Lessons Learned From 9/11

Good Metadata Is Key

Immediately after the terrible events of 9/11, ESRI staff, alongside many courageous others, worked around the clock supporting the New York City departments of emergency management, health, fire, public works, and more. Similar efforts took place at the Pentagon.

ESRI created a virtual organization with a team based in Redlands, California, supporting similar teams in New York City and Washington, D.C. These groups in turn helped hundreds of people do their jobs effectively.

A geographic information system (GIS) database, applications, and data sets helped create thousands of maps. An advanced, dynamic Web site was developed for the Office of Emergency Management, Public Health, and the fire departments. The Web site managed enormous volumes of precious data and maps.

From mapping New York City's infrastructure to routing debris removal to mapping asbestos plumes, ESRI digital and paper maps were used by thousands of people to make crucial decisions. Software was used to pinpoint assets, such as downed utility poles or damaged water valves, and to map power grids, emergency shelters, and much more.

GIS professionals worked to collect and integrate information to produce the various maps used in New York City's emergency response. Data content and accuracy were often understood only to the degree that individuals had worked with similar information in the past. An important lesson to be learned from 9/11 is the tremendous value of metadata in the event of an emergency. Metadata is the information about a data set and can include source of the data, creation date and format, projection, scale, resolution, and more. Organizations both public and private should view metadata, along with enterprise GIS systems and data, as a key component in homeland security and emergency response.

"There are few things more valuable that a city can do to prepare for disaster than invest in GIS data and in systems to share GIS capabilities," says Al Leidner, New York City Department of Information Technology. "Metadata is a crucial part of this."

"When organizations respond to an emergency, they need information and they need it quickly in one place," says Lew

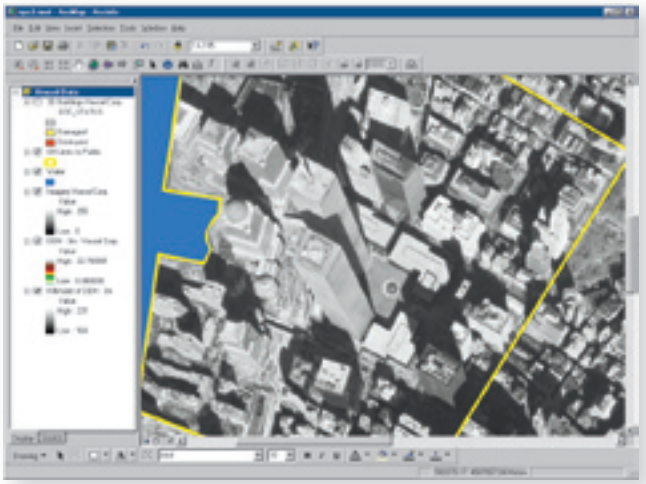
Nelson, law enforcement industry manager, ESRI. "Metadata is an important part of this. Who made the data, when was it made, what purpose was it made for; all these issues become relevant, particularly when you're working on the fly."

An example of where metadata is crucial might be in responding to a damaged building. Good metadata allows emergency response professionals to quickly locate the most recent map to view where businesses and people are located. In an emergency, when saving time can mean saving lives, good metadata gets the right information into the hands of the right people as fast as possible.

"In a catastrophe, it is difficult to know where data is to quickly assemble it," says Russ Johnson, public safety industry manager, ESRI. "A good data inventory and good metadata overcome that obstacle."

In addition to good metadata, common standards are also important. Common architecture, common naming conventions, and common color palettes and symbology all help in the exchange and integration of information. Information stored in data silos will need to be quickly integrated in the event of an emergency. Metadata helps people locate the right map data quickly. Common standards ensure effective data integration.

"A fundamental principle that organizations must adopt is that good metadata is a process, not an event," says Johnson. "This is something important for other organizations and people to understand. Maps and related data should evolve all the time. And so should metadata. New York City's metadata catalog today is excellent. They could serve as a blueprint for other organizations."



Other lessons learned from 9/11: organizations should build an integrated GIS. This starts with building the correct relationships within the organization and with outside organizations so that the right data sets are ready to be integrated when the time arrives.

Another important lesson is the importance for organizations to implement work flow procedures in advance for emergency event mapping requests. As soon as an emergency occurs, work flow procedures should be in place so people can quickly evaluate and request map products from defined catalogs of available content as well as browse data and request custom products to be generated using other layers that might not be on a custom product.

Also key is having well trained staff. The more a city or an organization can train and prepare people to work with GIS, the better.

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