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Foreword

This report is the result of a planning project that was a direct follow-on activity to goals and strategies established by the State of Alabama to better coordinate the development and sharing of geographic information, applications, and services. The existing goals and strategies were first articulated in the *Alabama Geospatial Strategic Plan: Fiscal Years 2010-2013*, published by the Alabama Geographic Information (AGI) Executive Council in June 2010.

The current planning project was supported with funding assistance from the Cooperative Agreements Program (CAP) of the Federal Geographic Data Committee (FGDC), in conjunction with the Fifty States Initiative to build the National Spatial Data Infrastructure (NSDI). The project was conducted with contract management from the Alabama Department of Economic and Community Affairs (ADECA), and project oversight by the Alabama Geographic Information (AGI) Advisory Committee. The AGI Advisory Committee supports the AGI Executive Council, and both were established by Executive Order 38 (EO38), in 2007. Their membership and duties are explained in the main body of this document.

While many individuals participated and contributed, the following members of the AGI Executive Council (EC) and Advisory Committee (AC) are acknowledged for their special contributions and support to this planning process:

Mr. Bill Bass, Department of Revenue (AC)	Ms. Chris Johnson, US Space and Rocket Center, Geospatial Technologies (AC, Chair)		
Director Art Faulkner, Emergency Management Agency (EC)	Mr. Danny Manley, Department of Transportation (AC)		
Mr. Lynn Ford, Department of Environmental Management (AC)	Director Maury Mitchell, Alabama Criminal Justice Information Center (EC)		
Mr. Shane Hammett, Alabama Criminal Justice Information Center (AC)	Mr. David Palmer, Franklin County (AC, Rep to EC)		
Mr. George Heleine, USGS Geospatial Liaison for Alabama	Mr. Ryan Pecharka, City of Prattville (AC, Rep to EC)		
Mr. Phillip Henderson, Department of Economic and Community Affairs (AC, Vice Chair)	Mr. John Russell, Department of Transportation (AC)		
Mr. Walter Hutcheson, Alabama Commission on Higher Education (AC)	Mr. Mike Vanhook, Department of Finance, ISD-GIS (AC)		
Director (former) Doni Ingram, Department of Economic and Community Affairs (EC)			

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Executive Summary

The Alabama Geospatial Strategic & Business Planning Project was conducted with contract management from the Alabama Department of Economic and Community Affairs (ADECA), and project oversight by the Alabama Geographic Information (AGI) Advisory Committee, which supports the AGI Executive Council. The planning process included "Stakeholder Outreach Workshops" around the state, interviews with key stakeholders, an on-line survey, and research on existing Geographic Information Systems (GIS) programs and previous GIS planning efforts in the state. Outreach to GIS stakeholders covered both the public and private sectors of the economy.

The top three opportunities as determined by the planning process are follows:

- Seek project collaborators to share costs as funding decreases, reduce duplication of effort,
 and take advantage of existing programs and grant opportunities.
- Expand private sector access to local data to reduce project costs and foster economic development and growth.
- Leverage technology to provide more ways to extend use and dissemination of information at a lower marginal cost and higher return on investment.

The history of GIS in Alabama dates back more than 30 years, which is farther back than in many states. In fact, one of the leading companies in the history of GIS, Intergraph Corporation, was founded in 1969, in Huntsville, Alabama. Up until the early 1990's, most industry analysts attributed Intergraph with the largest worldwide market share in GIS. The other leading company, with the largest worldwide market share in the current era for GIS software sales, is ESRI of Redlands, California. Many other companies have a major stake in GIS, and approach the market from different angles than ESRI and Intergraph, such as Google, Microsoft, Nokia (NAVTEQ), and TomTom (TeleAtlas).

In June 2010, the AGI Executive Council (EC), with support from the Advisory Committee (AC), published the *Alabama Geospatial Strategic Plan: Fiscal Years 2010-2013*, which articulated a number of strategic goals and focus areas, thereby fulfilling one of the duties specified in Executive Order 38 (EO38). Signed in November 2007, EO38 also established the duties of the AGI EC and AC. The current planning project adopted this existing and recent *Plan* as a foundation to build on.

The primary organizational approach to GIS in Alabama is characterized by mission-oriented acquisition of geospatial data to help perform mandated functions and services. GIS is considered a strategically important technology for meeting mission requirements in a number of key state agencies. For the most part, this has resulted in fairly independent, departmentally-driven efforts to achieve results. There have been cases of collaborative efforts between departments on statewide initiatives, such as aerial imagery collection, Virtual Alabama, the National Hydrography Dataset (NHD), and Geospatial Strategic Planning. There is also considerable volunteer participation amongst state agencies in statewide GIS coordination efforts.

Geospatial data often represents the combined product of federal, state, county, and local agencies, all of which must work together to some extent in order to achieve mutually beneficial and usable data. The ALDHS-sponsored Virtual Alabama and the ADECA-sponsored National Hydrography Dataset (NHD) initiatives exemplify this point, as do other examples, such as road data and parcel data collection from counties, by ALDOT and ADOR, respectively.

The Problem

While the Executive Council and Advisory Committee have done a good job setting the priorities from a cross-agency, statewide perspective, accountability for results is not clear. To hold someone accountable for coordinating the optimum use of scarce resources, and identifying the necessary trade-off decisions, you have to give them the authority and mandate to get the job done on a statewide basis. Even though volunteers are a vital and appreciated asset, relying on an *ad hoc* volunteer approach is not likely to produce sustainable results for the long run. For this reason, many states have establish an office at a high level to coordinate GIS programs, with the authority to direct action and shift resources for the implementation of statewide goals.

Currently, there is no single office or department in Alabama that has the job and the operational authority for ensuring pursuit of the state's vision for GIS by supporting the implementation of the Geospatial Strategic Plan endorsed by the AGI Executive Council in 2010. The state is relying on volunteer collaboration to fulfill these pursuits. While some measurable progress has been made, there is much work to be done with limited accountability for ensuring long-term success. This will require a new organizational approach.

The Solution

The main recommendation of this report is to establish an Alabama Geographic Information Program Office (AGI/PO) to support the implementation of the goals of the existing Plan, with appropriate authority and accountability to get the job of implementation done.

Key responsibilities for the AGI/PO include the following:

- The AGI/PO would serve as a functional, operating arm of the AGI Executive Council.
- The AGI/PO would be to help prioritize and concentrate spending on statewide GIS goals, to help control costs while ensuring results, programmatically.
 - o Get leverage form pooled funds and coordinated procurement
 - o Avoid unnecessary costs and duplication of effort
 - o Improve decision-support for statewide issues
- Promote the creation of private sector jobs that develop and utilize geospatial technology.

Key requirements and assumptions for establishing the AGI/PO include the following:

- Use existing staff with no new costs (budget neutral) from an overall state standpoint
- Establish a reporting line and/or sponsoring agency for the AGI/PO need to be established.
 - One alternative is that it reports into the Chairman of the AGI Executive Council,
 who is appointed by the Governor; this would resemble the Arkansas model, which
 is discussed in the main body of this report.
 - Another alternative is to designate an existing department as the "Managing Partner," to sponsor the AGI/PO; this model, which is being used by the federal government to manage geospatial platforms, is also discussed in the main body of this report.

Short-term action items recommended for establishing the AGI/PO:

 Consult with Department heads on the formation of the recommended Alabama Geographic Information Program Office (AGI/PO)

- Form multi-lateral Memo of Agreement (MOA) between Department sponsors to proceed in principle with the formation of the AGI/PO
- Establish task force or working group, with temporary duty assignments for full-time equivalent(s) to work on standing-up the AGI/PO, with executive support and guidance from Department sponsors
- Consult with the Governor's Office on organizational protocol and preferences for proceeding, both short-term and long-term
 - o Temporary task force or working group authorization
 - o Revisions to EO38 if appropriate
 - o New orders if needed

In addition to the AGI/PO described above, other key recommendations are as follows:

- Establish a permanent membership position for county and local government on the Executive Council. Although the Governor can appoint two members of the Advisory Committee to serve on the Council, and such appointments might include a county or local representative (as is the current case), it is not officially established that such representation on the Council will be assured; the same holds true for a Fire Department representative, who could also be a local government representative.
- Work toward legislation to codify the Alabama Geographic Information Executive Council,
 Advisory Committee, and Program Office.
- Make a concerted effort to get non-GIS people involved in Alabama GIS matters, especially matters of policy and legislation.
- Prioritize and follow-up on the actionable takeaways from this planning process, both in terms of Workshop findings and Survey results.

1 Current Situation

The following sections provide an orientation to why this project was undertaken, by whom, and for what purpose. There is also a description of the current situation, with an emphasis on organizational approach.

1.1 CONTEXT & PURPOSE

The current Geospatial Strategic Planning project builds on the existing *Alabama Geospatial Strategic Plan*, published by the Alabama Geographic Information (AGI) Executive Council in June, 2010. The current project was conducted with contract management from the Alabama Department of Economic and Community Affairs (ADECA), and project oversight by the AGI Advisory Committee, which supports the Executive Council. The planning process included "Stakeholder Outreach Workshops" around the state, interviews with key stakeholders, an on-line survey, and research on GIS programs and previous planning efforts in the state. (See <u>Appendix A</u> for details on the Planning Methodology).

Geographic Information Systems (GIS) and associated geospatial data and Information Technology (IT) comprise a strategically important set of decision support and management capabilities for the State of Alabama, and for the nation. For convenience in this report, the term GIS will be used to refer to this entire set of geospatial data and related technologies. For simplification, GIS is sometimes described as computerized maps, which can be used to automatically answer questions about everyday things, such as:

- Where is it?
- What is it?
- How does it relate to adjacent areas?
- What did it look like before and when did it change?

In addition to being a specialized set of data and technologies for professionals to use in support of public safety, economic development, and other government priorities, the benefits from GIS have

http://geospatial.alabama.gov/Documents/Alabama Geospatial Strategic Plan FINAL062010 1.pdf

¹ To see Plan document go to:

become evident in ways that permeate modern everyday society. For example: Getting on-line directions to places; looking at real estate properties; and locating events and businesses. It is the subject of recent and ongoing planning in Alabama, to strengthen the state's utilization of GIS, and to gain greater efficiencies through coordinated action.

1.2 WHO ARE WE?

The GIS stakeholders in Alabama cover both the public and private sectors of the economy. Outreach was conducted during this planning process throughout the state. The key proponents of this planning project are the organizations described in this section.

1.2.1 The Alabama Geographic Information Executive Council & Advisory Committee

To better coordinate GIS resources and activities across the state, the Alabama Geographic Information Executive Council and Advisory Committee (AGI EC/AC) were both established by Executive Order 38 (EO38)², signed by former Governor Riley in November of 2007. The Council and Advisory Committee provide an institutional mechanism for coordination across state departments and statewide stakeholders to make progress on achieving the strategic goals.³ The AGI Executive Council, Advisory Committee and it subcommittees continue to operate under the existing EO38.

They were set-up to coordinate, promote, and facilitate the beneficial use of geographic information, GIS systems, and related technologies. Council members are designated in EO38, and are currently state department heads and commissioners and two voting members as recommended by the Advisory Committee. Committee members are appointed by the Governor, and its meetings are open to the public; also, Subcommittees formed by the Advisory Committee can include members from the at-large government and industry stakeholder communities. The current approach relies heavily on voluntary participation.

² To see EO38, go to: http://www.governorpress.alabama.gov/pr/ex-38-2007-11-27.asp

³ For more on the AGI Executive Council and Advisory Committee, go to: http://gis.alabama.gov/

AGI Executive Council

The AGI Executive Council's primary duty is to develop policies regarding the utilization of geographic information, GIS systems, and other related technologies. EO38 lists the Council's responsibilities to include:

- 1. Strategic planning for a sustainable state program to coordinate GIS.
- 2. Resolution of policy and technology issues.
- 3. Coordination of interagency development of high-quality, accurate framework for geospatial data.
- 4. Coordination, direction, and facilitation of state, county, and local government GIS efforts.
- 5. Educational outreach program to coordinate geospatial training efforts.
- 6. Advising the Governor, the Legislature, and local governing bodies as to needed directions, responsibilities, and funding regarding geographic information.
- 7. Evaluate and determine the staffing requirements for GIS Coordination at the state level.
- 8. Seek input from all stakeholders at all levels of government, and the private sector to include public utilities, business professionals, industry leaders and others with a vested interest in GIS.

The Council is required to report to the Governor and the State Legislature at least annually on the progress made toward accomplishing its duty. Membership currently comprises senior state government positions defined in the Order, including Directors and Commissioners for 12 state agencies. The Governor appoints the Chairman from the Council membership for a two-year term. During the Workshops, a concern was noted that the Council was state agency-centric, with no mandatory representation from stakeholders outside of state government. The Governor can also appoint two members of the Advisory Committee to serve on the Council, and the Advisory Committee can include stakeholders from all levels of government, academia, and industry. Most recently, the Governor's Advisory Committee appointees to the Council includes both a city and a county representative.

AGI Advisory Committee

The AGI Advisory Committee's purpose is to provide representation from stakeholders throughout the state across a broad range of focus areas. As described in EO38, its responsibilities are to:

- 1. Ensure that state and local interests are represented.
- 2. Foster communication and cooperation among stakeholders throughout state, local, and federal agencies, educational institutions, private industry, and others in the field of GIS.
- 3. Provide guidance and expert advice for the Executive Council in fulfilling the objectives of the Strategic Plan and on GIS related issues.

Members of the Advisory Committee are appointed by the Governor for a four year period. Additionally, as mentioned in the context of the Executive Council, the Governor can appoint two members of the Advisory Committee to serve a one year term as voting members of the Council. The Advisory Committee meets monthly, and includes representatives from many of the same agencies, as well as other stakeholders. Its meetings are open to the public, to allow broader stakeholder participation.

To help fulfill its responsibilities, the Advisory Committee can form Subcommittees on various focus areas. These Subcommittees can include participants who are not officially appointed to the Advisory Committee, to allow for the inclusion of subject matter experts as well as to facilitate broader stakeholder participation. Currently, the following three Subcommittees have been formed to work on statewide business plans for issues defined in the *Alabama Geospatial Strategic Plan*:

- Imagery
- Framework Data
- Education & Outreach

1.2.2 Departments with GIS Commitments and Support Centers

There is a core group of departments and agencies in Alabama notable for their budgetary commitments and/or resources devoted to GIS programs. They have also made significant contributions to statewide GIS; this is not to diminish the role of others, but rather, to focus on where the line authority and budget allocations are concentrated in the utilization of GIS.

While each of these departments has its own authority and budget priorities, they have worked together to strengthen the utility and accessibility of GIS in Alabama for common needs. Individually,

each one seems to have adequate GIS resources to meet its own tightly budgeted mission requirements; and together, they have shown a willingness to contribute resources to statewide strategic goals that are not in conflict with performing their departmental missions. The following departments and agencies are included in this core group:

- Alabama Department of Economic and Community Affairs (ADECA)
- Alabama Department of Revenue (ADOR)
- Alabama Department of Transportation (ALDOT)
- Alabama Emergency Management Agency (AEMA)
- Alabama Department of Homeland Security (ALDHS)
- Alabama Criminal Justice Information Center (ACJIC)
- Alabama Department of Environmental Management (ADEM)
- Alabama Department of Conservation and Natural Resources
- Geological Survey of Alabama

In addition, capacity is available from support organizations that cover their costs through chargebacks, fees for services, and other revenue sources. These organizations can provide support to departments and agencies that lack their own GIS capacity, or may assist with funded statewide program developments. For geospatial support, the following organizations have capacity and offer services:

- U.S. Space & Rocket Center, Geospatial Training and Application Center (GTAC)
- Alabama Department of Finance, Information Systems Division, Geospatial Office (ISD-GIS)

GTAC was instrumental in the development and adoption phases of Virtual Alabama, and provides leadership in the Advisory Committee. On a cost recovery basis, ISD-GIS will provide support to departments in need of geospatial services, such as the Forestry Commission, who may lack their own capacity, or need additional expertise. ISD-GIS provides access to ESRI products through an Enterprise License Agreement (ELA), which is discussed in a later section.

1.3 WHAT HAS BEEN DONE?

1.3.1 Brief History of GIS in Alabama

The history of GIS in Alabama dates back more than 30 years, which is farther back than in many states. In fact, one of the leading companies in the history of GIS, Intergraph Corporation, was founded in 1969, in Huntsville, Alabama. Up until the early 1990's, most industry analysts attributed Intergraph with the largest worldwide market share in GIS. The other leading company, with the largest worldwide market share in the current era for GIS software sales, is ESRI of Redlands, California. Many other companies have a major stake in GIS, and approach the market from different angles than ESRI and Intergraph, such as Google, Microsoft, Nokia (NAVTEQ), and TomTom (TeleAtlas).

As well as using both Intergraph and ESRI software, the state was a pioneer in applying Google to GIS visualization, with the launch of Virtual Alabama. This innovative and nationally recognized system used some of the same technology that Google was using for its hugely successful Google Earth platform. Many states followed Alabama's lead, and emulated Virtual Alabama for data visualization. For a complete outline on the history of GIS in Alabama, see Appendix C.

1.3.2 Alabama Geospatial Strategic Plan

In June 2010, the AGI Executive Council, with support from the Advisory Committee, published the *Alabama Geospatial Strategic Plan*⁴, which articulated a number of strategic goals and issues for Fiscal Years 2010-2013. Getting this Plan developed also fulfilled one of the duties specified in EO38. The current planning project adopted this existing and recent Plan as a foundation to build on. The strategic issues described in existing Plan include:

- **Governance:** What mechanisms are important to developing and sustaining Alabama geospatial capability?
- Framework Data: How can we better assess all current geospatial information available in the state?
- Metadata Standards: How do we develop strategies for implementing metadata standards?
- Data Standards: How can we develop better policies relating to the adoption of statewide standards?
- Data Access: How can we create and distribute quality geospatial data to all levels of government?

⁴ Op. Cit. http://geospatial.alabama.gov/Documents/Alabama Geospatial Strategic Plan FINAL062010 1.pdf

- Communications: How can we establish a forum for statewide communication on geospatial activities?
- **Education & Outreach:** What methods are needed to inform the public and policy makers and to promote technical and non-technical education?

For each of these focus areas, the existing Plan described specific goals, with strategies for achieving the goals. These are included in a later section of this document. (See section on "Vision & Goals").

1.3.3 Kick-Off Meeting with AGI Advisory Committee

The kick-off meeting for this planning project was held in Montgomery, in late September 2010, coincident with the monthly meeting of the AGI Advisory Committee. During the meeting and associated discussions, members of the Advisory Committee gave the following direction and guidance to the project team:

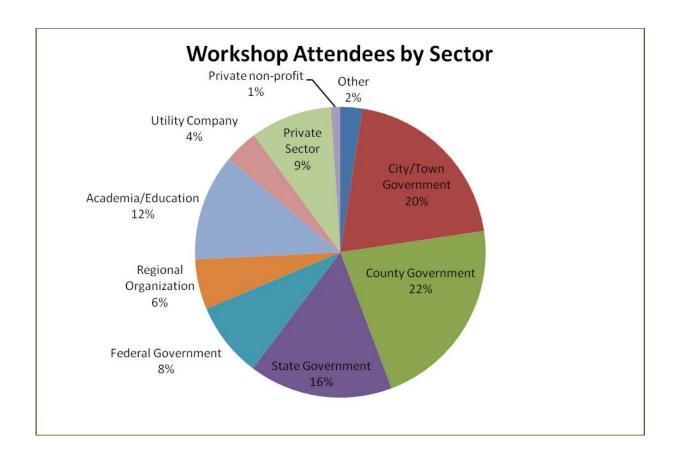
- Build on and advance the existing Alabama Geospatial Strategic Plan, and leverage existing relationships and institutions.
- Outreach to local governments is very important and building sustainable relationships.
- Understand and respect different sectors and communities of interest with their associated people networks and expertise, and recognize the potential for collaboration across sectors and levels of government.
- Seek to institutionalize the Executive Council and Advisory Committee with legislation.
- The National States Geographic Information Council (NSGIC) GIS Inventory tool is going to be used to gather information on framework layers and authoritative sources around the state.
- An idea emerged along lines of a "Managing Partner" approach to implementing the Geospatial Strategic Plan, whereby perhaps the AGI Executive Council designates an agency (or, perhaps an arm of the Governor's Office) as having the lead role in coordinating and tracking Plan elements that do not fall within anyone's current mission requirements.

1.3.4 Alabama Geospatial Strategic Plan Stakeholders Workshops

These workshops were held in five locations around the state, during November 2010 (see <u>Appendix A</u> for list). The purpose was to gather input from different geographic and economic regions, with different perspectives on GIS and associated statewide priorities. During the workshops, members of the Advisory Committee emphasized the importance of partnerships and trusted relationships with local

governments. They let stakeholders know they were there to interact, and ready to work with them. This was an important part of implementing the state's current goals, and also, making the Advisory Committee more relevant and meaningful to local partners. At the workshops, input was directly solicited through facilitated discussions, to capture perceptions of what the state is doing well, not so well, not doing but could be, or should not be doing.

The total number of people who registered for the workshops reached 241 uniquely counted individuals (Workshop Registration List provided, separately). Not everyone who registered necessarily came to a workshop – actual attendance was 181 people, overall. The turnout in each location made the workshops worthwhile. In some cases, people attended more than one workshop, and a few attended all five. An important goal was to reach out to local government and other sectors besides state agencies, to make this truly a statewide planning process. For the most part, the workshop attendees were users of GIS data, rather than producers of such data. They came from a diverse set of stakeholder groups and sectors, as shown in the pie chart that follows.



The largest numbers came from County and Local (City/Town) Governments, which was the desired outcome. The key takeaways from the workshops are summarized below. They are organized under the strategic issues identified in the existing Plan, to help align with the goals and strategies that were previously developed by the Advisory Committee in support of the Executive Council.

Governance

- a. Why does the Executive Council membership only include State agencies?
- b. What are the mechanisms for helpful and effective two-way exchange between state and local governments?
- c. Who "owns" geospatial data?
- d. Can the private sector and public gain access to non-sensitive data in Virtual Alabama?
- e. Representation from Fire Fighters is missing; it's not the same as Law Enforcement.
- f. Statewide purchasing vehicles/contracts would be helpful, for procuring software, data, and services.
- g. How much money is being spent on geospatial data across the state?
- h. If data goes up to the state from local government, something should come back in return.
- i. Coordinated planning of flyovers could save money and facilitate cost-sharing.

Framework Data, Metadata Standards, & Data Standards

- a. Everyone needs aerial ortho-imagery (corrected for distortion and mosaicked for seamless coverage).
- b. There are some different issues associated with collecting and updating geospatial data, depending on whether it's dynamic and transactional (e.g. Parcels) vs. relatively static (e.g. Hydrography).
- c. Counties wouldn't take kindly to standards being forced on them (which is not being contemplated), but good examples are welcome.
- d. How do we get a seamless, shared operating picture for multi-county events? ("Who knits and/or munches the data?")

Data Access

- e. High-speed Internet connectivity with sufficient bandwidth is important to improve performance of GIS functions over the Web.
- f. Can the private sector and public gain access to non-sensitive data in Virtual Alabama?
- g. How can local governments get the state's data for crashes at intersections?
- h. Is "Interoperability" its own strategic issue, or part of Data Access?
- i. Why just "public" information? The state could conceivably help locals get non-public data, such as certain utilities data, too.

Communication

- a. Emphasize either Public Safety or Revenue Generation when talking to political officials and the legislature to get attention and support for GIS.
- b. In the vision and mission statements, why "spatial" and not "geospatial"?
- c. Get the word out on GIS success stories, and build a portfolio
- d. Emphasize benefits from GIS; e.g., home insurance costs could go down with better fire service from reduced response times with better geospatial data.
- e. GIS experts need to do better showing leadership that resonates with non-GIS officials.
- f. Establish a face and a voice for Virtual Alabama, to get the word out on status and plans.

Education & Outreach

- a. Make the statewide stakeholder outreach more than a one-time thing.
- b. There is a need for educating local officials about GIS and data sharing benefits.
- c. Establish awards/recognition for GIS success stories
- d. Promote multi-purpose use potential of geospatial data; e.g. sounding maps for fishing also are good for rescue divers (i.e. where are the holes?)
- e. How about a "Lessons-Learned Meeting" on best practices and pitfalls?
- f. What questions need to be answered with GIS? (Make a "Top Ten" list!)

In addition to the key takeaways listed above, narrative summaries on each workshop were provided in a separate report. The narratives go into more detail based on what was heard in each location, and include additional takeaways that might not be included in the culled list, above. Also, the stakeholders

that attended the workshops helped identify the key strengths, weaknesses, opportunities, and threats associated with GIS in the State of Alabama. These are listed in a later section of this document.

Interviews

Interviews were conducted during the fall of 2010 as part of the planning process. A list of who was interviewed can be found in Appendix A. Much of this document reflects what was learned in the interviews, as well as the workshops and survey. Below is a list of observations that came up in multiple interviews.

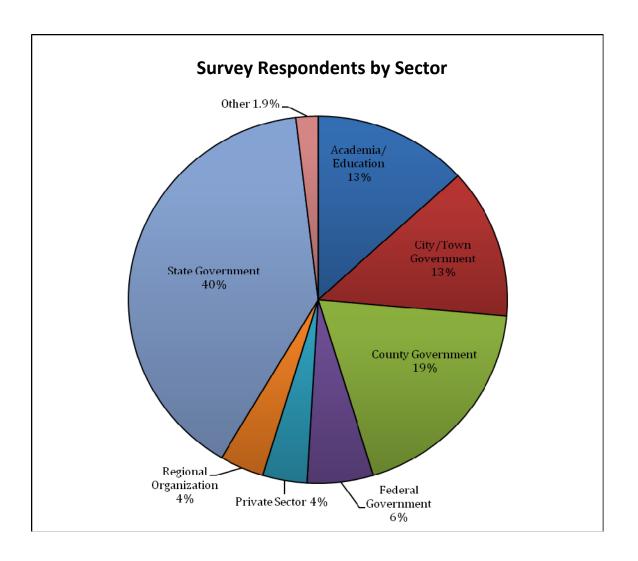
- Most counties have ortho-imagery (aerial photographs corrected for distortion and mosaicked) from within the past 5 years; this imagery is an essential framework data layer for GIS, and needs to be kept up-to-date with recurring flyovers on a regular basis.
- There are still a small number of counties that do not participate in data sharing agreements with the state, but most are sharing data that is essential for many state departments to perform their missions effectively.
- Statewide information sharing through Virtual Alabama is offered to all who wish to participate, but access is restricted to government users.
- The use of ESRI software (ArcGIS) is widespread in Alabama, more so than Intergraph software (GeoMedia).
- Acceptance of Web technology continues to expand for common data storage and sharing
 of maps, services, digital downloads; there is no standard for Web technology development,
 and multiple software vendors and Open Source components are used.
- A core group of state agencies work closely together, through a combination of formal agreements, informal understandings, and relationships based on trust.
- For statewide coordination to work more effectively, senior officials need to be involved, with line authority at a high level.

On-Line Survey

An on-line survey was conducted during November and early December, 2010 (on which a report was provided, separately). The sample size of 53 is relatively small, compared to the number of workshop registrants and attendees (241 registered, 181 attended), and weighted more toward state agencies (40% for the survey, vs. 16% for the workshops). Most of the respondents rely on locally produced data,

rather than data from a state agency; out of 18 data sets listed in the survey, only 5 were more likely to come from state sources than local.

Most of the survey respondents also attended at least one workshop, but 11 did not attend any workshops. When you combine the workshop registrants with survey respondents, the combined list of uniquely counted individuals is 252. Unlike the workshops where most attendees were users and not producers of GIS data, most of the survey respondents were producers of GIS data (79%). The following pie chart shows the demographics of the 53 respondents:



Here are some other highlights from the 53 responses

SUPERMAJORITY OF AGREEMENT (>66%)

- 84% share geospatial data & services on a regular basis
- 81% think "Funding and grants to support GIS" should be the top priority for the state
- 72% do not charge for geospatial data & services
- 67% say they have sufficient GIS support within their agency

MAJORITY OF AGREEMENT (>50%)

- 65% favor having a statewide Geospatial Coordinator for Alabama
- 65% point to lack of funding as the main challenge to the use of GIS
- 57% identified "Training" as the service they would use most often, if available
- 53% favor legislation to enact the GIS Executive Council and Advisory Committee

ALSO NOTEWORTHY

23 respondents (<49%) use Virtual Alabama at least occasionally, which is behind Alabama Maps, which is used at least occasionally by 24 respondents (49%). This is explainable base on the predominance of data producers amongst the respondents – i.e., they have there own GIS tools, and need to download data to work with their own applications. Currently, Virtual Alabama is primarily a viewing tool, with no data download services.

Research

The project team reviewed materials provided by members of the AGI Advisory Committee, and various reports, papers, and presentations provided by departmental sources. Some of these materials were for internal work purposes only, but they provided useful insights to the planning effort. The team also benefited from live demonstrations of capabilities that were given by several participating departments, including ACJIC, ALDOT, ISD-GIS, and ADECA. In addition, the following public reference materials were reviewed:

- Alabama Geospatial Strategic Plan: Fiscal Years 2010-2013 (AGI/EC, June 2010)
- Executive Order Number 38 (Governor Riley, November 2007)
- Strategic Plan for Statewide Geospatial Data and Technology Coordination (AL DOR, February 2005

1.4 WHAT IS THE CURRENT SITUATION?

1.4.1 Current Organizational Approach

The primary organizational approach to GIS in Alabama is characterized by mission-oriented acquisition of geospatial data to help perform mandated functions and services. GIS is considered a strategically important technology for meeting mission requirements in a number of key state agencies. For the most part, this has resulted in fairly independent, departmentally-driven efforts to achieve results. There have been cases of collaborative efforts between departments on statewide initiatives, such as aerial imagery collection, Virtual Alabama, the National Hydrography Dataset (NHD), and Geospatial Strategic Planning. There is also considerable volunteer participation amongst state agencies in statewide GIS coordination efforts.

In addition to GIS resources and programs being organized on a departmental basis at the state-level, they are further divided by levels of government, leading to a wide distribution of effort. This broad distribution makes GIS policy-setting and the conduct of statewide initiatives challenging; nonetheless, there have been a number of noteworthy collaborative efforts, as mentioned above. And, there is widespread endorsement for strong coordination of data standards and statewide data collection efforts, in conjunction with agreed to geospatial strategic goals; but, departments do not want their effectiveness in performing their mandated missions to be diminished by a loss of autonomy or accountability for how they use GIS.

Currently, GIS is not centralized by the structure of government or state policy into the hands of leadership with the authority to prioritize and budget for spending across a diverse set of multi-agency requirements and statewide goals. This stems from the primacy of departmental mission requirements and the reality of scarce resources; it is not a matter of divisive purpose or a lack of willingness to collaborate. Given the scarcity of resources to accomplish statewide geospatial strategic goals, and the lack of authority to concentrate the use of whatever resources are available, voluntary coordination and collaboration have been essential to work on common needs. The voluntary approach has produced some positive and promising results, but is nonetheless tenuous for sustainability and accountability

reasons; and it is very time-consuming, since it is not controlled by normal budget support and command authority.

Where GIS efforts tend to be the most concentrated, and the most effective, is at the local government level. This view was voiced in each of the Geospatial Strategic Planning Workshops by different stakeholders -- including state agency representatives -- as was the belief that the best geospatial data is local. Nonetheless, geospatial data often represents the combined product of federal, state, county, and local agencies, all of which must work together to some extent in order to achieve mutually beneficial and usable data. The ALDHS-sponsored Virtual Alabama and the ADECA-sponsored National Hydrography Dataset (NHD) initiatives exemplify this point, as do other examples, such as road data and parcel data collection from counties, by ALDOT and ADOR, respectively.

1.4.2 Virtual Alabama

Virtual Alabama⁵ is a nationally recognized system for innovative statewide geospatial data integration and visualization, maintained in a secure Web-based environment. During the past year, Virtual Alabama was transitioned from GTAC in Huntsville, to ACJIC in Montgomery, which is closer to its primary funding source, the Alabama Department of Homeland Security (ALDHS), as well as other state agencies who are key stakeholders in its ongoing evolution. There are thousands of users with a log-in, but the number of active users is probably in the hundreds.

The system was built using Google Earth Fusion Server, the same technology behind Google's own Google Earth, but is restricted from the public at the current time. It has a voluminous quantity of data from both state agencies and county and local governments, which is available to all levels of government via secure Web access. There are over 1800 layers in system for viewing, according to ACJIC -- that's a lot of data to manage and keep up-to-date. New thinking is being applied for maintaining and improving the operation of Virtual Alabama, to keep it current, and to make it accessible to more users.

⁵ To read about Virtual Alabama, go to: http://www.dhs.alabama.gov/virtual alabama/home.aspx?sm=g a

In December 2010, a Virtual Alabama Advisory Committee (VA/AC) was formed amongst a core group of state agencies, at the invitation of ALDHS, to be chaired by ACJIC. Currently, the invited agencies include: ACJIC, ADOR, ALDOF-ISD, ADECA, ADEM, ALDOT, and AEMA. ALDHS continues to provide overall management support and funding for this platform; and ACJIC is the technical custodian, responsible for the operational details of technical and administrative management for Virtual Alabama. Getting input on multi-agency requirements, resources, and desired outcomes from the VA/AC will help with the ongoing transition to a mature, fully operational system.

During the recent planning process, Virtual Alabama was most commonly cited as the state's main strength in terms of valuable assets and geospatial platforms for further development of statewide GIS data, applications, and services. This was true of comments from both interviews and workshops.

Nonetheless, some actionable shortcomings were also mentioned, as follows:

- Perceived gap with users on data updates.
- Might be getting used less than is thought a user survey might help.
- Data sharing currently limited primarily to government users.
- No private sector or public access.

In addition, the state's leadership with Virtual Alabama led to participation in the US DHS-sponsored Southeast Regional Operations Platform Pilot (ROPP) for "Virtual USA," an emerging national platform of regionally-focused catalogs of links to authoritative local data for emergency management and preparedness for national disasters.

1.4.3 Enterprise License Agreement with ESRI

The predominant GIS software used by professional GIS people is manufactured by ESRI of Redlands, California – i.e., the ArcGIS product line. As a large ESRI customer, the State of Alabama negotiated an Enterprise License Agreement (ELA) with the California-based company three years ago, and it is currently in negotiation for renewal for another three year commitment. The original ELA that has been administered by the Department of Finance (DOF), Information Systems Division (ISD), has not been renewed as of the end of January 2011. ISD is seeking a clear consensus from State agencies on cost recovery and how to best administer such a contract with ESRI with the goal of potential savings through a cooperative purchase agreement.

In principle, a number of state departments have indicated a strong interest in the ELA, as indicated by the on-line survey results and various interviews. In addition, Regional Councils can make purchases under the ELA. Internal discussions amongst the state departments are ongoing, but it is not clear what the outcome will be, or if there is a consensus. If completed the ELA would support reduced costs in acquisitions of software, training, and support. DOF recognizes that there is a risk in the expense for unlimited licensing and supporting upfront costs.

1.4.4 New Administration of Governor Bentley

The transition to the new Administration of Governor Bentley is underway.6 The inauguration took place on January17, 2011. The new Administration will include new Directors and Commissioners as members of the AGI Executive Council, and new appointments to the AGI Advisory Committee when current terms expire. It is hoped that the new Administration will endorse the direction that is underway for statewide GIS coordination, as well as bring new ideas along with new leadership.

1.5 STRENGTHS, WEAKNESS, OPPORTUNITIES & THREATS (SWOT)

Strengths are from the standpoint of what is currently done well, representing an asset to the state, and something that can be leveraged when pursuing opportunities. Weaknesses are from the standpoint of what the state is not doing well, or not doing at all. They can lead to an inability to pursue opportunities, or be disadvantageous enough to lead to threats, or serious challenges to progress; they may require remedial action. In both cases, knowing strengths and weaknesses is an important step to developing informed investment strategies for geospatial platforms that meet the state's needs.

The opportunities can have direct bearing on any discussions about budget prioritization, to square with mission requirements and statewide goals, and to make the most effective use of scarce resources. The threats are challenges that could have a negative effect on desired outcomes, if not avoided or eliminated as threats; some are more persistent or pressing than others.

⁶ To see transition news go to: http://govelectbentley.com/

The complete input on SWOT from the workshops is included in <u>Appendix B</u> of this document. As part of the main body, below, each category has been distilled into a "Top Three" list.

Top Three Strengths

- 1. Virtual Alabama, with its large volume of data and number of users.
- 2. All of the counties (i.e., 67 out of 67) have digital geospatial data.
- 3. Existing institutions, such as the AGI Executive Council & Advisory Committee, and several strong GIS programs in state agencies.

Top Three Weaknesses

- 1. Lack of integrated and authoritative statewide data sets (e.g. parcels, all roads, addresses, etc.); and inconsistent geocoding results for dispatching by address location, depending on the data sets being used.
- 2. Lack of funding mechanisms for recurring flyovers; and lack of funding in general.
- 3. Lack of inventory of existing data and services.

Top Three Opportunities

- 1. Seek project collaborators to share costs as funding decreases, reduce duplication of effort, and take advantage of existing programs and grant opportunities.
- 2. Expand private sector access to local data to reduce project costs and foster growth.
- 3. Leveraging technology to provide more ways to extend use and dissemination of information at a lower marginal cost and higher return on investment.

2 Vision & Goals

The content in this section is largely taken from the existing *Alabama Geospatial Strategic Plan*, previously footnoted in this document. Key elements are reiterated here for emphasis; the current planning project was aimed at building on the existing Plan as a foundation, not reinventing it. "Commentary" is provided for consideration and discussion.

2.1 VISION & MISSION STATEMENT

2.1.1 Vision

The State of Alabama will have a robust spatial information capability developed through a collaborative effort among the statewide geospatial community. This information will provide for effective operational, strategic, and executive decision-making to optimize the health and resilience of communities, provide access to public information, and enhance the safety, economy, environment, and quality of life in Alabama.

2.1.2 Mission Statement

The Alabama GIS Executive Council will foster the development of a spatial information capability for use by all jurisdictions and agencies to enhance decision-making processes. To ensure that the capability is sustainable, the Council will develop and implement a Strategic Plan with specific goals and objectives with measurable and actionable business plans.

2.1.3 Commentary

Currently, there is no single office or department that has the job and the operational authority for ensuring pursuit of the Vision by supporting the implementation of the Strategic Plan mentioned in the Mission. The state is relying on volunteer collaboration to fulfill these pursuits. While some measurable progress has been made, there is much work to be done with limited accountability for ensuring long-term success. This may require a new organizational approach.

2.2 STRATEGIC GOALS

2.2.1 Governance

Goal 1.1: Oversight – Define and establish the Bylaws of the AGI Executive Council.

Success Factor 1.1.1: The Advisory Committee will work with the AGI Executive Council to develop Bylaws for the Council.

Goal 1.2: Leadership – Provide leadership throughout Alabama on strategic priorities to develop the geospatial capability that will improve the quality of services and opportunities for Alabama citizens.

Success Factor 1.2.1: Identify an executive champion that will assist in promoting this effort in the state.

Success Factor 1.2.2: Identify relevant committees and legislators who could understand and promote the geospatial initiative.

Success Factor 1.2.3: Identify local government officials who can be champions through all forms of communications (meetings, presentations, emails, phone calls).

Goal 1.3: Implementation – Establish a sustainable framework to implement and support the development of the state's geospatial capability and support geospatial initiatives for the State of Alabama that also support activities that can be leveraged by all levels of government (local, county, state, and federal).

Success Factor 1.3.1: Establish subcommittees to drive the achievement of key objectives.

Success Factor 1.3.2: Oversee the development of business plans developed by subcommittees organized to address specific needs and requirements.

2.2.2 Framework Data

Goal 2.1: Establish subcommittee for Framework Data and Ancillary Data issues.

Success Factor 2.1.1: Solicit recommendations from the Advisory Committee members for individuals to serve on the subcommittee to address issues associated with framework and other priority data.

Goal 2.2: Establish mechanisms to measure the state's progress with regard to fulfilling the objectives of the National Spatial Data Infrastructure (NSDI) framework, as well as the state's other priority data needs.

Success Factor 2.2.1: Inventory the existing framework and ancillary data holdings and compilation of inventory results.

Success Factor 2.2.2: Increase participation in NSDI framework data activities.

Success Factor 2.2.3: Identify local government officials who can be champions through all forms of communications (meetings, presentations, emails, phone calls).

Goal 2.3: Gaps in the data inventory will be identified throughout the process of this set of goals (i.e., 2.1, 2.2, and 2.3) and identified needs will be prioritized.

Success Factor 2.3.1: Identify data through survey and needs assessment across the state and cross-reference them to the state data holdings, identifying incomplete or

unavailable data that are needed by the widest audience and are of the greatest utility to data consumers.

Success Factor 2.3.2: Once data surveys and needs assessments have been completed, the Council shall rank needs based on criteria to be established.

2.2.3 Metadata Standards

Goal 3.1: Encourage the use of FGDC-compliant metadata as the data quality standard for all Alabama geospatial data published and shared with the public or distributed outside the originator.

Success Factor 3.1.1: Encourage the use of FGDC-compliant metadata by sharing and distributing.

Goal 3.2: Define/support metadata collection to make data more searchable/discoverable.

Success Factor 3.2.1: Encourage the use of FGDC-compliant metadata by sharing and distributing examples of vector and raster geospatial data with accompanying FGDC-compliant metadata and by facilitating coordination of metadata training.

Success Factor 3.2.2: Outreach and education programs for the capture and recording of metadata and quality standards.

Goal 3.3: Facilitate metadata development for inventory database.

Success Factor 3.3.1: Increase utility of data holdings by working with data producers and providers to aid in the development of FGDC-compliant metadata for their data contributions.

Goal 3.4: Establish data accessibility standards to increase to high value, machine readable datasets generated and held by the state and local government that connects to data or services.

Success Factor 3.4.1: Research and perform outreach on existing data catalogs and sites to observe best practices and common data standards used to connect metadata to data in an open and transparent form.

2.2.4 Data Standards

Goal 4.1: Solicit the appointment of a Technical Committee on standards to further define and fulfill the goals of this Plan.

Success Factor 4.1.1: Solicit recommendations from the Advisory Committee members for individuals to serve on the Technical Subcommittee on Standards.

Goal 4.2: Establish and apply data quality standards for new data acquisitions.

Success Factor 4.2.1: The Technical Subcommittee on Standards shall have the responsibility of establishing data quality standards for data acquisition where needed and as appropriate.

2.2.5 Data Access

Goal 5.1: Organize strategies to support data sharing and dissemination among government agencies.

Success Factor 5.1.1: Continue data discovery and brokering data sharing arrangements between data producers, data providers, and stakeholder groups. Make data available to all levels of government for operational use of the core function areas of: business function, modeling function, analysis function, and visualization.

Goal 5.2: Develop a comprehensive, searchable interface strategy to make data and metadata holdings easily searchable and therefore discoverable and shared utilizing visualization technology.

Success Factor 5.2.1: Increase the utility of visualization for organizing, searching, and discovering data/metadata by thematically grouping data holdings and by developing a more comprehensive user experience for interaction with metadata elements compiled for these data.

Success Factor 5.2.2: Establish key word search in FGDC metadata and metadata search tags.

Goal 5.3: Develop data sharing initiatives with federal and other agencies to increase the amount of data development funded by non-state sources.

Success Factor 5.3.1: Identify federal and private grant opportunities (research or operational) in line with the objectives and direction of agency database development activities that could be pursued. Compile these projects and provide a summary of these external monies.

2.2.6 Communications

Goal 6.1: Increase awareness of the importance of creating and sharing geospatial information among stakeholders and the user community. Establish a Web-based presence to provide visibility regarding AGI-EC and other geospatial activities and initiatives in Alabama. Develop

electronic forum on the site for agencies at all levels of government, as well as other stakeholders, to participate in AGI-EC activities and initiatives.

Success Factor 6.1.1: Increase the utility of the Web site for the Council to post information such as meeting dates, meeting agendas, meeting minutes, and Committee activities, in a timely manner. Set up option to sign up for virtual mailing list to receive updates, follow meetings, and provide blog entry space. Create area on the Web site to post information suitable for public consumption.

Goal 6.2: Build support from elected officials and others for the *Alabama Geospatial Strategic Plan* (i.e., consult Mayors, City Councils, and County Commissions) through stakeholder meetings.

Success Factor 6.2.1: Conduct stakeholder meetings and increase presence at conferences and events utilizing state geospatial portfolio, use case whitepapers, presentations, publications, and other collateral material to promote Council activities and initiatives. Develop articles and participate in different media venues. Use written communications through the Executive Council to provide annual updates to the Governor.

Goal 6.3: Showcase "Geospatial Best Practices" through use cases by developing a State Geospatial Portfolio.

Success Factor 6.3.1: Compile project fact sheets/whitepapers into a Statewide Geospatial Portfolio (SGP). Utilize SGP as primary outreach material for supporting conferences, facilitating grant writing, and proposal support. Organize strategies to support communications between Advisory Committee and Executive Council, member agencies, and the public and national levels.

2.2.7 Education & Outreach

Goal 7.1: Establish a Subcommittee on Education & Outreach to further define and fulfill the goals of this Plan.

Success Factor 7.1.1: Solicit recommendations from the Advisory Committee members for individuals to serve on the Subcommittee on Education & Outreach.

Goal 7.2: Organize outreach and education programs specifically targeted at local level authorities and stakeholders (e.g., economic development, local schools, county engineering, law enforcement, public utilities, and emergency management). Provide outreach programs specifically designed to inform citizenry about GIS issues and opportunities.

Success Factor 7.2.1: Encourage participation in local level outreach programs by working with respective professional associations. Develop introductory GIS materials, handouts, and informational materials. Focus efforts to emphasize the important role GIS technology can play to improve efficiency in their area of service (e.g., better response during disaster situations and post-disaster recovery).

Goal 7.3: Organize and host the state GIS conference and encourage participation in GIS Day events. Identify conferences and events in which the Committee and Council representatives can participate.

Success Factor 7.3.1: Plan and organize activities to include organization in an annual state-sponsored geospatial conference, regional and national conferences and educational workshops. Identify conferences and events suitable for Committees and Council member participation.

Goal 7.4: Increase awareness of Geographic Information Systems degree programs, certificates, and training opportunities at colleges and universities within the State of Alabama, state government training facilities, and other training facilities. Promote geospatial careers and certification through educational curriculums and provide continuing education for geospatial professionals.

Success Factor 7.4.1: Identify and post an inventory of training opportunities on the Council Web site, and update quarterly. Work with education and workforce development sources to develop and promote GIS training and certification in Alabama.

2.2.8 Commentary

These goals were established through a participatory consensus-building process as part of the existing *Alabama Geospatial Strategic Plan*. Expectations to get results on these goals are high, but the current AGI EC/AC structure lacks a functional arm for implementation, other than voluntary efforts from the participating departments, such as work on the Subcommittees that have been formed.

Pursuit of all of these goals takes dedicated time and effort. Since 'time is money,' if these goals are to be achieved, decisions have to be made to make the time available, most likely at the expense of other things. The seriousness of financial constraints is loud and clear, as is the need to do more with less. This only works to a point, after which it is necessary to concentrate a certain amount of the available resources onto the state's high-priority goals, understanding the potential impact on departmental

interests, too. These are tough trade-offs, but they need to be made if statewide goals are to be achieved in a timely fashion, with accountability.

While the Executive Council and Advisory Committee have done a good job setting the priorities from a cross-agency, statewide perspective, accountability for results is not clear. To hold someone accountable for coordinating the optimum use of scarce resources, and identifying the necessary trade-off decisions, you have to give them the authority and mandate to get the job done on a statewide basis. Even though volunteers are a vital and appreciated asset, relying on an *ad hoc* volunteer approach is not likely to produce sustainable results for the long run. For this reason, many states have establish an office at a high level to coordinate GIS programs, with the authority to direct action and shift resources for the implementation of statewide goals.

3 Recommendations

The goals for Fiscal Years 2010-2013, which were articulated in the existing *Alabama Geospatial Strategic Plan* (and reiterated in the previous section of this document), are doable with the right help and organizational support. The following recommendations are to advance the implementation of the goals, and to drive toward more substantial and long-lasting results.

3.1 ESTABLISH AN ALABAMA GEOGRAPHIC INFORMATION PROGRAM OFFICE (AGI/PO)

The main recommendation is to establish an Alabama Geographic Information Program Office (AGI/PO) to support the implementation of the goals of the existing Plan, with appropriate authority and accountability to get the job of implementation done. At first, this might primarily equate to full-time coordination work, to help balance departmental interests with statewide goals. It is assumed that this office cannot effectively operate on a cost recovery basis. At some point, a budget allocation or reallocation is likely to be necessary, to establish and sponsor the Program Office.

An important responsibility of the AGI/PO would be to help prioritize and concentrate spending on statewide GIS goals, to help control costs while ensuring results, programmatically. Initially, this might be done with a unified Memo of Agreement (MOA) on mutual interest between departments to support the formation of the AGI/PO. Eventually, it may require legislation.

The AGI/PO would be responsible for monitoring the MOA(s), helping to make sure that there is follow-through on specific goals. Departments would be solicited to collaboratively "concentrate" their resources on jointly prioritized activities. They would continue to use GIS for their own mission requirements as they see fit, and their contributions to the statewide goals would be coordinated and monitored by the AGI/PO.

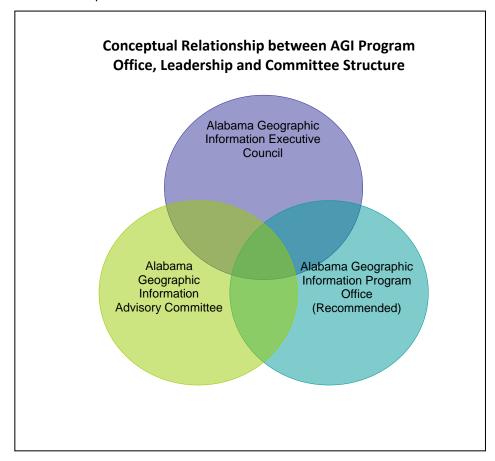
There is an important distinction between "concentrating" and "centralizing," and it is important for the new organizational approach to square with existing leadership structure and command authority, to avoid conflict. Line departments would be requested to allow the AGI/PO to act in certain designated

ways to directly influence the implementation of statewide geospatial goals that are not covered with current command authority, and to shift authority as needed when appropriate to AGI/PO leadership.

Key considerations for establishing the AGI/PO include the following:

- A reporting line for the AGI/PO needs to be established.
 - One alternative is that it reports into the Chairman of the AGI Executive Council, who is appointed by the Governor; this would resemble the Arkansas model, which is discussed later in this section.
 - Another alternative is to designate an existing department as the "Managing Partner," to sponsor the AGI/PO; this model, which is being used by the federal government to manage geospatial platforms, is also discussed later in this section.
- The AGI/PO would serve as a functional, operating arm of the AGI Executive Council.

The following diagram illustrates the conceptual relationship of the recommended AGI Program Office to the current AGI leadership and committee structure.



3.1.1 Arkansas Geographic Information Office Model

The Arkansas Geographic Information Office (AGIO) acts as the functional arm of the Arkansas Geographic Information Systems Board⁷, which is legislatively enacted. Board membership includes twelve voting members, appointed by the Governor. Three each of the twelve represent state entities; city, county and local government; the private sector; and institutions of higher education. Members serve for a term of four years, and meet quarterly during their term in office.

The AGIO provides administrative and technical support to the Board, including programs for geospatial data development and distribution. The AGIO coordinates with cities, counties, state, federal governments, and the private sector to reduce the duplication of effort in GIS programs. It coordinates the completion and maintenance of shareable statewide framework data, and applications of GIS. It is a recognized state agency, with a director, budget, and support staff. Before the AGIO was established in 2009, GIS coordination was in the IT department, where it struggled by trying to operate with chargebacks, which made it difficult to coordinate without conflict.

In addition, the GIS Board also receives advice from an Advisory Panel. Members of the Advisory Panel are nominated by GIS stakeholders around the state, and selected by the Board to serve. Currently, the Advisory Panel has 20 members, representing a wide diversity of GIS interests around the state, both in terms of type of interest and geographic location.

3.1.2 Managing Partner Model

The partner agencies of the Federal Geographic Data Committee (FGDC) are developing a "Geospatial Platform" to more effectively provide place-based products and services to the American public. The Geospatial Platform will be a managed portfolio of common geospatial data, services, and applications contributed and administered by authoritative sources and hosted on a shared infrastructure, for use by government agencies and partners to meet their mission needs and the broader needs of the nation. This platform concept is very similar to the one being contemplated for the future direction of Virtual Alabama.

⁷ For more on the Arkansas GIS Board, see: http://www.gis.state.ar.us/GISB/gisb.html

⁸ For more on the Arkansas AGIO, see: http://www.gis.state.ar.us/default.html

⁹ To see more about the Geospatial Platform, see: http://www.geoplatform.gov

To help implement the Geospatial Platform concept at the national level, FGDC is adopting a "Managing Partner" approach, whereby one of the partner agencies will serve as a broker and manager of the common data, applications, and services amongst government partners and the public. The initial criteria for the Managing Partner to meet include the following:¹⁰

- Ability to negotiate and mange formal partner relationships (e.g. contractual agreements, service level agreements, etc.)
- Capability to conduct geospatial requirements analyses
- Credibility with the geospatial stakeholder community
- Portfolio management capabilities
- Customer relationship management capabilities

3.2 BENEFITS OF AN AGI/PO

3.2.1 Get leverage from pooled funds and coordinated procurement

- Gather and share specifications
- Pay once for the same data needed by many
- Get regular updates on a schedule
- Negotiate with vendors using leverage
- Streamline software licensing and maintenance

3.2.2 Avoid costs

- Reduce duplication
- Discover cost-sharing opportunities
- Catalog sharable data, applications, and services
 - Share data and applications rather than reinvent
 - ° Share specifications for server and Web-based implementations
 - Reuse code in application development programs

3.2.3 Improve decision-support for statewide issues

Be a go-to place for non-departmental map support

¹⁰ See <u>Geospatial Platform: Modernization Roadmap for the Geospatial Platform</u>, Version 3.0, FGDC, August 2010, p.20:

- Provide analytical support for non-departmental issues of a geographic nature
- Establish an enterprise approach with unifying ideas and best practices

3.3 OTHER KEY RECOMMENDATIONS

In addition to the AGI/PO described above, other key recommendations are as follows:

- Establish a permanent membership position for county and local government on the Executive Council. Although the Governor can appoint two members of the Advisory Committee to serve on the Council, and such appointments might include a county or local representative (as is the current case), it is not officially established that such representation on the Council will be assured; the same holds true for a Fire Department representative, who could also be a local government representative.
- Work toward legislation to codify the Alabama Geographic Information Executive Council,
 Advisory Committee, and Program Office.
- Make a concerted effort to get non-GIS people involved in Alabama GIS matters, especially matters of policy and legislation.
- Prioritize and follow-up on the actionable takeaways from this planning process, both in terms of Workshop findings and Survey results.

4 Implementation Program

4.1 ORGANIZATIONAL NEEDS

Depending on the state's internal organizational protocols and the Governor's prerogatives, a task force could be established to give further definition to this office, to clearly delineate responsibilities and to mitigate potential conflict. A mechanism for designating roles and responsibilities could be a universal or multi-lateral Memo of Agreement (MOA), as a precursor to potential legislation.

4.2 EXECUTIVE SUPPORT

Request Governor Bentley's support for this program, through the Transition Team and new Cabinet Members, including the following actions:

- Request amendment to EO38, to give direction to the AGI Executive Council to form the AGI/PO, with the objective of controlling and concentrating GIS spending toward statewide goals that are shared in common by the member departments.
- Lay the groundwork for legislature, with the Governor's support, to codify the AGI Executive Council, Advisory Committee, and Program Office into law (see the Arkansas GIO model, in the section on recommendations).

4.3 STAFFING

No new staff positions are proposed as part of establishing the Alabama Geographic Information Program Office (AGI/PO). Existing personnel should be assigned on a temporary basis to full-time duty to stand-up the AGI/PO. These full-time equivalent (FTE) assignments may evolve into permanent duty when and if appropriate, depending on the findings and recommendations of the team assigned to stand-up the office, and their sponsors.

4.4 COSTS

Any start-up costs for the AGI/PO will be agreed to and absorbed by sponsoring agencies, with no increase in overall state budget requirements. This amounts to a shifting and concentrating of designated resources, with budget trade-offs made at the departmental level for sponsoring participants.

4.5 PHASING & MILESTONES

The phasing and milestones are geared to a short-term "Quick Start" for the AGI/PO, with an assessment of progress at the end of three months. Recommended activities are as follows:

AGI/PO "Quick Start" Activities (April-June 2011)

- Consult with Department heads on the formation of the recommended Alabama Geographic
 Information Program Office (AGI/PO)
- Form multi-lateral Memo of Agreement (MOA) between Department sponsors to proceed in principle with the formation of the AGI/PO
- Establish task force or working group, with temporary duty assignments for full-time equivalent(s) to work on standing-up the AGI/PO, with executive support and guidance from Department sponsors
- Consult with the Governor's Office on organizational protocol and preferences for proceeding,
 both short-term and long-term
 - o Temporary task force or working group authorization
 - o Revisions to EO38 if appropriate
 - o New orders if needed
- Establish a two-year workplan for the AGI/PO, congruent with the goals and focus areas of the existing *Alabama Geospatial Strategic Plan: Fiscal Years 2010-2013*
- Report to the AGI Executive Council on progress toward standing-up the AGI/PO

5 Assessing Risk

5.1 GIS INTERNAL TO DEPARTMENTS VS. EXTERNAL

GIS has evolved as an information technology with it own specialization. It is a support function to departmental employees in the performance of their mission. It requires a certain level of dedicated expertise, in a similar fashion to personnel, finance, and legal units within an organization. These staff functions have evolved in different ways from state-to-state; but typically there is some level of centralization, either within a department, or across departments.

Typically, appropriate management attention and resources are needed to tailor broad programs and policies to departmental needs. Centralization for certain staff functions seems to work fine within departments, but often produces tension with line departments when consolidation occurs across departments, or results in chargebacks.

For example, the activities of ISD-GIS in trying to roll-out staff-type support functions on a fee basis, while well-intentioned, have sometimes been seen as conflicting with departmental efforts. This is not unique to Alabama, and seems to be systemic to state-level programs where consolidation of IT support is contemplated or practiced on a cost recovery basis. It was for this reason that the GIS Office was moved out of IT in Arkansas. (See "Arkansas GIS Office Model" in the section on Recommendations.)

Staff services are typically indirect, and often somewhat intangible; their work is sometimes hard to measure, and hard to credit. The line people tend to be the ones producing the tangible products that the public can utilize and recognize. Uneasiness and friction may creep into line-staff relationships, and misunderstanding of motives. This can happen within a department, as well as across departments. For example, staff employees may take on quasi-line functions on some projects, while line employees are developing their own GIS skills that might be otherwise associated with specialized staff. As GIS technology gets easier to use, which it is, this phenomenon could gain momentum.

5.2 CONSOLIDATION VS. CONCENTRATION

Within the domain of Information Technology (IT), consolidation (i.e. centralization) has been a trend across many states. This has spilled over to impact GIS, too. Perceived gains of moving in one direction are often offset by losses. While there is some validity to the notion of economies-of-scale for IT infrastructure investments, there can also be an adverse impact to the departments that lose resources for GIS. For example, requiring a line department to use consolidated services can result in disruptive cultural changes to how the department does business, shifting emphasis away from being responsive to a specific set of customers and accountable for the performance of a specific mission, to negotiating chargebacks and fees for services. While this might be acceptable and even preferred for underlying IT infrastructure, it is not necessarily desirable for GIS, which has evolved in a culture of sharing data and solutions to common problems.

The idea behind the AGI/PO is not consolidation or centralization, but rather, concentration. The idea of concentrating resources is different from centralization, but not without similar risk. It is the normal tendency of departments to serve their own specific interests, rather than the broad interests of the public-at-large, or broad statewide goals. Forming an AGI/PO might make some departments feel that their GIS programs are threatened, which can create risk of potential conflict. The risk can be mitigated with organizational measures and leadership for coordinating across departments and providing an agreed upon nexus for the implementation of statewide goals with a unified Memo of Agreement (MOA).

6 Lessons-Learned From Other States

The Fifty States Initiative is an ongoing nationwide effort, and most states have completed either Strategic Plans or Business Plans for GIS. Across the many state planning projects that have been undertaken and documented under this initiative, certain consistent themes and outcomes are evident. Here are five key lessons-learned from other states:

- Identify the high-visibility issues where GIS can have a positive impact (e.g., Public Safety, Economic Development, and Education, to name a few).
- Take measures to strengthen GIS coordination on a statewide basis.
 - Identify the political and economic support for geospatial programs, and the necessary leadership (i.e., business/departmental sponsor and political/legislative sponsor).
 - Prioritize and concentrate spending initiatives, and identify opportunities for costsharing.
 - Strive to eliminate duplication of effort.
 - Consider codification of your GIS Council; nationally, the number of legislatively enacted Councils is growing (now up to 22 with AZ becoming legislatively enacted in 2009, and GA in 2010).
- Take inventory of what you currently have for GIS data, applications, and services; identify authoritative sources, and gaps.
- Stakeholder outreach, especially to county and local government, is invaluable.
- If consolidation of GIS with Information Technology (IT) is contemplated (and this has happened in quite a few states), approach it with "eyes wide open"; chargebacks and fees for services are the norm in IT, which is a different business model from how GIS has evolved as a government program to address high-visibility socio-economic issues that often require collaboration and transparency.

7 Marketing the Program

Many of the takeaways from the stakeholder workshops relate to marketing the GIS program, statewide, either directly or indirectly. The following sections briefly reiterate some of the key recommendations.

7.1 MARKETING COMMUNICATIONS

- Establish a unified "umbrella" brand for GIS in Alabama, for GIS stakeholders around the state to identify with a larger entity, and to rally beneath the conceptual umbrella; a suggestion was made during one of the interviews that "Alabama One Map" be considered.
- Reinforce existing and emerging brand names, which could then fit under this "umbrella," such that the perception is that they are related at some level as part of Alabama's GIS program. For example:
 - "Virtual Alabama" is a well-established brand name, with some equity in it for the state
 - "NHD-Wet" is another system gaining national recognition for its innovative approach, including volunteered geographic information (VGI) and Open Source components; it could become another brand name
- To avoid confusion with the federal use of "Geospatial Portfolio Management," which relates to investments in geospatial assets, change the showcase of geospatial best practices to another name, such as Geospatial Success Stories, Case Studies, or Showcase.
- Establish awards and recognition for GIS success stories around the state, and document these stories as part of an ongoing communications program.
- Emphasize the benefits from using GIS for specific problem-solving applications, and explain in layman's terms.

7.2 EDUCATION & OUTREACH: DEVELOP & STRENGTHEN THE GIS COMMUNITY OF STAKEHOLDERS

- Continue the stakeholder workshop program so that it is not a one-time thing to be forgotten, but rather, a vital part of a statewide Education & Outreach program.
- Participate in non-GIS events, such as meetings of Assessors, Surveyors, Planners, Mayors, Commissioners, etc., to reach out to non-GIS professionals and to better understand their needs.
- Conduct meetings on lessons-learned and best practices (and pitfalls) related to GIS data, applications, services, and professional development.

Appendix A: Strategic Planning Methodology

This Appendix describes the key elements of the planning project that produced this document. These elements are listed, below.

- a. Preliminary teleconferences to set-up the project and establish a work-plan with ADECA, the contract manager.
- b. Background research on relevant materials provided by state or discovered by contractor.
- c. Project planning meeting (a.k.a. "Kick-off Meeting," for which a separate report was provided), in conjunction with an AGI Advisory Committee meeting.
- d. Online survey (separate report provided, including names of respondents).
- e. Stakeholder outreach workshops (listed below; also, a separate report was provided, including names of attendees).

CITY	FACILITY	DATE	
Dothan	Troy University Dothan Campus	Tues, Nov 9 th , 9AM	
Mobile	Baldwin County Courthouse Annex	Wed, Nov 10 th , 9AM	
Birmingham	Regional Planning Commission of Greater Birmingham	Fri, Nov 12th, 8AM	
Huntsville*	US Space & Rocket Center	Tues, Nov 16 th , 9AM	
Montgomery	Alabama Criminal Justice and Information Center	Thurs, Nov 18 th , 9AM	

f. Interviews with a variety of stakeholders, including the following (AC = Advisory Committee; EC = Executive Council):

INTERVIEWEE	TITLE & ORGANIZATION	
Max Armstrong	Director, Blount County EMA	
Bill Bass	Division Director, Property Tax Division, Alabama Department of Revenue (ADOR)	
Lynn Ford	IT System Specialist Associate, Alabama Department of Environmental Management (ADEM)	
Shane Hammett	Senior Project Manager, Alabama Criminal Justice Information Center (ACJIC)	
Phillip Henderson (AC)	GIS Manager, Office of Water Resources, Alabama Department of Economic and Community Affairs (ADECA)	
Doni Ingram (EC)	Director, Alabama Department of Economic and Community Affairs (ADECA)	
Chris Johnson (AC)	Senior Vice President, Geospatial Technologies, US Space & Rocket Center GTAC	
Danny Manley (AC), and Michael Rief	GIS & Emergency Support Manager, Alabama Department of Transportation (ALDOT)	
Melissa Mayo	GIS Specialist, Alabama EMA	
Deputy Chief Howard Wayne "Mac" McFarlen, Jr.	Deputy Chief, Huntsville Fire & Rescue	
Maury Mitchell (EC), and Jeff Matthew	Director, Alabama Criminal Justice Information Center (ACJIC)	
David Palmer (AC)	County Engineer, Franklin County	
Ryan Pecharka (AC)	GIS Coordinator, City of Prattville	
Tom Solomon, and Scott Farmer	Executive Director, Southeast Alabama Regional Planning & Development Council	
Mike Vanhook	State GIS Coordinator, Alabama Department of Finance, Information Systems Division, Geospatial Office	
Chauncey Wood	President, Alabama Association of Volunteer Fire Departments	

- g. Draft Plan Delivery
- h. Participation in Alabama GIS Advisory Committee Meetings
- i. Final Plan Delivery

Appendix B: Strengths, Weaknesses, Opportunities & Threats (SWOT)

The lists below are based on what was heard at all of the workshops, combined. The individual strengths, weaknesses, opportunities, and threats (SWOT) are numbered for easy referral, and not to indicate prioritization. A SWOT analysis is an important step to developing informed investment strategies.

Strengths

Strengths are from the standpoint of what is currently done well, representing an asset to the state, and something that can be leveraged when pursuing opportunities.

- 1. Virtual Alabama, with its large volume of data and number of users.
- 2. Individual state agency programs.
- 3. 66 out of 67 counties that have digital geospatial data.
- 4. Some very good sharing going on right now.
- 5. Local success stories (e.g. Jefferson County and others).
- 6. Willing volunteers.
- 7. Existing institutions, such as the AGI Executive Council & Advisory Committee.

Weaknesses

Weaknesses are from the standpoint of what the state is not doing well, or not doing at all; they can lead to an inability to pursue opportunities, or be so disadvantageous as to lead to threats, or serious challenges for making progress; they may require remedial action.

- 1. Broadband service for high-speed Internet connectivity is limited in some regions of the state.
- 2. Virtual Alabama shortcomings:
 - a. Perceived gap with users on data updates.
 - b. Might be getting used less than is thought a user survey might help.
 - c. Data sharing currently limited primarily to government users.
 - d. No private sector or public access.
- 3. Currently no mechanism to support and enforce data standards.
- 4. Authoritative sources not commonly known.
- 5. Lack of representation for Fire/Rescue, First Responders in Council.
- 6. Lack of integrated statewide data sets (e.g. parcels, all roads, etc.).
- 7. Inconsistent geocoding results from address-matching alternatives.
- 8. Some county officials have no interest in sharing.
- 9. Lack of funding for recurring flyovers.
- 10. Limited training at local level.
- 11. Ready access to GIS professionals.
- 12. Metadata processes & procedures.
- 13. Lack of Funding, in general.
- 14. Access to private company datasets (e.g. Alabama Power).
- 15. Fragmented data sharing policies.
- 16. Potential dependencies on proprietary data, services, tools.
- 17. Limited familiarity with the existing Executive Order and/or Geospatial Strategic Plan.
- 18. Competing communities of interest with different GIS/CAD systems.
- 19. Lack of inventory of existing data and services.
- 20. Limited communication with all geographic regions of the state.
- 21. Lack of leadership talking-up the technology in terms non-GIS people care about.
- 22. Need for a Common Operating Picture (COP) for multi-county events.

Opportunities

Opportunities can have direct bearing on any discussions about budget prioritization, to square with mission requirements and statewide goals, and to make the most effective use of scarce resources.

- 1. Provide alternatives for those locations that don't have the high bandwidth.
- 2. Provide "Cloud-like" resources for local agencies for publishing data and maps.
- 3. Seek project collaborators to share costs as funding decreases.
- 4. Reduce duplication of effort.
- 5. Crowd-sourcing and VGI for data collection.
- 6. Executive education & outreach; showing the "Wow" factor to leadership.
- 7. Increase security protocols and flexibility for sharing.
- 8. Take advantage of existing programs and grant opportunities.
- 9. Interfacing with other applications and tools (e.g. HazMat).
- 10. Extend strategic planning to the local level.
- 11. Private sector access to local data to reduce project costs and foster growth.
- 12. Promote open standards and practices.
- 13. Education and outreach.
- 14. Coordination activities.
- 15. Looking for better ways to share and distribute data.
- 16. More participation in Council/Committee subcommittees from Fire & Rescue, First Responders.
- 17. Leveraging technology to provide more ways to extend use and dissemination of information.
- 18. Statewide composite address locator service using local jurisdiction data.
- 19. Lessons learned one page project highlights and summary of best practices.
- Serve out Wetlands Inventory and Census geography as map/data service or provide access to download easily.
- 21. Use Council to lobby for local jurisdictions to get access to private data sets (e.g. Alabama Power).
- 22. Ensure interoperability between systems (e.g. ESRI, Intergraph).
- 23. Provide GIS Inventory training and promote participation.
- 24. Create online bulletin board for sharing such things as planned flyovers, desired imagery coverage, etc. ("like a Craig's List for geospatial projects").
- 25. Local access to E-CRASH accident information from the State to assist in traffic safety analyses.
- 26. Leverage universities and colleges as potential source of technical skills.
- 27. Online capital improvement project portal to support in cost sharing, data accessibility, and promotion of data collaboration and collection.

28. Current Broadband mapping program to assess and improve service for high-speed Internet connectivity.

Threats

The threats are challenges that could have a negative effect on desired outcomes, if not avoided or eliminated as threats; some are more persistent or pressing than others.

- 1. Overly complex metadata standards -- might set bar too high for compliance.
- 2. Quality of information -- might be hard to control in an open system.
- 3. Political change.
- 4. Serious funding constraints.
- 5. Lack of resources.
- 6. Outdated system security.
- 7. Not involving local stakeholders.
- 8. Not adequately educating local officials on the importance of data sharing and participating with statewide geospatial initiatives.
- 9. Potential loss of benefits from sharing data if MOAs/MOUs hit political brick wall.
- 10. Attitudes such as: "This is my data, and I don't want to share it".
- 11. Allowing users to feel isolated and not represented.

Appendix C: History of GIS in Alabama

The following outline shows the long history of GIS in Alabama, dating back more than 30 years. In fact, one of the leading companies in the history of GIS, Intergraph Corporation, was founded in 1969, in Huntsville, Alabama. Up until the early 1990's, most industry analysts attributed Intergraph with the largest worldwide market share in GIS. The other leading company, with the largest worldwide market share in the current era for GIS software sales, is ESRI of Redlands, California. Many other companies have a major stake in GIS, and approach the market from different angles than ESRI and Intergraph, such as Google, Microsoft, Nokia (NAVTEQ), and TomTom (formerly TeleAtlas).

The selected milestones are not exhaustive, but they help tell the story of GIS in Alabama over the years.

1970's

- Identified need for valuating property tax.
- Identified need for maps to show property ownership.
- First base maps created from aerial photography.
- Plotted deed descriptions.

1980's

- Evolving digital mapping needs.
- Some trying times finding a balance of software/ systems / workflow.
- More counties started to become aware and take part in digital mapping.
- GIS being used more for analytical processes instead of just mapping.

1990's

- More movement into GIS.
- Several systems used throughout counties and state departments.
- Emerging Internet was taking a role in data sharing.

2000-2004

- More accurate data being created from updated digital orthophotography.
- Every county participates in digital mapping with updated aerial photography.

- GIS is not standard throughout the state, and CAD is also widely used.
- Executive Order 68 (Gov. Siegelman): Prior Council formed.

2005 - Current

- DOR GIS Strategic Plan.
- New initiative to establish current Council (EO 38, Nov. 2007, Gov. Riley).
- Grant through NOAA to acquire new digital orthophotography.
- State encourages counties to embrace GIS for environment analysis and economic planning.
- Leveraging web for GIS practices and data sharing needs.
- Advent of Virtual Alabama.
- Development of the current Alabama Geospatial Strategic Plan (June 2010).
- Development of a unified Web presence for the AGI Executive Council and Advisory Committee, at http://gis.alabama.gov.

Appendix D: Document History

The table below is for tracking versions of this document.

Version	Date	Description	Responsibility
Draft Report	21 January 2011	Draft GIS Strategic Planning Report	AppGeo
Draft with Comments	9 February 2011	Draft with Comments from AGI/AC Review Committee	AGI/AC
Final Report	26 February 2011	Contractor's Final Deliverable with Revisions	AppGeo