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Avoiding "Disaster Information" Disasters

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When a hurricane, tornado, tsunami, earthquake, flood or major fire hits, fewer people die and some damage can be avoided if a plan is in place, communication is fast and information is immediately available. Much of the information needed for disaster planning, management and recovery is geospatial information. Industry is progressing toward geoprocessing interoperability, which behooves disaster managers to re-evaluate their information systems.

The progress is due to the combined efforts of vendors of GIS, Earth imaging, desktop mapping and automated mapping/facilities management software. Along with experts from several integrators, computer companies, universities and technology-using agencies, vendors are developing specifications--through the consensus process of Wayland, Mass.-based Open GIS Consortium (OGC)--for open interfaces that will enable communication among diverse and previously noninteroperable geoprocessing systems. That bodes well for disaster managers, because their work typically involves coordination among a large number of agencies, offices and private organizations that don't use the same systems.

No More Compromising

In the past, it was practical in some cases for users to standardize on a particular vendor's products. That enabled interoperability, although the "one product fits all" approach didn't give everyone the best solution. This compromise soon will become less necessary, as OpenGIS Specifications roll out and products conformant to those specifications begin to reach the market. There will be no immediate guarantees of interoperability, and the first steps will be small ones, but during the next few years it will get better and better. Meanwhile, computing in general will move toward Internet computing, in which users will find much of what they need not on their computer's disk or on their organization's server, but on thousands of unseen World Wide Web servers out on the public network. Users will find geodata and geoprocessing services there, accessible and usable through OpenGIS Specification-conformant interfaces. Wireless "information appliances" that know where they are geographically will connect to the Internet as easily as a desktop computer connects. Such wireless devices will be excellent tools for communication and coordination during disasters.

Every application domain has special requirements that can be accommodated in interfaces and common software services. OGC hopes to work with various agencies to have them introduce disaster information requirements into the process that produces OpenGIS Specifications. If all goes well, the process will result in commercial geoprocessing and geoinformation products and services that optimally serve disaster management needs. With member participation, OGC may test and demonstrate proposed methods and technologies.

Will OpenGIS Specifications help solve the problem of different data schemas? Yes, by providing mechanisms for data sources to report their data schemas. Such mechanisms eventually will be built into network-resident services that automatically find sources that have the particular features and attributes people need to know about.

Data Standards

But everyone who thinks about a regional, national or global disaster information network will need to think about data content standards and metadata standards. Most of the geodata needed during a disaster is data that were collected, updated, distributed and used before the emergency, probably with little thought about how they would be useful during a disaster. Data owned by utility companies, surveyors and other private data producers may be valuable before, during and after a disaster. Military data sources also come into play during major catastrophes. Incompatible feature names, semantics and metadata are merely a waste and a nuisance during routine operations, but they're a tragedy during a disaster.

Clearly, when we talk about a disaster information network, we need to talk about the Federal Geographic Data Committee's (FGDC) work on data content standards and metadata standards. FGDC's staff has made good progress on their primary task, which is federal inter-agency geodata coordination, and they have been good cheerleaders for state, regional, local, and private data coordination. However, their charter gives them no power to impose standards nationally. But we need national standards, not only for disaster management but for many other purposes, not least of which is new economic activity.

Having interoperable systems without interoperable data is like having a good telephone system but no common language. OGC strongly encourages national dialog on the creation of new consensus approaches, organizational roles, funding schemes and public/private initiatives that will result in nationwide acceptance of something much like the body of standards being developed by FGDC.

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