Pilot Project for Digital Mapping Solutions for Humanitarian Relief Efforts in El Salvador

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Goals

Develop and test digital field mapping solutions to support disaster preparedness while providing worldwide access to any collected data for World Vision International or other staff as a tool to communicate disaster need to potential donors.

PROJECT OVERVIEW

The project was designed to test the viability of two Geospatial Information Science and Technology (GIS&T) functions in the humanitarian aid and response sector:

- Mobile GIS&T as a tool for gathering field data for emergency planning,

- Internet mapping capabilities for sharing information world-wide.

This pilot project was conducted in El Salvador, with cooperation from the Latin America Caribbean Region Office (LACRO) and other World Vision partners in Central and South America.

Figure 1.   Census data collection using handheld GPS units.

The main goals of the project were to:

1)   Develop and test digital field mapping solutions to support disaster preparedness and mitigation in developing countries at both the regional and local levels,

2)   Complete a survey of all 16 Area of Development Program (ADP) districts in El Salvador and develop a complete Geographic Information System (GIS) database,

3)   Provide access to field gathered information and other GIS data through an Internet mapping site that will allow World Vision International (WVI) and World Vision El Salvador (WV-ES) personnel to create maps that can be used by internal staff and as a tool to communicate need to potential donors.
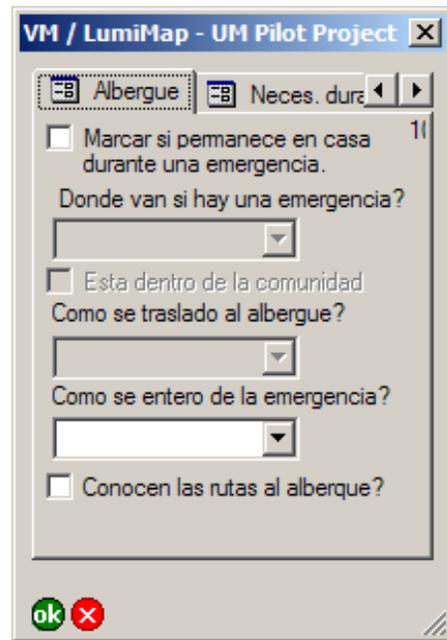

Figure 2. Screenshot of survey form used for collecting data.

The digital mapping solution consisted of:

- Handheld computers with GIS software and Global Positioning Satellite (GPS) capability,

- Customized digital survey forms, developed in cooperation with local World Vision staff and other participants,

- Training for WV-ES personnel in the use the equipment to conduct the surveys,

- Infrastructure to compile multiple survey results for immediate analyses,

- Web hosting of geospatial information with on-line mapping capability for analysis by WVI and WV-ES staff

At the conclusion of the project, the World Vision Partnership was provided with:

- Digital survey tools coupled with mobile GIS for disaster response and planning,

- Personnel trained in the use of the mobile GIS & development of custom survey tools,

- Geospatially-referenced database of a sample of the residents in each sixteen WV-ES ADP's in El Salvador,

- Awareness of the digital mapping solution in the ADP's and other agencies in El Salvador and other countries in Central America,

- Internet mapping website with all project information and other geospatial data, available to WVI and WV-ES personnel.

INTERNET MAPPING SITE

Prior to the start of training in El Salvador an internet mapping site was designed and implemented on a server at the University of Mississippi using ArcIMS. This site resides on a server administered by the UM Geoinformatics Center (UMGC) and is available 24 hours a day, seven days each week. The mapping site was loaded with available data for El Salvador, to provide framework information for users of the site. The site address is http://www.lumimap.org. The El Salvador Relief Information Mapping System (RIMS) is located near the bottom of the page.
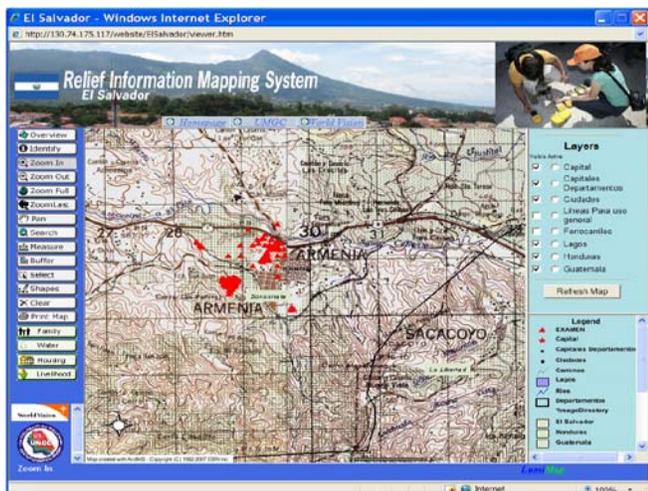

Figure 2. Screenshot of internet mapping site.

TRAINING SESSIONS

After the ArcIMS website was complete, the handheld GPS units, Trimble GeoXM's with ESRI's ArcPad, were configured to be used with data of El Salvador in order to conduct the training sessions. The first training session during March 2006 was in San Salvador, El Salvador and consisted of in-class lectures and hands-on experience collecting simulated data in the field over a one week period. The classroom training consisted of the theory and operation of GIS, GPS systems and internet mapping. The field exercises were coordinated with the staff at the local ADP offices. One field exercise focused on an area susceptible to landslides while the second field exercise was located in an area on the coast prone to flooding.

Following the first training in El Salvador, a similar training session was conducted in Recife, Brazil and was compressed into a shorter time period than the previous one week training session. In July 2006, a third training session was held back in El Salvador, but adjusted to train two different groups over a one week.

DATA COLLECTION

In an effort to assist with the data gathering in the ADP's, LumiMap/UM technical staff traveled to El Salvador with additional handheld units. After some initial logistical issues, the LumiMap/UM staff traveled to Tacuba and began gathering data in that ADP. The staff at the ADP was keenly interested in the equipment and able to successfully use the digital mapping tools after minimal training. This team collected more than 300 data points, averaging 75 per day, with three mapping units. This data gathering effort by the LumiMap/UM team successfully demonstrated that the data collection system was reliable and made it possible for a two person team to gather data and upload the data gathered to the internet mapping site directly from the ADP's.

IMPACTS

The project has succeeded in training approximately 40 World Vision International staff on the potential uses of GIS&T. The digital mapping solution and the internet mapping site proved to be successful in collecting real-time data from the field exercises and rapidly disseminating that data worldwide within 12 hours. Training non-technical people to use the handheld GPS units with the customized questionnaires became fairly quick. By the time of the data gathering effort in August 2006, non-technical staff were able to be trained in an hour and successfully collect data. Situations in which people could be trained in an hour to use a tool would immediately after a disaster. However, a full training session covering all of the theory behind GIS and GPS is still recommended, time permitting.

Collaborators

LumiMap/UM

World Vision El Salvador

World Vision International

Contact Information

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