



## **LAGIC Technical Services Quarterly Report**

LAGIC-LSU Contract: 2008-2009

January - March, 2009

April, 2009

### **Summary:**

During the third quarter of the 2008-09 contract, LAGIC completed *phase one* of the LouisianaMap 2.0 geospatial portal functionality. The LouisianaMap 2.0 geospatial portal is available at: <http://map.la.gov/>. An *end of service* strategy for the old LouisianaMap site is planned for the fourth quarter.

In January, LAGIC Technical staff deployed the Data Services site on LouisianaMap portal. The data [Resource Center](#) includes numerous free, live map services available to GIS professionals; permitting users to directly integrate LAMAP data and services within their desktop GIS. In March, the portal released the [LOSCO Data Catalog](#), allowing users to freely download ZIP compressed GIS data (ESRI Shapefile format), which are organized by data theme (*e.g.*, cadastral, demographics, hydrological, transportation, etc.).

LAGIC Technical Services has begun working with the GIS Council and data stakeholders to develop strategies for utilizing and promoting access to the LouisianaMap map services. Participants include Lincoln Parish GIS, LA Dept. of Transportation and Development, the LSU Police Department - GIS Unit, and the LSU AgCenter and Cooperative Extension.

LAGIC Technical Services also provided support for the 25th Annual Louisiana Remote Sensing & GIS Workshop, scheduled for April, 2009. Support includes the LARSGIS.ORG web site design and maintenance, workshop communications and outreach, and miscellaneous technical support.

Finally, as a result of increased data volume hosted by LAGIC, minor hardware upgrades (*e.g.*, external and internal hard disk drives) were performed during this quarter.

### **Administrative & Staff:**

#### **1) Staff:**

LAGIC Technical Services continues to employ two full-time professionals, and one part-time graduate assistant.

During the latter half of February 2009, LAGIC was informed by the OES Acting Director that a budget cuts would be implemented for the 2009-10 fiscal year. As a consequence, LAGIC

technical services has begun scaling-back/suspending services in anticipation of significant budget adjustments. Furthermore, LAGIC Technical services has been working with GIS Council membership on contract opportunities.

## 2) Training:

LAGIC continues to participate in various online training seminars focused on Web mapping services and open-source GIS data services. Subjects included open data standards and interoperability tools, interactive geoprocessing scripting, and support for real-time data services.

LAGIC technical staff continue to develop in-house user guides, white papers, and procedural manuals for various software systems and services (e.g. ArcSDE, ArcGIS Image Server, etc.). These documents will be available to technical staff, and distributed to GIS council members on request.

## Data Management & Services:

### 1) LAGIC Data Services:

LAGIC maintains the following in-house data services:

#### a. Database System Management:

LAGIC is currently hosting a majority of static geospatial data assets within a SQL Server 2005 Database Management System. Geospatial assets are directly accessible via ArcSDE spatial database engine. Clients primarily comprise of in-house users. However, numerous Web-based mapping applications hosted by LAGIC access these data layers.

LAGIC has also configured a test environment for the open-source PostgreSQL DBMS platform. The software has been installed on a virtual server. An evaluation as a low-cost and/or *ad hoc* geodatabase server platform was completed. A summary of capabilities and expectations is planned.

#### b. DBMS Organization:

Currently, the LAGIC hosts approximately 1,000 feature classes, raster datasets, and spatially enabled data tables:

- i. LAGIC in-house/production database, (25 feature classes)
- ii. Louisiana Spatial Data Infrastructure (LSDI) [UTM & GEOG], (254 feature classes, 3 raster datasets, and 39 data tables)
- iii. US Census Bureau TIGER/Line - Second Edition 2006, (42 feature classes, 9 data tables)
- iv. LOSCO Data Catalog, (302 Features, 12 tables)
- v. Louisiana Geographic Names Information System (GNIS), (2 feature classes)
- vi. Louisiana Recovery Authority (LRA) - Louisiana Speaks datasets (42 feature classes)

*Ad Hoc* databases include:

- i. Homeland Security Infrastructure Program (HSIP), (132 feature classes)
- ii. Miscellaneous Data, (100 feature classes)

- iii. Elections Database, (3 feature classes)
- iv. Weather Database, (18 feature classes)
- v. TIGER2006 Second Edition - WGS-1984, (42 feature classes)
- vi. TIGER2008 First Edition - WGS-1984, (40 feature classes)
- vii. NAIP 2007 Test Service, (2 raster datasets)
- viii. LiDAR Digital Elevation Model, (1 raster dataset)

LAGIC's primary spatial data inventory system is maintained according to the Louisiana Spatial Data Infrastructure (LSDI) schema. The LSDI data structure is hierarchically organized according to *framework data layer category (i.e. data theme), feature name, data provider, and year of publication*. In order to accommodate various performance enhancement strategies for online publication, it was necessary to organize the data according to both Geographic and UTM coordinate systems.

All data are securely maintained, and are accessible via policy-based usernames and passwords.

Data and metadata records receive continuous QA/QC for continuity. Additional changes and edits to the data are made as needed.

*Ad hoc* databases are created as needed, and are often the result of a special request or technical project. Due to the nature of their function, some of these systems (*e.g.* HSIP) may become permanent database services.

c. *File-based Organization:*

Data provided on the LAGIC DBMS geospatial database is also available online for download. Data layers have been exported as ESRI Shapefile format, and include comprehensive metadata. These assets have been compressed to ZIP format, and are accessible for download from the LAGIC web site data catalog(s): <http://lagic.lsu.edu/geodata/>.

d. *Miscellaneous Data Services:*

Geospatial One Stop (GOS), on going  
LAGIC maintained metadata continue to be accessible via the GOS Federal data catalog. Metadata records are harvested according to an automated schedule, ensuring that the latest updates are propagated to the GOS search indexes.

2007 NAIP, available

LAGIC Technical staff have successfully published the US Dept. of Agriculture, 2007 NAIP aerial photography (1-meter, true-color) via ArcGIS Image Server. Accordingly, it is accessible for consumption via: <http://lagic02.lsu.edu/lagic/rest/>. Image Server publishes image services, providing distributed data services that allow compatible client applications to consume the image data quickly and in real-time.

Louisiana LIDAR Digital Elevation Model (DEM), pending

LAGIC is working with the LSU and LOSCO to distribute the LIDAR DEM data set as an image service. The DEM data layer is 64GB raster dataset will be hosted via ArcGIS Image Server

platform. Accordingly, it will be accessible for consumption via:

<http://lagic02.lsu.edu/lagic/rest/>.

## 2) LouisianaMap Data Services:

LAGIC data assets have been replicated and transferred to the LouisianaMap data server(s) maintained by the Division of Administration, Office of Information Services (OIS). Additional details are provided in the Technical Support and Applications Development section.

### a. Database System Management:

To accommodate additional datasets and map service cache, storage space on the DOA storage area network was increased to 800GB and assigned to the 1SPGISSDE server. Additional data resources are obtained from the SDE data layers maintained by LAGIC, on the LSU Campus.

### b. DBMS Organization:

To ensure efficiency and replication needs, the organization of the LouisianaMap data servers mimic the structures maintained on LAGIC servers(see above).

### c. Data Replication Services:

Interest has been expressed to extend the LouisianaMap data services capabilities to members of the LGISC and Louisiana geospatial community. This has prompted LAGIC Technical staff to explore data replication strategies that can be utilized across heterogeneous networks and the Internet. As time permits, capabilities testing will be incorporated within the LouisianaMap services program (see below).

### d. Web Usage Monitoring:

LAGIC is currently examining resources for monitoring and tracking system usage. Recommendations will be made in Q4, with implementation anticipated during the summer of 2009.

## Technical Support and Applications Development:

### 1) LouisianaMap:

The portal is accessible via <http://map.la.gov>. The following geospatial assets are available to the public:

#### a. Data Services:

LouisianaMap currently hosts a number of active geospatial data services and mapping applications:

- Basemap services include: the US Census Bureau's TIGER/Line 2006 [map], Satellite and High-resolution aerial photography [imagery], and a service consisting of both satellite and basemap features [hybrid]. Example: [http://map.la.gov/explore\\_map.html](http://map.la.gov/explore_map.html)
- Supporting the basemap services are the LSDI geospatial data services: thematic map services that feature data layers represented in the LSDI framework. Available services include Biological, Cadastral, Demographics, Imagery, Land Use,

Transportation and more. Services are accessible via ArcGIS desktop and server clients. Users can browse and access services here:

[http://map.la.gov/resource\\_center.aspx](http://map.la.gov/resource_center.aspx)

- All services are available via the LouisianaMap services directory:  
<http://map.la.gov/lamap/rest/services>

Basemap and Data services are available for *ad hoc* mapping services. These include address matching and geocoding services (hosted by ESRI), 2008 presidential election results, and the LOSCO public marinas and boat launches.

All data services are accessible via Web-based clients, and compatible GIS software platforms, including Google Earth, NASA World Wind, Gaia 3.2, and all contemporary ESRI GIS platforms (e.g. ArcGIS Desktop and Server).

*b. Applications Development:*

Development of the LouisianaMap 2.0 mapping application platform has been the primary focus for the last three quarters. A number of key map applications and services have been developed, including:

- LouisianaMap 2.0 Base Map: Base-map of Louisiana constructed using U.S. Census Bureau's TIGER/Line 2006 Second Edition data layers. Map services are cached to 9 scale factors, resulting in highly-responsive, interactive mapping. Services include basic map manipulation functionality, including zoom in/out, and pan. Advanced functionality requiring advanced programming is currently being developed by ESRI developers (e.g. printing, geocoding/address matching). The LouisianaMap 2.0 base map is also available via the ESRI [Data Resource Center](#).
- Explore Louisiana 2.0: Map application utilizing the LouisianaMap 2.0 base map. In addition to the functionality identified above, the mapping application includes an identify tool that can be used to reveal attribute details regarding user-selected parishes. [http://map.la.gov/explore\\_map.html](http://map.la.gov/explore_map.html)
- LOSCO Boat Launch & Lift Locator: Map application that reveals the location and details of publically-accessible boat launches throughout south Louisiana. Boat launch data was provided and maintained by the Louisiana Oil Spill Coordinator's Office (LOSCO). [http://map.la.gov/losco\\_marinas.html](http://map.la.gov/losco_marinas.html)
- 2008 Election Map: Map application utilizing the LouisianaMap 2.0 base map and election results provided by the Louisiana Secretary of State office. [http://map.la.gov/elections\\_20081104.html](http://map.la.gov/elections_20081104.html)

*c. Data Replication & Distributed Data Services:*

As indicated earlier, various LGISC members have expressed interest in extending data services to the GIS Council and Louisiana geospatial data community as a whole. The scope of these services have not been defined, and technical challenges relating to the replication and exchange of data across heterogeneous networks will need to be examined. Additional information will be compiled as time permits.

## 2) Custom Services

LAGIC supports a number of custom services on the LouisianaMap platform.

*a. Image Services:*

As mentioned earlier, LAGIC Technical staff have implemented the ESRI ArcGIS Image Server (hosted at LAGIC) as a means for quickly distributing raster data to users. NAIP 2007 and LIDAR DEM services are accessible via the [LouisianaMap Resource Center](#).

*b. Globe Services:*

In addition to the services listed above, LAGIC has explored various strategies for publishing globe services. Samples included historic maps obtained from the US Library of Congress, demographic data, election results, hurricane maps, and more. These map services will utilize ArcGIS Explorer, Google Earth, and NASA World Wind globe/visualization software (when possible). Select [globes](#) are available on the LouisianaMap 2.0 Web site.

*c. Ad Hoc Services:*

The success of the map and data services provided during the 2007 hurricane season has prompted a number of inquiries about similar resources during the 2008 hurricane season. LAGIC will entertain these requests as time and resources permit.

*d. Custom Map Applications and Services*

Support for additional mapping applications is currently being considered, including Flex mapping applications, Google Maps applications, Microsoft Live Maps applications, geoprocessing (e.g., buffer and analyze, add, and edit) services, OGC Web Feature Services, and more.

In an effort to reduce redundancy and prevent confusion resulting from multiple resources, LAGIC is also coordinating efforts with various GIS stakeholders via regular coordinating meetings of the LouisianaMap Subcommittee of the Louisiana GIS Council.

### **3) LAGIC Technical Services**

*a. ArcGIS Server and LouisianaMap User Groups*

LAGIC Technical Services is coordinating the ArcGIS Server developer's support group. Group members include public and private sector geospatial professionals. Currently, the User Group has an online presence hosted by Google Groups. Additionally, LAGIC created the LouisianaMap User Group on the same Google Groups platform. Currently the group is closed to new membership. New members will be accepted on a limited bases starting in summer 2009. LAGIC serves as the group administrator for both Google Groups.

*b. Ad Hoc Support:*

LAGIC Technical services staff have participated in, and responded to, various support requests, meetings, and more. Support requests are primarily issued by LGISC members and partners. Such requests generally involve questions surrounding GIS issues (e.g. trouble shooting, configuration inquiries, and implementation strategies).

## **LAGIC Technical Support Services:**

### **1) System Support - LAGIC**

*a) Systems Administration:*

LAGIC technical staff continues to maintain/support geospatial data systems and services (see above) on the following hardware assets:

- i. Application Servers:
  - Dell PowerEdge 2600 Server hosting SQL Server 2005 DBMS and ArcSDE Server.
  - Dell PowerEdge 1900 Server hosting ArcGIS Server, ArcGIS Image Server.
  - Dell PowerEdge 830 Server hosting LAGIC/Council centric Web, Email, and File services.
  - Dell Power Edge SC430 Test Server hosting ArcGIS Server applications.
- ii. Workstations & Desktops:
  - Three Dell Precision T7400 production workstations
  - Two managed desktops
- iii. Mobile Training/Laptops
  - Twenty-Five laptops

Where ever possible, all outdated computer/hardware are upgraded, re-assigned, or scavenged for parts. Scrap is collected by LSU property management.

*b) Networking:*

LAGIC technical staff continue to work closely with LSU ITS-NI with various small networking and/or enterprise IT issues (*e.g.* connectivity, security, *etc.*).

**2) Technical Support - LAGIC**

*a) Ad Hoc Service & Support:*

LAGIC technical staff members continue to support all LAGIC related IT issues and requests, and troubleshooting. These include, but are not limited to, technical training, systems preparation, network management, training and outreach support, and systems management.

**3) Technical Support - LGISC**

*a) Ad Hoc Administrative Support:*

- i. Participation in LAGIC Oversight meetings.
- ii. Technical staff continues to respond to miscellaneous technical request and support from both the GIS Council and LSU GIS Community.
- iii. LGISC LouisianaMap Subcommittee meetings.
- iv. 2009 Louisiana Remote Sensing & GIS Workshop

**Short-term Outlook:**

In light of the recent budget cuts, the extent of our ability to provide technical services and support will be limited. The addition of skilled staff was necessary to meet many of the contract goals. Similar disruptions are expected with regard to LouisianaMap. The deployment goals and objectives established in the LAGIC contract will need to be re-evaluated. Economic uncertainty will require a complete re-evaluation of LAGICs existing contractual responsibilities. Additional impact is expected in our ability to take-on *ad hoc* tasks that do not result in direct, quantifiable benefit to LAGIC or LouisianaMap .