Recognition of GIS Critical

In January 2007 the US National Research Council released a new report entitled

Successful Response Starts with a Map: Improving Geospatial Support for Disaster Management (www.nap.edu/catalog/11793.html). It summarised eighteen months of meetings and workshops beginning shortly before Hurricane Katrina hit the Gulf Coast and bringing together dozens of witnesses and an international committee that included social scientists, scientists and engineers from academia, industry, government, and non-governmental organisations. Two points, both somewhat paradoxical, stand out in the findings of the committee.

Plenty of Maps

First, the case for GIS at all stages of disaster management is overwhelming, from preparedness through to response, recovery and mitigation. Yet at the same time almost nobody outside the realm of geospatial professionals recognises this. This point was brought home to me very forcibly in Dublin in late 2005 by a story related by Andy Smith of the UK charity MapAction (www.mapaction.org), who talked about arriving in a small village in Sri Lanka shortly after the Indian Ocean tsunami. Villagers crowded around the vehicle: â€œWhat have you brought us Food, water, medicinesâ€ â€œNo, but I have plenty of maps, computers, satellite links, portable generators, GPS unitsâ€¦â€ The disappointment was palpable. While we can argue, as does the above report, that â€œsuccessful response starts with a mapâ€, the tools of the geospatial professional are never uppermost in anyoneâ€™s mind when actually hit by disaster.

Not in Area Hit

Secondly, many of us remember the immediate and precise images provided by Google Earth in the aftermath of Hurricane Katrina. Anyone with a broadband connection to the internet could track aspects of the disaster as it unfolded - except those people who most needed the information but had lost the necessary computers, power supplies or internet connectivity. For a brief moment the world resembled a donut, with an abundance of geospatial information available everywhere except in the impacted area.

Global Applicability

The National Research Council is the operating arm of the National Academy of Sciences, which was authorised by President Lincoln in 1863 to provide scientific advice to the federal government; NAS has since been joined by the National Academy of Engineering and the Institute of Medicine. While the reportâ€™s twelve recommendations are directed in the first instance at US agencies, it is clear to the committee that the problems they address exist in most parts of the world and that similar action would be helpful within many contexts. The major points are summarised below (the full text of the report and its recommendations is available at www.nap.edu/catalog/11793.html).

Leadership: Many countries have established a National Spatial Data Infrastructure (NSDI) and similar efforts have been made at sub-national and global levels. In the US, and perhaps in many other jurisdictions, the governing structure of the NSDI predates societyâ€™s growing awareness of the potential for catastrophe. The report recommends a strengthening of the role played by agencies concerned with disaster management, in the US particularly by the Department of Homeland Security.

Data security: Many reasons are cited for failing to share data during emergencies, including security, loss of income and control, and abuse of privacy. If the need to share data could be anticipated through advanced planning under a wide range of possible scenarios, appropriate arrangements and controls could be put in place.

Preparedness exercises: Various institutional, interpersonal, technical, and procedural problems currently inhibit communication between first responders in the field, emergency operations centres and other centres for co-ordination. Training exercises should be directed specifically at overcoming these problems and should involve all groups involved in disaster management.

Backup and archiving: In order to learn from past experience it is imperative that the databases and procedures created in response to disasters be made available as resources for training and research. All too often, GIS applications are designed on the fly, under the extreme pressures of emergencies.

Research: GIS has been designed largely for the comfortable and relatively slow environment of the office rather than for the hectic field conditions of disaster management. User interfaces need to function in extremes of dark, smoke and water, and need to be robust and simple enough to be adopted by first responders. Research is needed to adapt and restructure GIS to meet the specific conditions of disaster management.

Recognition

Other events of the magnitude of Hurricane Katrina, the Indian Ocean tsunami, or the incidents that occurred in London on 7th July 2005 are inevitable. They may take the form of a major break along the San Andreas fault, a terrorist attack in another major city, or massive flooding. When they do happen, and if the problems identified in the report are not addressed, similar patterns of breakdown to those evident in the case of Hurricane Katrina will undoubtedly occur. GIS is rapidly becoming one of the most important tools in disaster

management and it is critical that its importance be recognised.