

Louisiana Geographic Information Systems Council

Strategic Plan for GIS Development 2006

STATE OF LOUISIANA

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VISION

Having experienced the worst natural disaster in American history, the strategic plan vision focuses on improving state governmental ability by enhancing interoperability and data sharing to address 1) emergency preparedness, 2) service delivery capability, 3) health and social services, 4) economic development, and 5) environmental issues.

This plan proposes implementing GIS technology in various ways throughout state agencies in order to realize this vision. GIS technology, when implemented within normal governmental operations, can be a valuable tool in obtaining greater efficiency and effectiveness in an agency's mission and function. This technology can make state government more effective by providing unique analysis opportunities and by introducing innovative service and information delivery methods to its citizens. Adding a spatial dimension to any agency's function in many cases allows identification of cost-saving measures, and can potentially provide a better service delivery model of governmental assistance to individuals, businesses, and other governments or agencies.

GIS has been used by various Louisiana governmental agencies for everything from providing maps to first responders during the recent hurricane relief efforts to food stamp fraud detection. The technology has proven application solutions in a variety of challenges at all levels of government.

MISSION

The mission of the Louisiana GIS Strategic Plan is to maximize the effectiveness and efficiency of state government through the implementation of geographic information systems (GIS) technology.

Eliminate duplication of effort and unnecessary redundancy in data collections and systems and to provide for integration of geographically-related data bases to facilitate the policy and planning purposes of the state of Louisiana.

In 2005, Hurricanes Katrina and Rita accentuated the importance of spatial data assets in supporting policy development and decision making related to response, recovery and rebuilding efforts.

PHILOSOPHY

The legislature finds that geographically-related information of potential use to the state of Louisiana has been collected and stored in numerous formats by many state entities. Geographic information system (GIS) technology is rapidly advancing, and many agencies throughout state government have used this technology to develop a variety of applications. No centralized geographically-related data resource or network for data communication and exchange currently exists. This type of network can use available GIS technology to eliminate duplication of effort and unnecessary redundancy in data

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collections and systems and to provide for integration of geographically-related data bases to facilitate the policy and planning purposes of the state of Louisiana.

The legislature further finds that cooperation and coordination among the various state entities developing and maintaining GIS systems is necessary for the economical use of state resources allocated to acquire GIS technology and associated data bases.

GOALS

The strategic planning committee developed the goals considered necessary for a successful implementation of an enterprise GIS Model in state government to realize the vision, mission, and philosophy set forth in this plan.

Goal 1: Facilitate Enterprise GIS in State Agencies

Agencies face a number of challenges in implementing enterprise GIS technology within their organization. Some agencies will have a fully integrated enterprise GIS model. Having champions at the executive level will help promote the implementation of Enterprise GIS. Without this high level support, GIS or any other major project stands little chance of success considering the current state budgetary and staff limitations. Educating upper management on the benefits of GIS technology is a critical component in this strategy.

Objective 1.1 – Develop Strategies to increase support for Enterprise GIS among statewide and agency leaders

The fostering of intra/inter agency cooperation will be a critical factor to ensure that the introduction of GIS technology, GIS analysis and GIS products is successful. Promotion of cooperation will assist in the sharing of data, best practices, and new approaches to GIS analysis. Data sharing is critical in the successful implementation of a statewide GIS approach within state government.

Leadership Strategy

Fostering strong GIS leadership with an appropriate level of authority within state agencies over both human and technological resource allocation will be required.

Data Sharing / Protocol Strategies

Clear lines of authority and protocol must be established in the use and distribution of sensitive, proprietary, licensed, or confidential information. This will require development of programmatic agreements between the executive agencies of state government. The governor, working with the CIO, should facilitate the development of these protocols and agreement implementation; whereas, some agencies may implement only critical components utilized within a particular department of an agency. The enterprise advantage lies in having a consistent departmental GIS approach and simultaneously facilitating cross-departmental utilization of spatial data assets.

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Objective 1.2 – Implement the GIS Enterprise Model

Provide information technology (IT) resources necessary in each agency to staff and implement the enterprise GIS model, and provide a spatial data distribution portal available to those inside and outside state government.

Resource Strategy

Provide a statewide pool of funding that state agencies can access to implement the GIS enterprise model. Provide funding for a state wide resource for state agencies that are not able to implement enterprise GIS model.

Portal Strategy

Allow access to a comprehensive GIS data by creating a one-stop-shop to search, view, and retrieve GIS data from various state agencies.

Goal 2: Enhancement of GIS Training

Develop the training resources necessary to provide state employees with the background and knowledge required to use GIS technology to perform their assigned tasks.

Objective 2.1: Expand or Utilize GIS Training Resources

The state has a number existing resources relating to training that can be used more effectively or expanded to include GIS training.

Statewide Training Program Strategy

The Comprehensive Public Training Program (CPTP) is the state-funded training program for state employees. CPTP is interested in providing specialized classes to assist state employees meet new challenges. CPTP's current interest in providing training to agencies dealing with hurricane related emergencies could be an opportunity for GIS Training that has not yet been explored.

Educational Institution Strategy

Expand educational curriculums, allowing institutions to offer a specialty designation or certificate in GIS or geospatial technology. Continuing education offers a wider breath of training opportunities that are more convenient for professionals, government employees, and other members of the general public. Community colleges reach a wider range of people by providing introductory classes and more application oriented training at a reasonable cost and at convenient hours.

State Educational Strategy

LAGIC has been developing a training component as part of the LouisianaMAP project. LAGIC offers a variety of customized training workshops for specific geospatial applications. In addition, LouisianaMAP Academy is an online resource offered by LAGIC that could be augmented to

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provide a single source of information for all GIS training programs both public and private throughout the state. To fully implement this strategy, additional resources are needed.

Private Sector Educational Strategy

GIS hardware and software vendors have developed their own authorized training centers to certify their user base. The advantage of vendor led training is that the new user becomes familiar with the same software and software version, that will be used in their office, rather than receiving generic GIS instruction. The state should link agencies with vendors that provide free informational seminars on specific topics or in response to the release of new software versions or new products. The state can leverage its economy-of-scale to obtain reduced cost training opportunities from private sector vendors.

Professional organizations play an important role in expanding the understanding of GIS technology among their members. Their members tend to be professional users of GIS, whether they are assessors, planners, or engineers. Their primary employment expertise is not GIS, but they use GIS technology to perform their duties more effectively and efficiently. Professional organizations provide an important training function to the Louisiana GIS community.

Goal 3: Development of a Tiered GIS Approach

This Plan supports development of a series of tiered implementation approaches based on varied agency organizational structure, resources and missions for implementing enterprise GIS. This approach allows departments to implement enterprise GIS techniques in a phased manner.

Objective 3.1: GIS Needs Assessment

Before an organization can efficiently and effectively utilize GIS technology and techniques, an assessment of the mission critical issues facing an agency is recommended.

Assessment Strategy

In order to conduct this assessment executive management should identify a set of internal resources (staff) that are knowledgeable in mission and business requirements of the organization. These internal resources should be supported by knowledgeable individuals applying GIS capabilities within their organization. This team should be charged with delivering the functional application assessment to identify business processes that are candidates for integration of GIS technology along with a priority list for deployment derived from cost benefit analysis.

Dependent upon available resources, the state should support agencies that cannot conduct their own internal GIS needs assessment through technical assistance via online assessment tools and the procurement of professional

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services. The assessment should match GIS solutions with organizational needs. It should be noted that any needs assessment should be periodically revisited to account for changes in organizational mission and responsibilities, new mandates, and advances in technology.

Objective 3.2: Cross Departmental Data Sharing

Devote resources necessary to acquire and maintain high quality spatial information that is generated by federal, state, and local levels of government to allow for information sharing across departments and agencies at all levels of government.

Cross Departmental Access Strategy

To better address an enterprise architecture strategy or even a tiered approach, a broader approach is needed allowing seamless cross-agency use of spatial data. The spatial framework layers, as identified by the Federal Geographic Data Committee (FGDC), are documented in the LouisianaMAP project plan (formerly the I-Team Plan). The plan is available on the web at <http://lagic.lsu.edu/i-team> web site.

For the plan to become a reality, proper technological infrastructure allowing cross-agency use of spatial framework GIS data is required. This will allow agencies at all levels of government to focus on mission related issues by reducing the internal resources necessary to create and manage framework data.

Objective 3.3: Apply an Enterprise Approach to Point Solutions

Encourage state agencies to employ an enterprise approach when implementing project specific GIS solutions or division/section level GIS solutions so that the benefits of these efforts are widely shared within and outside departments.

Dissemination of the Benefits of Point Solutions Strategy

In instances where the needs assessment targets specific divisions or sections within a department for the immediate implementation of a GIS solution, an enterprise approach should always be taken regarding these projects. GIS technology and techniques have been utilized in addressing project specific issues. Over time spatial data sets developed for project specific purposes become departmental spatial data assets. These assets should routinely be made available to the entire department via network data sharing or to other departments via the web. By adopting the enterprise GIS approach and applying it to these project specific solutions, organizations can leverage assets, thereby improving organizational efficiency and effectiveness.

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Objective 3.4: Provide a quality resource for departments that cannot implement an in-house GIS solution

Provide a state supported service that allows departments to access GIS resources and spatial data assets to support the effective policy development throughout state government.

Development of a GIS technical service strategy:

All state agencies that are interested in utilizing GIS may not have the resources or need to implement the enterprise GIS model. In the case of less complex GIS applications, like geocoding state service centers or other facility locations, a GIS application could be developed outside of the department that could provide geocoding of addresses and placement of this data in map format on a general purpose public web site.

These types of applications could be accomplished by an expanded LAGIC. Furthermore, the LouisianaMAP GIS web site could be utilized as the general purpose GIS web portal. Costs for the GIS services could be billed to the agency receiving the services unless new state funding is provided in supporting the necessary expanded LAGIC infrastructure service capability.

This concept should not be confused with centralized GIS which has been unsuccessful in many states due to the eventual takeover by political influences and more generously funded departments. Also, this approach is not recommended for departments with one or more GIS division/section operations, or those that have a need for enterprise GIS.

Objective 3.5 Departmental Enterprise GIS

Support the development of departmental enterprise GIS in state agencies that have the capacity to do so and where enterprise GIS would yield the greatest benefits.

Enterprise GIS Support Strategy

Develop a how-to guide that provides extensive information on best practices and ways to implement enterprise GIS. Provide state assistance through enterprise data and software acquisitions as well as support for conducting needs assessments.

Goal 4: Implement and Maintain a Catalog of Spatial Assets.

Louisiana has taken the initiative in creating the Louisiana Geographical Information Systems Council (LGISC) and the Louisiana Geographic Information Center (LAGIC) as policy and operational components, respectively, for addressing GIS related issues. By cataloging Louisiana's spatial data assets, the state can better utilize these assets once identified, documented, and cataloged.

Objective 4: Catalog Departmental Spatial Data Assets

Similar to the creation of the Louisiana Services Directory, the cataloging of spatial data and possible tabular data sets capable of being geocoded into a

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spatial ones is a major effort for any department; therefore, the committee recommends the following:

1. Provide the staff and resources to LAGIC to work with state agencies to develop a comprehensive catalogue of the spatial data maintained in each agency.
2. Identify the staff and resources within each agency to coordinate with LAGIC to document and catalog legacy databases.
3. By performing this first task similar to the Services Directory, the available spatial data assets of the state will be identified, documented (metadata), and cataloged for use in governmental activities such as policy evaluation and analysis.

Recommendations

1. Identify or develop means and funding for conversion of “non-spatial” legacy databases into spatial ones which will require substantial resources and technical support.
2. Policies and procedures should be adopted by state agencies that will require the capture of precise point location information when building new databases (addresses, lat/long etc.)
3. The Louisiana Services Directory, maintained by the Division of Administration, is a useful model for a statewide spatial data catalog. Like the Directory, a data catalog will require substantial administrative support to be successful.

Goal 5: Coordinate Spatial Data Sharing and Distribution.

The sharing and distribution of spatial assets is a requirement for efficient and effective government. The federal government has implemented the National Map as a portal to their spatial resources and the Geospatial-One-Stop as a data clearinghouse and metadata catalog.

Objective 5: Expand LouisianaMAP

With additional resources LouisianaMAP, the state’s GIS portal, could provide an easy-to-use interface to State spatial data. Using the Louisiana Services Directory as a model LAGIC could, with additional resources, provide a consolidated and comprehensive catalog of state spatial assets.

Data as an Asset Strategy

Data is a critical asset that is often overlooked. Program data sets are the data collected by agencies as they perform their mission. This data can be geospatial (addresses, departmental regions, well locations) or it can be non-spatial data (test results, house visits, species count). Much of the non-spatial data contains a spatial link, such as a street address, or point location and can therefore be geographically referenced by using an automated process called “geocoding” or “address matching”. The data can then be

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linked with other data sets such as county and municipal boundaries and political subdivisions that are available from both public and private sources. Older “legacy” data sets can often be converted to more robust data base management systems (DBMS), leveraging an existing investment. These older data sets are particularly useful for showing past conditions and discovering data trends.

Metadata Strategy

The steps in spatial data creation should be documented with metadata records. Metadata is a process of detailing the history of a spatial record so that these data sets can be easily duplicated and the data can be understood and shared with other agencies. Departments that have fourth or fifth generation database management systems essentially have taken a step towards grouping all of their databases (programs) into one linked data model. This expedites the data maintenance process by allowing for geocoding of one data set, rather than having to geocode each separate data set. It is essential that framework data, the basic themes that are used by every agency in the creation of their base maps, be documented with FGDC compliant metadata. These framework (basic) layers are discussed in greater detail in the I-Plan as well as the LouisianaMap project report.

Data Distribution Strategy

The ultimate purpose of collecting, cataloging and maintaining spatial information is to provide that information to federal, state, and local agencies, research organizations, the private sector, and the public.

Programmatic Goals Strategy

Given the strategic goals, the next step is to articulate the programmatic goals that are intended to help drive the statewide spatial data infrastructure (SSDI) implementation program. For the planning process to succeed, it is important that the programmatic goals be achievable and compatible with one another. Examples of programmatic goals include:

- Establish authority for the statewide coordination of geospatial initiatives
- Establish a state-wide Geospatial Coordinator position
- Develop standards of data exchange across all levels of government, private industry and academia
- Develop a state-wide parcel data layer product with ongoing maintenance and support
- Establish a three year orthoimagery (aerial photography) program
- Establish a State Clearinghouse for geospatial data

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- Continue to raise the level of awareness within state government about the importance of long-term program support for GIS activities within the state
- Support geospatial data needs of the National Response Plan.
- Develop programmatic goals that support the implementation of statewide spatial data infrastructure (SSDI).

Recommendations

1. Identify the resources necessary to create/acquire, implement, and maintain statewide enterprise data.
2. Develop policies that require recipients of state funds (either directly or by pass-through) to collect accurate, comprehensive location information when involved in data creation or maintenance and to document that data creation with FGDC compliant metadata.
3. Create templates that can be used in state contracts for data creation that specify the use of nationally recognized geospatial data standards, such as those developed by the Federal Geographic Data Committee (FGDC) or the American National Standards Institute (ANSI).
4. Provide resources (through mini-grants) to local governments and state funded academic departments for data creation with specific terms and conditions that require that metadata records will be created that document the data set and that this data will be shared with state and federal users.
5. Provide LAGIC with the resources to expand its data clearinghouse and metadata catalog functions.

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**Appendix A
Strategic Plan Subcommittee Participants**

Appendix A

This section contains contact information for the various individuals participating in the strategic plan process. The contact listing for the strategic plan participants includes name, agency, telephone number, and e-mail address as listed in the following section.

Strategic Plan Subcommittee Participants

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Appendix B NSGIC Coordination Criteria

Appendix B

National States Geographic Information Systems Council (NSGIC) Coordination Criteria

NSGIC suggests nine (9) coordination criteria that are essential to fully enable statewide geospatial coordination activities. Louisiana currently meets seven (7) of these nine (9) coordination criteria. Significant efforts remain to establish better coordination and sustainable funding sources.

Full-Time, Paid Coordinator Position

In the first criteria, NSGIC recommends that one individual or agency be designated and have the authority to implement the state's geospatial business and strategic plans. Many states have created one or more full time positions to oversee the coordination of geospatial technology.

Louisiana does not have one individual with the authority to implement the states business plan for geospatial development. Currently, as LAGIC funding comes through the Division of Administration, Office of Electronic Services, the Director of this agency comes closest to fulfilling these criteria.

Clearly Defined Authority For Statewide Coordination

The second criteria recommend that a responsible individual or group be designated through executive orders, budget authorizations or legislation. These individuals or groups are better able to deal with difficult coordination issues as they are empowered to perform this function.

In Louisiana, the GIS Council (<http://doa.louisiana.gov/lgisc>) was created by legislation to address coordination issues. Issues that need immediate attention are dealt with by the LGISC Executive Committee and then discussed at monthly Council meetings. Issues that do not require an immediate response are delegated to specific LGISC subcommittees.

Coordination Office Has Formal Relationship With CIO

The third criteria suggest that the state's information technology architecture is best served by having a close alliance between geospatial and traditional information technologies. Therefore, a close relationship with the state CIO is essential to move geospatial technology initiatives forward.

Louisiana has recently appointed a CIO within the Division of Administration who possesses an understanding of geographic information technology. LAGIC, the administrative arm of the Council works closely with the Division of Administration (DOA) and receives its base funding through the DOA's, Office of Electronic Services.

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Appendix B NSGIC Coordination Criteria

Champion Is Aware And Involved In The Process Of Coordination

A visionary political champion, who understands the critical importance of geospatial technologies, is the fourth criteria. This champion is essential in obtaining recognition and funding to support new initiatives. Without a strong champion, new initiatives often fail. While there are individual champions within some state agencies and other governmental entities, Louisiana state government has yet to formally identify a unitary champion for geospatial technologies.

Responsibilities Assigned for NSDI and Clearinghouse

The responsibility for the component pieces of the National Spatial Data Infrastructure (NSDI), as the fifth criteria, should be assigned to the appropriate staff and agencies to ensure that data stewards are identified to prevent duplication of effort. Assignment of responsibilities should occur in advance of actual need to ensure that the appropriate activities are planned for and incorporated into the state's business plan.

In Louisiana, the I-Team Initiative identified the various data stewards and assigned responsibility for data layer creation and maintenance (See I-Plan). NSDI Clearinghouse responsibilities have been assigned to LAGIC.

Local Government, Academia, and Private Sector Coordination

According to the sixth criteria, a state must have the ability to meet and coordinate with all public and private sector entities engaged in geospatial activities. Safeguards should be developed to ensure that the needs of other sectors can be incorporated through consensus building activities.

The Louisiana GIS Council provides a forum for local government to participate in state geospatial activities. The Council includes members from a variety of government, quasi-government and private entities including parish (county), municipal, assessor and planning associations and organizations. Other sectors are welcome to participate in and apply for membership to the LGISC.

Sustainable Funding Sources To Meet Projected Needs

Sustainable funding, as a foundation for effective partnerships, is the seventh criteria. The highest component cost in implementing geospatial technology is typically data production. Furthermore, most users require continuous updates of mission critical data which necessitates reliable and recurring funding sources. Effective consortia can only be developed when each of the players brings something to the partnership.

Sustainable funding is a reoccurring issue for the Louisiana geospatial community. While successful efforts have produced the base orthoimagery and elevation framework layers through multi-governmental collaboration, these successes have been the exception rather than the rule. What is needed is a

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Appendix B NSGIC Coordination Criteria

comprehensive policy and mechanism to adequately fund the creation and maintenance of the state's critical data layers identified in the I-Plan.

Coordinators Have The Authority To Enter Into Contracts

The eighth criteria argues that to be effective, individual state GIS coordinators or the agencies must be able to readily contract for software, systems, training and data production costs to create and maintain the SSDI. Often partnerships can be brokered to capture end-of-year funds when contracting mechanisms are already in place. Recent amendments to the Council and LAGIC's enabling legislation enable LAGIC to contract for services with state, local government and other entities.

Federal Government Works Through The State Coordinator

The final criteria recommends that Federal agencies use the state's GIS coordination body (LGISC) as the "clearinghouse" to make certain that all funding opportunities are used wisely in implementing the business plan of the state. In addition this coordination will eliminate duplication.

In Louisiana, Federal agencies have been active participants in statewide acquisition of data products, especially raster imagery. Coordination of grant opportunities has been attempted on a small scale. Although some successful coordination efforts have been achieved, a more comprehensive approach is required to implement the SSDI.