isif asia

fast facts
Project: Development of Emergency Networks Training and Tools Kit
Lead Organization: Internet Education and Research Laboratory, AIT
Country: Thailand

situation

Every year, millions of people face disasters and terrifying consequences; disasters, both natural and man-made alike, often led to high death tolls, environmental destruction, communication breakdown, and civilian displacement. Rescue operations perform the critical function of help alleviating human suffering and saving lives, empowering victims and their next of kin, and building resilience. Successful rescue operations – whether small or large scale – require effective communication and coordination. However, disaster situations often result in the loss of traditional communication systems as infrastructure may be seriously damaged or completely destroyed. Fixed telephone lines, mobile communications, and local Internet access may be rendered unusable.

solution

The aim of the project "Emergency Networks Training and Tools Kit" project is to develop an easily manageable emergency communication system. This would also require a training manual that anyone who with limited technological knowledge could understand. In particular, the target audience of the training manual is experienced in post-disaster recovery and resettlement operations. To serve this purpose, the project team created DUMBO (Digital Ubiquitous Broadband), an emergency communication system turns ordinary laptops/PDAs into life-saving network devices without relying on any fixed infrastructure, and provides a platform for effective rescue and recovery operations. DUMBO deploys mobile wireless network on an ad- hoc basis for emergency conditions, such as after a natural disaster when a fixed network infrastructure is not available or has been destroyed and allows the users to access critical information in the event of an emergency.

DUMBO allows streaming video, VoIP and short messages to be simultaneously transmitted from a number of mobile laptops to the central command center or to the other rescuers at the same or different disaster sites. The DUMBO command center has a face recognition module that identifies potential matches between unknown victims' face photos taken from the field and a collection of known face images stored at the command center. In addition, DUMBO support sensors that can measure environmental data like temperature and humidity. Data from the sensors can be sent to the command center which analyzes or passes them on to the other mobile nodes. The command center can be located either in the disaster areas or anywhere with Internet access.

DUMBO training begins with an overview of how the community can respond to emergencies and then moves onto specialized training for search and rescue operations, damage assessment, and resettlement activities. After the training, the volunteers and rescue operators can possess the skills necessary to be part of emergency preparedness and response in technologically challenged disaster areas.

The DUMBO training enables the disaster responders to be better prepared to respond to and cope with the aftermath of a disaster. Additionally, if a community wants to supplement its response capability after a disaster, civilians can be recruited and trained as neighborhood, business, and government teams that, in essence, will be auxiliary responders. These groups can provide immediate assistance to victims in their area, organize spontaneous volunteers who have not had the training, and collect disaster

intelligence that will assist professional responders with prioritization and allocation of resources following a disaster.

If a community wants to further enhance its response capacity after a disaster, civilians can volunteer for auxiliary training. These auxiliary groups may include neighborhood, business, or government teams to provide immediate assistance to victims in their area. These teams will be able to organize spontaneous volunteers who have not had the training and collect disaster intelligence that will assist professional responders with prioritization and allocation of resources following a disaster.

broader impact

The solutions developed during this project have been made available to the public and are meant to serve as resources for any individual or organization to which they may be of use. Anyone who has Internet access can use the DUMBO-isif website to learn about the latest communication technologies, and users can compare the variations of technologies based on different criteria such as coverage area; wireless, fixed, or mobile networks; costs and ease of deployment; etc. This will allow users to develop technical knowledge that is useful for post disaster communication and areas without existing communication infrastructure.

DUMBO, which supports multimedia communication and allows users to move freely, can be regarded as a complete solution for emergency communication. Furthermore, the DUMBO website itself provides information about different kinds of natural and manmade disasters as well as preparedness information, making the site a one-stop information and coordination center for disaster response planning; and includes information about organizations able assist communities. There is an option for site users to donate money, supplies, or volunteer time with any of the organizations listed. There is also information about the recent disasters across the region for research purposes. This website intends to be useful for the disaster survivors, the respondents, the volunteers, and researchers or educators.

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