Fitzgerald, project manager for Global Relief Technologies, said this was the first time the American Red Cross had collected this much critical data electronically in such a short period of time. The disaster assessment managers on the ground noticed significant increases in productivity by disaster assessment volunteers, with higher accuracy of data, as well as the benefits of immediate geospatial analysis.

“While the Trimble Nomad handhelds and RDMS don’t change the basic data collection methods used—it still requires volunteers to be on the ground—it’s a substantially more efficient and a more accurate process than the previous paper-based system,” said Fitzgerald. “Plus the data is immediately available to other analysts, improving communication and the level of service and assis-

tance provided.”

Fitzgerald and the GRT team selected Trimble devices because the units are rugged and come pre-integrated with Bluetooth®, cellular modem, and a digital camera.

“Trimble Nomad handhelds are ruggedized devices that are solid and well built for performance and durability,” said Fitzgerald. “The built-in Global Positioning System receiver and multiple connection options mean American Red Cross disaster assessment volunteers are always connected and they can feed relief operation managers precise information about what they are seeing on the ground.”

The Global Relief Technologies RDMS software includes pre-configured menus and electronic forms, where volunteers select check boxes, radio buttons, and enter information in text boxes to record relevant damage details about impacted dwellings. Information collected includes everything from severity and location data, to information about the status of electricity, road closures, as well as inaccessible areas. With the Trimble Nomad handhelds, they also take digital photos of dwelling damage. Once volunteers collect data about the damaged sites, it is generally sent via GPRS technology (General Packet Radio Service) that is built into the Trimble Nomad handhelds. In the event that GPRS is not available, because of the location or adverse weather conditions, the Trimble Nomad handhelds can also interface via Bluetooth with a BGAN Satellite terminal to send data. BGAN (Broadband Global Area Network) is a mobile communications system created to transmit broadband wireless voice and data communications almost anywhere on the earth’s surface.

Essentially, built in GPS technology in the Trimble Nomad handhelds allows RDMS Collect to automatically pull in GPS latitude and longitude coordinates as the user is collecting damage assessment data, without the need for the individual to have technical GIS experience. Once the data is sent, the location information can be used to perform spatial analysis on the data. RDMS Collaborate plots the information collected in the field on a map which provides critical information to assessment volunteers such as dwelling type (single

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family home, mobile home, apartment) vs. the damage recorded (Destroyed, Major, Minor, etc.), represented by a certain color.

This new electronic system eliminates time-consuming data entry from paper sheets and possible errors that often arise from illegible handwriting or misread maps. Data is exported from the RDMS Collaborate system and imported into CAS. The system gives Red Cross client case workers and others, including those at the Red Cross Disaster Operations Center Washington D.C., instant access to damage assessment data which supports their overall relief efforts, including their response to clients' most pressing needs.

Because the Trimble Nomad handhelds are used by volunteers with varying levels of technical knowledge and experience, it is also important that the devices are easy to use. From Fitzgerald's perspective, volunteer response to the Trimble Nomad handhelds has been extremely enthusiastic and positive.

"Volunteers like the Trimble Nomad handheld's large, bright, touch screen, and the stylus because it's simple to use," said Fitzgerald. "Equipment managers like them because if they need to troubleshoot or re-load the software on the units it's straightforward. The USB host and client slots are easy to locate so software updates, reboots, and other changes can be made and there are no tools needed, meaning it can be done quickly in the field."

While in the field with the American Red Cross, Fitzgerald was able to see the benefits of the streamlined disaster response system first hand.

"I overheard a client case worker talking on the phone with a local resident who was staying in a hotel provided by the American Red Cross," said Fitzgerald. "The resident provided the client case worker with their address and explained that their home was surrounded by flood water and they needed to extend their hotel stay. The case worker looked through the paper street sheets and found the hand-written street sheet for the resident's home but the hand writing was difficult to read and didn't include enough detail. So while this was going on, I punched the residents address into RDMS

Collaborate and up popped a record for the resident's home. The assessment contained all of the necessary details such as, damage, description, and even a photo that showed three to four feet of flood water surrounding the home."

With access to the complete, electronic damage assessment the case worker had the proper validation needed to approve the client's request for hotel stay extension.

Today the American Red Cross has 26 Trimble Nomad G series handheld devices loaded with RDMS stored in the organization's Disaster Operation Center in Washington D.C. Fitzgerald and American Red Cross team members are excited about the organization's plans to utilize Trimble technology for other projects in the future. They are also working on a 'Train the Trainer' program that will enable on-site Red Cross workers to train volunteers in a few hours on how to effectively use the devices. Over the course of next year, the Red Cross plans to continue to roll out the technology in order to expand the organization's ability to generate and analyze disaster information in near real time.

THE EQUIPMENT USED ON THIS PROJECT INCLUDES:

Trimble Nomad G series handhelds
Global Relief Technologies' Rapid Data Management System (RDMS)

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