

THE EFFECT OF WEB-MAPPING SYSTEM IN DISASTER PREPAREDNESS FOR LOCAL COMMUNITIES AND INDIVIDUALS

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Recently, a significant amount of disaster risk information that helps in reducing the risks associated with natural disasters, such as hazard maps, risk maps, damage estimation map, etc., has been published. Disaster risk information can be effective in notifying the stakeholders of the risks involved so that they will be able to understand such risks and act accordingly. Most natural disaster risk information contains spatial information, which means that disaster risk information is typical geo-spatial information. GIS is an essential technology for supporting the various phases of risk assessment and communication (i.e. acquisition of information, creation of information, and presentation and distribution of information). Especially, WebGIS can integrate various disaster risk information on Internet directly and it is an easy way for people to access disaster risk information.

Therefore, we have developed the Web-Mapping System “e-Community Map” for disaster preparedness. “e-Community Map” integrates GIS data sources and legacy information provided by local communities. The system delivers dynamic, geo-registered maps using standard international geospatial HTTP protocol services (Web Map Service (WMS), Web Feature Service (WFS), and Web Coverage Service (WCS)) via an interoperable environment. The local communities input their legacy information and tabulated data using PCs, GPS-equipped phones, and other tools. The system outputs maps, including printed maps for off-line communication and field surveys.

We held many workshops in various areas using this system. In a workshop for flood mitigation, a local voluntary committee for disaster prevention used “e-Community Map” in the process of risk communication. First, the people of the community gathered photos of a past flood in the area. The photos, with their location information, were added to “e-Community Map”. These photos were overlaid on a flood hazard map published by the local government. The geographical distribution of deeply flooded areas corresponded with the locations of the photos. The community was able to clearly understand which areas had a high risk of flooding. Furthermore, using this map, they were able to engage in practical discussions about how to save people, such as frail elderly and disability persons who may need support, by developing plans for having agreement on utilization of resources what shops or groups may provide in emergency cases.

In addition, we developed a prototype system for supporting volunteers who help people in need of social aid by using the real-time flood risk mapping system based on “e-Community Map”. We performed the demonstration experiment by using this system for some volunteers. Volunteers could receive flood risk information in their cellular phone and take decisions with regard to their actions. In an interview after the experiment, they said, “I was able to get the security by receiving information among actions” and “It is necessary for volunteers to rescue those who need social aid.”

These case studies demonstrated the usefulness of “e-Community Map” for risk communication and decision making in disaster preparedness for local communities and individuals. Now, we develop more advanced systems. We will introduce their systems in this poster and demonstrate prototype systems in the poster session.