# Arkansas Strategic Business Plan Review



In 2009 the AGIO was awarded a grant from the Federal Geographic Data Committee to support the development of a Strategic Business

Plan for Arkansas. That funding supported an outside consulting firm, Applied Geographics, to conduct a number of facilitated workshops around the state. The feedback gathered from that activity set the stage for the plan. The overarching strategic goal for the 2010 plan was to provide recurring funding for continual investment in, and improvement of, the Arkansas Spatial Data Infrastructure. Within the plan there were categories of datasets that were prioritized and laid out as objectives. These are highlighted to the right.

Arkansas has made strides and improvements, despite the fact that no recurring source of funding needed for investment and continual improvement of data currently exists.

The development of major datasets remain piecemeal or a function of opportunities for leveraging financing through other programs with similar objectives. For example, the road centerline file program has benefited from both Broadband Mapping and Streamlined Sales and Use Tax programs because both activities required the creation of accurate physical address location data and those programs cannot be completed without updated and accurate road centerline data. The accuracy and quality of the address data is directly linked with centerlines.

# 2010 Five Year Plan

- Digital Orthoimagery • ~\$1.2M per Year
- Parcels
  - $\circ$  ~\$7.5M over 5 yrs
- Administrative Boundaries o ~\$75K per Year
  - Roads
    - $\circ$  ~\$200K per Year

# 2010 Five Year Results

- Digital Orthoimagery
  No Funding
  - Parcels
    - One Time Funding
    - o 60/40 Split
    - ~\$1.3M
- Administrative Boundaries
  - No Funding
- Roads
  - Partial Funding through Grants

For a number of years, the AGIO has held the statement, "the best data is local data". Often times, however, this core concept is no longer true. The action steps taken by the AGIO as a statewide integrator of data has added value to the local data in many cases. The statement that "the best data is local data" is now subjective by county and by data set.

We have achieved a statewide scenario where many data sets are in maintenance. We may be able to say, "maintain it once and use many".

At the direction of the Board, the AGIO performed a thorough assessment of the core elements in the Strategic Business Plan that was developed in 2010. We also surveyed GIS stakeholders through the Arkansas GIS Users Forum email list. We used a simplistic grade of zero to five with zero being lowest and five being highest. The table below provides a high level review of the result. The first two columns represent a score assigned by AGIO staff and a score from constituents that were acquired through the online survey. This is followed by a more in-depth discussion of each activity in the subsequent paragraphs. In general, the average score by constituents seems to agree with the agency score, with the agency submitting a tougher grade.

AGIO Internal Score	Constituent Score	Element	Recommendation	Result
0	2	Digital Orthoimagery	Recurring orthophoto program with a 3-year re-fresh cycle	Incomplete
3	3	Parcels	Completion of a statewide parcel data layer	Partially Complete
1	3	Administrative Boundaries	Improve the accuracy and currency of political and administrative boundaries	Partially Complete
3	4	Roads	Improve the accuracy and currency of roads data	Partially Complete

\*Average score based on 47 constituent responses to online survey

### **Digital Orthoimagery**

AGIO requested and received General Improvement appropriations in 2011, and 2013 for orthoimagery, but neither were funded. In that time, the National Agriculture Imagery Program (NAIP<sup>1</sup>) acquired statewide data in 2011 and 2013. The product does not meet state requirements, but is current and available in the public domain. At the same time a number of imagery services became available through commercial sources. Yet, these commercial services are not truly available in the open domain for all stakeholders and are flown at random intervals to fit outside business needs. Likewise, this commercial data does not meet the GIS Board requirements for leaf-off to meet the needs of county

<sup>&</sup>lt;sup>11</sup> The NAIP program is funded by the U.S. Department of Agriculture with the purpose to collect imagery for its program compliance monitoring. For this reason the imagery is acquired during the months of June, July & August which represent the peak of the growing season.

assessors. However, despite these drawbacks, it is frivolous for the agency to vigorously advocate for funding from the executive branch, when sources of imagery are publicly available at no direct cost to Arkansans.

#### **Comments from Constituents on Digital Orthoimagery**

Not achieved at the state level. Numerous counties see the need for the imagery and acquire and fund the imagery themselves. Considering the number of potential users of imagery across the state and the willingness to pay at the local level for imagery I question why the program should be supported and funded at the state level. Help the local users develop cooperatives for the acquisition of the data just as has occurred in other states (for example MS).

The boards work has been exemplary, just need to get the legislature to let go of some funds for this project.

No new imagery flown statewide in period is very disappointing outside of NAIP data that can be obtained if known. If there is a fund available, I have never heard about it.

Based on your performance criteria and what is available on line through GeoStor web services, you did not hit your mark. The 2006 orthos available are now 6 years out of date in Central Arkansas (Conway Area) and I suppose statewide.

Need more people talking to their legislators to support funding of this project.

I am not sure how to rank this with NAIP (feds not state) being flown every 3 years. Or do we rank on a leaf off flight which has not be flown in several years.

This has not happened and I don't think it is even a possibility at this point. We really appreciate that some of the urbanized areas fly or have flown orthophotography since the 2006 Statewide ADOP flight. And we think the NAIP imagery is a great resource. But we would love to see a consistent, reliable program in place for the state. I think we could even get on board to help fund such a program.

Usually use other sources for imagery due to resolution of imagery by surveying aerial targets and georeferencing imagery.

*This was an ambitious goal, and has proven difficult to fund. I believe that a more regular collection of leaf-off imagery would still be an asset for the state.* 

Didn't see any push on this at all. Some counties are still having to foot the bill themselves. While others are not getting anything.

As an idea, it is very much needed, so 5 stars in that regard; as it is a recommendation (not yet a funded project), the word "achieved" is a misnomer.

#### Parcels

The AGIO received \$800,000 in General Improvement Funding to launch the parcel mapping grant. Twenty-two (22) counties are participating in the ongoing project with matching funds. The vendor who held the majority of the contract failed in the 3<sup>rd</sup> phase of the work and this circumstance has most certainly damaged the perception of the agency. We adjusted course and have the project moving forward again. The failure has substantially delayed progress in those counties. For the future outlook there is no guarantee of funding to complete counties that did not participate in the grant. Thirteen (13) of the seventy five (75) counties have no parcel data published on GeoStor. The board must seek ways to close this gap and this data should remain a high priority.

#### **Comments from Constituents on Parcels**

I believe the AGIO has attempted to do this with mixed success... the statewide mapping has been a bit of a fiasco. Don't know enough to know whose fault it was.

We have a need for information on business parcels mostly. Sq. ft., Date constructed, additions/improvements, roof type, construction type, utilities availability.

An attempt was made to accomplish this worthy and important goal. The contracting process was flawed and the administration of the project was poorly managed. The contracting should never have been advertised based on price and should have been based on qualifications.

*I think that the State needs to adopt plans to update and correct the parcel layers as well. I have worked in Jefferson County and showed the County at least 6 parcels that were clearly incorrect (including areas where there is no parcel data - a no-mans land). The County in essence shrugged their shoulders.* 

Grant failed with many counties who participated not getting the parcels or the quality was seriously lacking in the ones who did get the data, which in some cases was over time.

The AGIO does a good job supporting the counties where work is being done. The problem is that the counties have not been quick to adopt GIS and fewer devote an employee, solely, to its completion.

*Nice job here. Do not know the counties without parcel data layers nor count of those with but, this effort is a little more out of your hands. ARCountyData.com shows about 27 without, 36%. Maybe GeoStor has similar ratios.* 

Parcel data for some counties contains areas of inaccurate mapping for many polygons, including data gaps. An example is in Johnson County near the town of Knoxville and the west side of Piney Bay. It is recommended that the layers should be reviewed and cross-checked with descriptions from actual legal land deeds to ensure correct boundaries are shown and attributed to their respective owners, and then updated on an annual cycle.

AGIO has done a great job working with minimal resources.

The bankruptcy of one of the vendors has slowed this process in our county.

The parcel data is becoming an important part of our workflow...it is proving to be a highly need layer for all types of GIS activity. We love it!

From my perspective this seems to have been well organized and new parcels being released regularly. Good job.

Parcel mapping has been a terrific effort by the AGIO. There is no doubt that AGIO's leadership is responsible for near-completion of this project.

*It is my understanding that the parcel grant match program is a failure. The project should have been qualifications based and not low bid based.* 

Doing well. Please continue! There are still so many counties that need the State's help.

As this has not yet been achieved, what was the starting year? I am giving this 4 stars, as probably 90% or more of the counties are there; how many of the 75 counties are complete? This kind of information would help in giving a rating.

#### Administrative Boundaries

AGIO laid substantial groundwork on administrative boundaries during the redistricting processes that occurred in 2011. Coordination and data development occurred on school board zones and school districts, Justice of Peace Districts, and election precincts. Because these data sets are based upon Census Block boundaries, the Census Bureau is qualified to support a determination on these boundaries. These boundaries do not change often, but are directly related to data sets that do, such as Municipal Boundaries. However, administrative boundaries -- such as Municipal Boundaries -- require a Professional Surveyor in order to make a qualified determination. In order to successfully meet this objective within the next five years, the agency is requesting that a surveyor position be added to the staff in order to improve the accuracy of administrative boundaries. As such, the agency is also seeking legislation and support to solve this problem. This concept involves requiring all municipalities utilize technical assistance of the AGIO – provided by a Professional Surveyor on staff for all municipal boundary changes.

#### **Constituent Comments on Administrative Boundaries**

*Quite honestly this is for me one of the HIGHEST priorities but I cannot tell you if the State achieved this goal. If this goal has been achieved, I just did not know it and while that could be \*my\* fault because I did not know it could also be a publicity issue.* 

Much work to do here. AGIO is doing the best they can do with the authority and resources they have.

*I* don't know if this synchronization has happened between parcels and boundaries.

Not sure about the legislative part but I do know that AHTD accepts my updates to our city limits and updates the state files on GeoStor

I think that pushing the legislation through for a standard methodology/repository for city would be a big step in governing such boundaries. A closer step to everyone getting on the same page. Here at the AHTD, after discussion with AGIO, we're getting comfortable using the parcels available along with the legal descriptions to plot new city limit annexations and to adjust existing city limits. In some cases, the work is done for us!

I'm not aware of any issues with these boundaries.

The first point seems to have been well-achieved. I'm not familiar enough with the specifics of the second point to comment.

I may not have been paying attention, but don't remember any work being done on this. If there has you need more education & promotion. Should be #3 on the list to work on next after parcels & photos.

Have these been achieved? AGAIN, a 5-star idea, but what does "achieved" really mean, since these 2 principal activities not yet happened?

### Roads

Connect-Arkansas broadband grant funding – as well as staff support from DFA for Streamlined Sales & Use Tax – has improved the data, but more improvement is required. While AGIO has, in many cases, added value to local data, the processes and tasks necessary for doing so have resulted in acute inefficiencies within the agency's process flow. We have identified these inefficiencies as specific areas needing immediate attention and improvement internally. In particular the Arkansas Road Centerline File is wrought with process issues, foremost of which is the data schema. Most local stewards do not maintain their data in the ACF schema. There are numerous geometry problems, such as: multipart features, topology violations, intersections that are not split into segments. Despite several years of work there are still roads that are not spatially accurate when viewed against digital orthoimagery. AGIO routinely repairs these errors, but the county or city often does not incorporate these repairs. As such, the next update received contains the same errors repaired once before. We have identified for refinement particular internal process tasks that introduce inefficiencies, but we also request the Board's input to help identify and correct these issues. Unless all stakeholders completely adopt the standard a process control problem will remain.

Another project underway that was not in progress in 2010 is the MAP21 project. This project addresses the federal requirement that each state have a digital Linear Referencing System (LRS) data set. In conjunction with this initiative, the AGIO teamed up with the Arkansas Highway and Transportation Department to coordinate with local officials and to update the Arkansas Centerline File geometry and attribute standards in order to meet these federal LRS standards. This project is currently underway and will be completed in 2017.

## **Constituent Comments on Roads**

AGIO has done a good job with this but there is ample room for improvement.

There is no room for additional comments in this survey so I'll make a few here. The AGIO continues to provide services to counties and municipalities for free which could be better handled through the free enterprise system. Using a free enterprise approach would free up AGIO to address those issues which are better handled through a government entity such as the audit of data to assure that only high quality information is available to the public."

*I think this has been done for the most part. Our county is a bit behind on address points but centerlines are updated and uploaded weekly, though actual changes are few and far between.* 

*I think the state is moving in an excellent direction concerning the ACF. We use it daily here at the AHTD and are excited about our upcoming partnership with AGIO to achieve compliance with FHWA's new initiative for an all public roads LRS.* 

This seems to have been done well and the GeoStor address locator service is a nice feature.

The addressing aspect of ACF is coming along very well. However, the line work is still very iffy in some counties; better consistency is needed. Although not part of the 2010 plan, topologic enforcement is really needed with this data set.

Keep chugging on! You're almost there!

*Considering how many counties, The state has done a great job of providing leadership and guidance.* 

I feel that the address point data sets should remain with the addressing authority. Using address point data created from parcel data could cause errors. I have found that some parcel data contains incorrect address data and I don't feel that using the center of the parcel to place an address point is a good alternative to the point being placed directly on the house location.

### FURTHER CONSIDERATIONS

During the review of the plan we observed several factors that did not come to light in the 2010 process. We offer the following points for your consideration:

#### Education

The agency has been so entrenched in project level work directed by the plan that we have neglected to achieve substantial progress on GIS education aspects of the enabling legislation.

"15-21-503(2) (b)(ii) Implement informational and educational programs; AND (d) (3) Additional requirements are the implementation of educational programs, ... (e) (7) Implementing an ongoing information and education program to promote understanding and productive use of spatial and land information systems by public and private entities and individuals;"

More outreach work is necessary, but we have to prioritize staff resources. If outreach is a priority of the board, then we need assistance to accomplish this objective. To some degree the agency and Board have relied on the grassroots activity of the Arkansas GIS Users Forum to fill this need. The volunteerism by the Forum in this regard should be commended. However, it is apparent that the grass roots effort alone will not further substantial progress of the board's strategic initiatives. Employee turnover at the local level where most data maintenance occurs will continue to drive the need for education.

### **Elevation Data**

The Board requested the agency evaluate and amend the plan with the consideration to include other framework data that originally did not receive attention from 2010. Elevation data was cited as a category for study. The AGIO's opinion is the 2009 workshop and outreach that formed the basis of input for the planning process did not include constituents such as engineering, survey, design and floodplain users who may have influenced the plan to place greater emphasis on improving elevation data. The AGIO could not reach a consensus on a recommendation to the GIS Board on amending the plan to include new emphasis on elevation. This is partly based on the poor performance in achieving recurring funding digital orthoimagery that can easily be argued as having far more intrinsic value for a wider range of uses and users.

# **GeoStor Budgeting**

The agency must continue to seek those opportunities that align with the previous plan's funding objectives. In 2009, after a recent upgrade, GeoStor was a robust new platform and was not a concern on the strategic plan's five year horizon. However, this is not the case in 2014 and beyond. The AGIO seeks to successfully achieve funding GeoStor within our current operating budget. In the past, the office requested one-time funding for each GeoStor upgrade. This one-time funding request dilutes political resources and energy that could be used in supporting the above programs. By architecting a system that will be supported long-term on the agency's operating budget, the AGIO frees up this one time expenditure and allows the office to focus efforts on the other strategic items.

# **Political Advocacy**

When a state agency's field of focus is aligned with a specific industry – for example, the Arkansas Oil and Gas Commission – the industry's special interest groups lead the way in terms of political advocacy for that sector by investing in professional lobbyists; this is especially true for licensure and regulatory agencies. It should be recognized that advocacy

cuts both ways and can be in opposition to agency interests. This seems truer for agencies that are primarily regulatory. Given the broad spectrum of industries using GIS technologies – education, agriculture, economic development, forestry, utilities, city, county, etc -- the GIS Board does not a specific sector of focus. Therefore, no industry related special interest group participates in political advocacy on behalf of the GIS community. Due to this fact, the GIS

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Board relies on the agency to perform its own political advocacy. This raises an important question: would the previous five-year plan have been successful if the GIS community had a proactive and organized advocacy effort?

# AGIO's Five Year Horizon

The agency spent considerable time evaluating internal objectives that will influence our ability to respond to the priorities of the GIS Board. Unless the Board determines a course correction is necessary; the agency laid out six strategic objectives that are deemed necessary to achieve within the next five years.

1) GeoStor must become the centralized enterprise geodatabase with multiple editors that are authorized to maintain data.

Since the inception of GeoStor, the system has possessed the technical capability to have multiple editors. For example, an authorized user in a County, or an authorized user in a state agency could edit, update and maintain data. However, for various reasons that are as much institutional as operational, the AGIO remains the only entity that has direct edit capability for the data on GeoStor. This means AGIO itself can be a barrier to the timely update of GIS data available on GeoStor. Having multiple editors may also lead to further reduction of duplication in data, allow timely updates, and decrease cost.

2) All addresses, centerlines, parcels and administrative boundaries are current, accurate and maintained.

The 2010 plan called for continual improvement and investment, but data maintenance was not singled out as a higher priority consideration in each of the categories. For the existing programs of address points, road centerlines and parcels the state must continue to emphasize maintenance of the data. This will steer toward being able to use and apply the GIS data in decision making.

These framework layers are tantamount to operational functions of local and state government. As such, current, accurate and maintained versions of these layers delivers

more bang for the buck than any of the other layers in the State's spatial data infrastructure. They represent the most commonly used base map layers. These layers represent three of the four planks in the previous five-year plan and they represent the most complete elements of the state's framework. Therefore we must:

- a) Complete Address Points
- b) Revise Roads to meet Linear Reference System objectives of federal mandate
- c) Complete Parcels
- d) Modernize the process of Municipal Boundary changes

The AGIO and local stewards have invested substantial time in these layers. For the most part, grants and one time funding have created these layers. Failure to maintain them would be shameful. This would be an outright neglect of the State GIS Board's mission. The AGIO cannot sustain the same level of effort we currently output on data creation and maintenance with soft money. Emphasis must be placed on the fact that local stewards maintain these layers.

3) The statewide master address program database has achieved CASS certification by the US Postal Service for bulk mailing.

By the end of 2014, the AGIO forecasts 65 of the 75 counties will have completed the creation of an address point file. We intend to seek grants or one time state funding to complete the remainder. The address records maintained by state agencies represent the single most duplicated information in Arkansas. Address records are, arguably, the one element of location data maintained by all of government. Numerous state agencies spend money annually to sanitize and improve these records using commercial software that is certified through a US Postal Service program known as CASS. In order for state agencies to become reliant on the locally developed address file it must achieve this certification. The agencies will be confident the data is reliable and accurate. This activity should lead to a reduction in operating cost.

4) Physical address data linked to parcel polygons in the County Assessor offices is drawn from or based upon the master address program database to reduce duplication and improve quality.

Through our work in parcel mapping in the counties we have identified a consistent deficiency in the Assessor's computer assisted mass appraisal (CAMA) systems. That deficiency is the physical address of the subject properties. This degree of this deficiency varies from county to county. Often the physical address values are empty. The County takes great care with keeping the billing address of the owner, but not always the physical address of the parcel. This stems partly from the fact that accurate road centerline and address point data were not abundantly available when the CAMA system data was originally created. These resources can now be applied to the Assessor records and doing so will lead to improved quality of the parcel polygon data.

5) AGIO must develop stronger coordination with the State Surveyor Office and Professional Surveyors.

The past five years the AGIO's focus has been directed toward coordination with counties. We have maintained minimal coordination with our colleagues in other state agencies. We have maintained almost no coordination with the State Surveyor Office and Professional Surveyors. These represent major stakeholders who have a vested interest in a strong spatial data infrastructure. The www.plats.arkansas.gov website that is hosted on GeoStor is one of the most valuable resources in use by these stakeholders. The State Surveyor's Office maintains the Public Land Survey System (PLSS) Corner Monument Program and yet up to this time none of the data gathered through that program has been used to improve the accuracy of the PLSS data. Frequent communication and coordination with these stakeholders is necessary to improve the quality of that data which is the foundation for improving the quality of the parcel polygon data over time.

6) AGIO must lead the way in the reduction of costs for enterprise GIS software for the state.

The AGIO does not expect increased funding for data creation or maintenance. There is not a source of funding currently to allow AGIO to invest in the development of other framework layers. The agency must persist with seeking coordination opportunities through grants and partnerships with other stakeholders to maintain and improve the state's framework layers. The agency must reduce its operational cost for software because that sector of the budget is the only line item we can shift toward seed funding for funding partnership activities.

#### Conclusion

After an objective review of the plan and its accomplishments, it is fair to say that the results were commensurate with the level of support. Public awareness and perception of this technology is greater than ever before. The State's spatial data infrastructure has improved over the past five years but more improvement is necessary. An overall shift to data maintenance is a key component in the next five years. The board must rise to meet this expectation in the future. An opportunity exists for further advocacy. Increased advocacy will be a positive, and necessary, force in the execution of the next five year plan.

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Dr. Margaret McMillan, Chair

Arkansas Geographic Information Office