

Considerations for Building a Shared GIS



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Background

- Alaska's "Statewide Information Technology Plan" – calls for standards for software purchases
- Technology Management Council (TMC) oversees standard setting process
- TMC convened "Functional Work Groups" (FWG) in specialty areas to decide on standards



GIS Functional Work Group

- TMC created the GIS Functional Work Group
- Composed of 1 GIS rep from each department
- Work Group met approx. monthly between March and October 2004 (7 months)
 - TMC envisioned work would take 2 months



GIS FWG Tasks

- Inventory GIS commercial/freeware software currently in use
- Inventory GIS applications/projects
- Recommend statewide GIS software standards
- Address considerations for building a shared GIS



Statewide GIS Inventory

- Some depts had large number of GIS projects (e.g., Natural Resources, Fish & Game, Transportation)
- Others had only a few GIS projects (e.g., Health & Social Services, Law, Commerce)
- Others had none (Admin, Public Safety)
- GIS inventory showed large range of GIS software in use



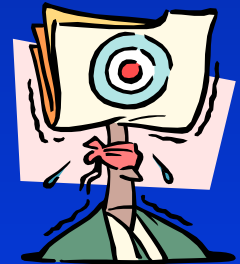
Statewide GIS Software Standard

- Based on inventory, FWG decided GIS standards should be set at the Department level
- No statewide standard
- TMC was dissatisfied – told GIS FWG to establish a statewide standard



Statewide GIS Software Standard

- GIS FWG revisited statewide GIS inventory
- Decided to establish GIS standards based on “suite of products” perspective
- Most depts using products of 3 major vendors
- GIS “Standard” would be any product suite from ESRI, AutoDesk, or MapInfo
- TMC still not satisfied – too general



Statewide GIS Software Standard

- GIS FWG still used “suite of products” perspective
- Developed a “Standards” document that specifically listed the GIS products for each of the 3 major GIS vendors and their uses
- Caveat: list was not exhaustive
- Accepted by TMC!



What is a “Shared GIS”

- GIS FWG tasked with addressing “considerations for building a shared GIS”
- Would it be used just by agencies or would it be accessible to the general public?
- Some disagreement on the meaning of a “shared GIS”
- Functional vs goal-oriented definitions



Shared GIS – Functional Definition

- “A Shared GIS is a database of spatial information, housed in an appropriate environment with adequate support personnel and adequate and enforceable policies in place to ensure its relevancy”
- Stresses migration from traditional file-based GIS & dependency on a single vendor



Shared GIS – Goal Definition

- “A shared GIS allows all users to search for, acquire, and use data available from multiple state agencies”



Methods to Provide Shared GIS Data From Multiple Sources

- Create a “Data Warehouse” with a central enterprise database designed for data retrieval – periodically updated
- Create several business area “Data Marts” designed to answer specific questions – periodically updated



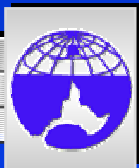
Methods to Provide Shared GIS Data From Multiple Sources

- Create Internet services that provide data to open GIS applications, where issues of datum and projections become transparent to the user
- Create a central web-based portal that provides links to all available State GIS services and data



Methods to Provide Shared GIS Data From Multiple Sources

- Assemble a single database server where data are updated and can be queried
- Improve access for other agencies to each department's GIS databases, either by providing the ability to download the data or allowing the data to be read directly



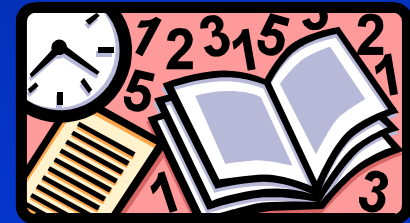
Requirements Associated With a Shared GIS

- Coordination amongst agencies to develop standards
- New policies and procedures need to be put in place
 - Creating new data sets
 - Correcting existing data sets when users discover errors



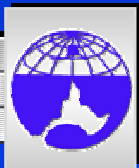
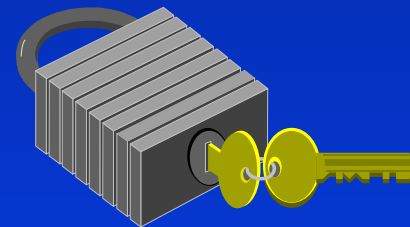
Requirements Associated With a Shared GIS

- Ensure metadata exists for data sets and that it is accurate and up-to-date so users understand projection, datum, resolution, and limitations



Requirements Associated With a Shared GIS

- Security measures would need to be in place to protect proprietary and confidential data
- Cancer and other healthcare data with personal identifiers would need to be excluded from a shared GIS unless aggregated and de-identified



Benefits of a Shared GIS

- Increased accessibility to state-maintained data
- Data would be relatively up-to-date
- Potential cost savings through reduced time and effort in obtaining data
- Increased locational consistency of data files if all in same projection & datum



Drawbacks of a Shared GIS

- Potential cost increases
 - Documenting & preparing data for sharing
 - Maintaining a central data repository
 - Software costs to keep all users on compatible versions
 - Data purchased from a vendor for enterprise-wide use is usually more expensive than if purchased for a single project and single workstation



Drawbacks of a Shared GIS

- Tendency to promote “mission creep”
 - Emphasis could shift to development of GIS data systems rather than using GIS as a tool to support an agency’s statutory mandate
- Differing opinions on what constitutes the standard base features layers
 - Features vs. resolution vs. time



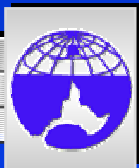
Drawbacks of a Shared GIS

- Potential duplication of effort
 - USGS maintains the federal geographic data clearinghouse (geodata.gov) that already includes state data
 - » Look into – is it more cost effective to contribute data to this service rather than build a shared GIS?



Potential Problems When Using Data From Multiple Agencies

- Misinterpretation or misuse of data created by another agency
 - Low resolution or low accuracy data developed for a specific purpose may be used by another agency and reach the wrong conclusions



Potential Problems When Using Data From Multiple Agencies

- Misinterpretation of non-coincidental data from multiple sources when the data are presented within a common system
- Misunderstanding of shared GIS data used in combination with a user's own data



Potential Implementation Problems

- Limitations in network bandwidth could make it impractical to use a shared GIS in “real time” or download data due to large file size
- Rural office issues
 - Some use dial-up connections or using DSL on local ISPs
 - Some don't have any access to main state network and lack a reliable WAN



Shared GIS Not the “Silver Bullet”

- Individual project needs may not be solved solely by a shared GIS



GIS FWG Recommendations

- Single shared GIS server not cost effective, efficient, or desirable at this time
- Need a consultant to do a cost-benefits analysis and provide details on:
 - Design
 - Cost savings
 - What new costs would be assessed against each department as their share of implementation and maintenance?



GIS FWG Recommendations

- What aspects of a shared GIS would have the most value?
- How would we proceed toward a shared GIS in incremental steps?
- What policies and procedures would need to be put in place?
- What infrastructure would be needed?



GIS FWG Recommendations

- Agree on a set of “standard” base features, including sets for multiple datum, projections, and precision
- Take better advantage of technology already in place and make data available to other agencies
- Depts should attempt to license newly acquired data for all State agencies



GIS FWG Recommendations

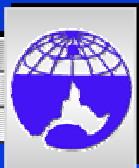
- Update and improve metadata for dept-managed data sets
- Take advantage of the federal geographic data clearinghouse for dept and public access to state metadata and data downloads
- Establish Internet services (e.g., ArcIMS) of “standard” datasets that can be used by staff with ArcGIS

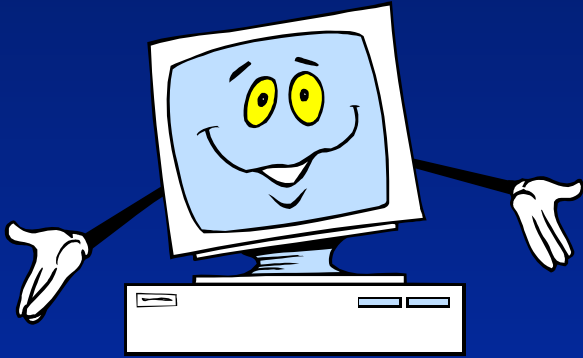


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Thanks very much!



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