

California GIS Council

Homeland Security and GIS Data Priorities

Action Items:

- *GIS Council to form a Homeland Security Subcommittee, to coordinate California's response to the federal **Geospatial Assurance** (GA) program. The Subcommittee will: a) Give specificity to GA needs; b) Build consensus on priorities; c) Identify an appropriate receiving entity for GA and a **California Metadata Inventory** (CMI); and d) Identify an appropriate dissemination entity for GA and CMI information.*
- *GIS Council Members commit to contributing their respective agencies' GIS metadata to a CMI in accordance with the priorities identified by the Homeland Security Subcommittee, with guidance from the Governor's Office of Emergency Services and the Governor's Advisor on Homeland Security. The goal is to complete an initial inventory by February 28, 2001.*

What is the federal Geospatial Assurance Program?

Geospatial Assurance (GA) is a joint strategy developed by the US Geological Survey (USGS) and National Imagery and Mapping Agency (NIMA) in response to the September 11 terrorist attacks. Its purpose is to identify, acquire, integrate and share geographic data to meet both civilian and military homeland security requirements. The program incorporates data standards established by the Federal Geographic Data Committee (FGDC).

What Do USGS/NIMA Need from the GIS Council?

The USGS would like to work with The Council to prioritize, gather and integrate the needed data sets. The Council's proposed subcommittee will have an initial starting point in a recent paper written by the Federal Geographic Data Committee (FGDC) (<http://www.fgdc.gov/publications/homeland.html>) FGDC identified the following categories of geospatial information as important:

- Facilities and operations susceptible to attack.
- Critical infrastructure, including telecommunications; electrical power systems; gas and oil production, storage and distribution; banking and finance; water supply systems; emergency services.
- Accurate employment data tied to specific locations.

- Detailed and current "framework" data, including orthophotography, transportation, elevation, political boundaries, property ownership, hydrography and geodetic control.

In addition, emergency scenario-specific datasets need to be defined with the assistance of the Governor's Office of Emergency Services and the Governor's Homeland Security advisor. Data for response to specific scenarios may include: hospitals and emergency rooms, ambulances, fire departments, public health departments and resources, primary care clinics and physicians, pharmacies, public buildings, schools; weather and wind patterns; response assets, water supplies, etc. Some components of such datasets are not generally available, and, in some cases, are partially developed or lacking entirely.

Responding to this USGS/NIMA request will require coordination of jurisdictions throughout California. The Statewide Council, as the forum for statewide GIS planning and coordination, is the most appropriate body to coordinate this response.

What's the Value of a Coordinated Response?

We have learned from our recent energy crisis that good communication and coordination systems are essential in responding to new kinds of emergencies. Through the Council, and in consultation with the newly established Governor's Office for Homeland Security, California can provide the necessary data to enable an effective emergency response in the event of a terrorist attack. In addition, a coordinated California response to the GA request will provide an opportunity to test the operation of the GIS Council.

Who Should be Involved in the Proposed Subcommittee?

We recommend that USGS chair this subcommittee. The Council members should direct their senior GIS technical staff to participate in this subcommittee. It should include at least four representatives each from federal, state, and local government. Additional representatives should also be recruited by Council members from senior GIS technical staff positions in local government and regional GIS collaboratives in California.

How Do these Action Items Relate to the Council's Identified Priorities?

- The highest priority identified at the GIS Council Formation meeting was an inventory of California GIS data. Cataloging Homeland Security GIS data would advance this Council priority.
- The second highest priority was an inventory of existing GIS resources and data gaps. Responses to the GA, while not directly addressing this Council priority, will provide initial contacts, informal networks, and communications across jurisdictions.
- Over the long-term, an effective response to GA also includes the formation of Regional GIS Councils, a goal shared by the GIS Council as well.

What is Metadata?

In one of the proposed action items at the beginning of this briefing paper, Council members are asked to commit to provide metadata about geospatial data held in their respective agencies. Metadata or "data about data" is structured information that describes the origin, content, quality, currency, appropriate uses, and means of access to data.

Why is Metadata An Important Aspect of Responding to this Request?

Metadata is what enables geographic information to be used by agencies other than those who produced it. Lack of accurate, rapidly accessible metadata can render the most appropriate data useless, or worse; can lead to a mis-application of data. - Although necessary to respond to the immediate request, the need for a California Metadata Inventory existed prior to September 11 and will remain a critical issue in years to come.

What are the Challenges Involved in GIS Metadata?

Specialists developed many of today's geographic information systems in isolated environments, with attendant data quality known only to those specialists. In addition, the creation of good metadata can be quite time consuming, and since it was never required, it was usually not part of the GIS funding. This has resulted in substantial GIS data collections with inadequate metadata on methodology, accuracy, history, and physical extent. Only recently have project requirements come to include metadata creation. Good quality information may exist, but if it is not widely known, those who need it—under emergency conditions or not—may never find it.

A 1994 Presidential Executive Order (12906) directed federal agencies to produce metadata. At the State level, metadata issues are covered in part by Strategic Data Emergency Recovery Plans, already mandated in most agencies by directives such as Agency Information Management Strategy (AIMS) from the Department of Information Technology (DOIT). Problems stem from the varying degree of compliance with these directives across State and Federal agencies, as well as from varying compliance with counterpart directives at local levels.

Metadata for Homeland Security

The FGDC paper referenced above describes the value of GIS data for several kinds of homeland security uses. Accompanying metadata issues are amplified below:

1. Potential targets and methods of attack can be **detected** by analyzing temporal and spatial patterns. An assumption of analysis is that the data is current and accurate as represented in metadata. The actual assets on the ground today may

not truly constitute a target, valid targets may be missed, or methods of attack may be misapprehended if metadata is not current and accurate.

2. **Preparedness** depends upon current and accurate data that is interoperable, especially in multijurisdictional environments. Metadata provides the roadmap to interoperability.

3. Detection of targets and methods can enable **prevention** of terrorist acts. Planning preventive actions also requires timely and accurate data whose value can only be determined from the metadata.

4. Systems not directly attacked must be **protected** from the cascading effects of systems that are attacked. Metadata on the spatial data used in 'collateral damage' cases is just as important as metadata on spatial data used to deal with directly attacked systems.

5. Damaged systems require an immediate response and a longer-term recovery phase. **Response and recovery** decision-makers are heavy users of spatial data. The quality of their decisions will be proportional to the quality of their data, as well as to their understanding of the data gained from metadata.

Thus, GIS metadata is as important as GIS data to homeland security, emergency response, and related efforts.