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Interim Report for IGIC's CAP Project: Planning for the Iowa Geospatial Infrastructure

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Project Narrative

Summary of project status - The Iowa Geographic Information Council's (IGIC) CAP project is continuing to gather information on costs and benefits related to building and maintaining a statewide spatial data infrastructure (SSDI). For now we are calling the SSDI the Iowa Geospatial Infrastructure or IGI. In order to complete the project on schedule in March 2008 it was necessary to limit the scope of IGI definition to just the seven framework layers (geodetic control, administrative boundaries, ortho imagery, cadastral, transportation, elevation and hydrography). This project is especially interested in helping to create GIS programs in counties that currently do not have one. Eighteen participants received return on investment (ROI) training from our GITA consultant at the end of August and are continuing to collect and write up the costs and benefits related to their own GIS projects. These ROI participants came from most of the GIS sectors (local, state, federal, academic and private) likely to participate in building the IGI. Their single agency ROI projects will be aggregated into a multi-agency ROI analysis of building and maintaining the statewide IGI. Other groups likely to access and use the IGI are also being interviewed for benefits, including efficiency improvements to their business processes. It is possible that address points will be added to the available core layers in the IGI to broaden the range of potential users, and hopefully increase the amount of tangible benefits available in the initial multi-agency ROI analysis. Cost and benefit data collection will continue through October and early November. The steering committee will meet and develop alternate scenarios for development of the IGI. These scenarios along with the single agency ROI data collections will be sent to our consultant in January for further analysis and development of the IGI business plan. Final delivery and acceptance of the IGI business plan will occur in March 2008.

Project Activities and Milestones:

- March 25-27, 2007 - Attended NSGIC mid-year in Annapolis which included the FGDC 50 States strategic and business planning session. This session was very helpful and introduced us to the research on return on investment (ROI) for geospatial projects. ROI became a key element in our thinking for developing our own SSDI business plan.
- April 2007 - formed a steering committee for the Iowa business planning project and developed a vision for the Iowa Geospatial Infrastructure (IGI). Decided to de-emphasize strategic planning for the time being and concentrate on developing

a business plan for creating and maintaining the IGI. Also decided to not hire a project manager, and instead hire a consulting firm to help us develop and write the IGI business plan.

- May 2007 - Steering committee develops RFP for business planning services to develop a spatial data infrastructure for Iowa. RFP open for 3 weeks.
- June 2007 - Selection committee meets and considers seven proposals from applicants. Committee chooses Geographic Information Technology Association's (GITA) proposal because of emphasis on return on investment, gathering and analyzing cost and benefit data. IGIC executive board approves selection.
- July 2007 - Contract with GITA finalized and approved by IGIC executive committee. GITA rep meets with project steering committee for kick-off meeting with project goals and scope. Decision to limit scope to creating and maintaining the seven NSDI framework layers in Iowa. GITA rep gives presentation at quarterly meeting to full IGIC council. Presents ROI overview and enlists participants for ROI training in August-September. There are 25 slots for training, which includes a workbook and a license to GITA's single agency ROI software. GITA rep does interviews with staff at IDOT, Office of State Archeologist, and UI Dept. of Urban and Regional Planning.
- August 2007 - GITA gives public ROI webinar. ~40 people participate in webinar. GITA has a conference call with the people interested in ROI training which is around 20.
- August 23 and 24 - ROI training at Johnston Public Library, 18 attendees plus GITA trainer. Participants work on ROI analysis of single agency GIS projects. Participants include 2 city, 6 county, 4 state, 2 private, 1 regional government, 2 academic and 1 federal.
- August 2007 - GITA rep interviews more staff at IDOT and two county GIS programs.
- September 2007 - ROI participants continue to work on their single agency projects. So far, we have received ROI spreadsheets from 2 counties with GIS programs, and a PLSS project from the Office of State Archeologist. Results are posted on a GITA ROI forum. Our GITA consultant has prepared a template spreadsheet for counties without a GIS program currently. We have also received general GIS development and maintenance costs from four counties not directly in our ROI project. IGIC is coordinating with the Iowa County Information Technology group to develop specifications for county-based GIS data layers, especially parcels. The IGIC Geodetic Control committee met with the NGA advisor from Minnesota, and continues to develop its web viewer for geodetic control points using county control networks obtained from counties and private surveyors.
- September 23-27 - Attended NSGIC Annual Meeting in Madison which included a session with other FGDC 50 States grantees. Interesting to see the differing ways other states are doing their strategic (most states) and business plans (some). Not many states are collecting return on investment data. Collected reports from states that have cost/benefit data. After seeing several state presentations on

- enterprise GIS, we concluded that Iowa may need to reconsider how it approaches integration of framework layers and web services.
- October 2007 - Scheduled meetings related to this project include: IGIC quarterly council meeting includes CAP update to members; coordination meetings on road centerlines, ortho imagery, lidar elevation and hydrography. These coordination meetings will include staff from county and city GIS programs, IDOT, IDNR, Public Health, Emergency Management, USGS, NRCS, FSA, and USA Corps of Engineers. GITA phone interviews with potential IGI users continues with homeland security and public health. The coordination meetings will likely identify other people to interview. IGIC is will deploy a web survey tool to collect basic information on available framework layers, with follow up by student workers by phone.
 - November-December 2007 - Collection of projects from ROI training participants wraps up. Project steering committee meets at end of the month to develop 3 or more IGI development scenarios that consider various funding stream options. For counties currently with no GIS, scenarios will include the likelihood of self-funding alone, self-funding with 20-year financing through an IGIC sponsored GIS loan fund, and self-funding with state grant assistance. Other scenarios will include the likely impact of *Imagery for the Nation* on ortho imagery projects between the state and local governments.
 - January-March 2008 - GITA will perform a multi-agency return on investment analysis and develop a business plan for IGI development.

What practices have led to success or not?

Our project has had difficulty defining the scope clearly enough so participants could easily grasp the concepts, while keeping it broad enough for benefits to easily outweigh the costs. Initially the IGI scope included layers besides framework and web services/enterprise GIS. As discussions went along, these ideas became de-emphasized because there was no consensus which layers to include and the web services/enterprise GIS ideas were too new for many participants. Eventually, emphasis centered on the seven framework layers and helping counties without a GIS program. Now, we are finding it difficult to collect enough benefits from county and city GIS programs to justify their participation at the basic, framework level. Many counties in Iowa are already creating and maintaining some or all of the framework layers, at high accuracy. For them to participate in IGI, there would be some additional some costs and few benefits. Cities and towns are also left outside our project scope because they mainly need infrastructure type layers (water and sewer lines, electric, gas and cable utilities). At the other end of the spectrum, some state agencies that could provide local benefits (economic development assistance, emergency management, public health efficiencies, etc) need data layers (addresses, census, floodplains, land use, buildings, etc) which are beyond the scope of the seven framework layers. It still may be possible to come up with more benefits than costs in the current configuration. The outcome is a bit unclear at this point, so we'll keep looking for more potential users to collect benefits from.

As a possibility, we are considering expanding the scope very slightly to include street address points (possibly derived from parcels, road centerlines and lidar building

footprints) along with the seven framework layers, while keeping the project timeline and budget intact. By including address points, we can consider benefits from many additional user groups, especially emergency management agencies, public health and human services. This idea came directly from interaction with other states at the NSGIC annual meeting. The project steering committee has not been formally asked to endorse the idea yet.

Bottom line, scoping this type of project was difficult, so maybe others can learn from our experience by doing more planning or research upfront.

Explain how statewide coordination will change as a result of this project:

Iowa is a fairly GIS data-rich state, with ongoing ortho imagery and a statewide lidar projects. It has a good quality road centerline layer from IDOT, and a project to build a high quality hydrography layer based on a recent National Wetlands Inventory update, completion by USGS of the 24k National Hydrography Dataset and availability of a statewide 1 meter DEM from lidar. About two thirds of the counties have some kind of GIS program, ranging in complexity from an in-house GIS program and staff in larger counties, to contracting out with a vendor for creation and maintenance of the parcel layer in smaller counties. Generally speaking, Iowa has creditable framework layer development programs, run by single agencies usually without the benefit of outside assistance or external funding (exceptions being the lidar and ortho projects).

Looking deeper, most of the Iowa GIS programs are almost totally funded internally, usually without consideration of data models or standards (internal needs driven), and little availability for general public distribution (no metadata, not in a clearinghouse, cost recovery and licensing issues). Up to now, cooperation and collaboration on data development projects has relied on connecting mutual interests, so when the perceived threshold of internal needs outweighing out-of-pocket costs is reached, joint projects are possible. In the case of statewide orthoimagery, one group, realizing its significant need for new imagery, goes out to many other groups to "sell" the program to potential funding partners. While successful in the past, this approach leads to mental exhaustion on the part of the one person doing the selling, and hasn't created the long term cooperative framework needed to maintain and refresh the data layer over time. In another case, one group might collect local GIS data without consideration of use by other state organizations, or even potential use by others internally. Framework data for statewide transportation layers, 1 meter orthos, elevation and hydrography are publicly available from state, federal and university sources, but not all in one place, or usually not as web services (image viewers are plentiful). Most local GIS data sets are available for purchase, but no effort has been attempted to compile these into a readily available statewide coverage due to cost and licensing restrictions. There are about 30 or so counties programs without a GIS program and no current plans to help that situation.

It is hoped that this Iowa CAP Project will at least open the door for discussion of more comprehensive statewide GIS coordination. Iowa is a strong, "home-rule" type of state, which usually requires everyone starting out, no matter their size, status or resources, as equal partners. There is a definite tendency to resist one group dictating directives to

others, either from federal to state to local agencies, or state agency to state agency, or between the academic institutions. Balancing the home-rule effect is the general tendency of most Iowans to be open, positive thinking and accessible - this is especially true in the GIS community. There are few official barriers to communication among the different GIS sectors, just a lack of time and resources to carry out any plans, and then convincing the boss to expend those resources. The real challenge to coordination and building of a statewide GIS infrastructure that feeds into a national system, is to convince the decision makers (on every level) that the tangible benefits of participating in regional and statewide efforts is strongly in their interests, and in the interests of their stakeholders. This is why our CAP project has strongly resonated with the return on investment aspect of developing a state SSDI business plan. If we can show a positive return on investment to every contributor, and convince them they will not lose any local control of their program in the process, then there is a reasonable chance that building the state's infrastructure can move forward. Hopefully the collective and individual benefits will be such that decision makers will readily choose to participate.

Though it's too early to definitively say that this project is directly improving statewide coordination, it does seem to be facilitating communication about data standards, and longer term thinking about data layer maintenance and associated costs. When there are meetings about data layers, people are thinking about standards, metadata, where the data will reside (a clearinghouse?) and how these projects can be more tightly integrated with business processes and web services.

Because of this project, group thinking on the role of a statewide GIS coordinator seems to be changing shape as well. In the past when there was a funded coordinator, the primary function seemed to be education and outreach to non-GIS organizations. As part of the CAP project, through the collection of costs for framework data layer creation and maintenance, several coordinating functions are emerging as essential line items in the budget, including gathering stakeholder input on data needs and specifications, coordinating funding sources and negotiating agreements, writing RFP's, selecting contractors, and writing and managing contracts. Because these functions are costs related to specific ongoing data programs and projects, it should now be possible to include them in the budgets for new projects or larger initiatives. So in our IGI business plan, the cost of a GIS coordinator will be attached to specific functions within various project budgets. This represents a shift in thinking: instead of justifying the need for a coordinator as a standalone concept (or doing a cost/benefit analysis for the coordinator position itself), it just becomes a necessary line item in a larger context of building framework layers and applications to address societal needs including economic development, public health, etc. It should be easier to sell in that context as part of an overall business plan, rather than just another standalone concept requesting long term funding.

Next Steps:

The IGI business plan will be rolled out in March 2008. This will be in the middle of the 2008 legislative session, so there will be little opportunity to move on any of its plans or recommendations. It may be possible that some of the information gathered in the single agency ROI analyses will be usable in committee hearings on funding for ortho imagery collection in conjunction with the statewide lidar project. Projects that are not part of

agency budgets (developed the previous fall) are difficult to get funded during the session unless important stakeholder groups call for it. So most of the information gained from the ROI and business plan will be used in the next budget cycle. That will allow IGIC to talk to various stakeholder groups in the summer of 2008 to gain support for its recommendations. The business plan will lay out funding levels required to hire staff, create data, and build infrastructure to deliver the framework data layers to users. IGIC will work with our legislative contacts and stakeholders to plan funding requests to agency budgets, direct state appropriations and other funding opportunities. As much as possible, IGIC will work to tie IGI components to state issues including renewable fuels, water quantity and quality, and rural development. We hope that a key component in our funding requests will be the return on investment information – a piece that we have not had in the past, at least to this extent.

Currently there is the realization that IGIC's business planning project for the seven framework layers (possibly plus one), is only a beginning point for additional business plans that expand the IGI to include additional high priority layers, communities of practice, web services and true enterprise-wide integration. There were many presentations at the annual NSGIC meeting showing the obvious benefits of enterprise GIS at the state IT level. It will be challenging to make something similar happen in Iowa given the previously mentioned home-rule effect. But it is evident that the benefits in efficiency are substantial as demonstrated by those states leading the way. It seems likely that IGIC will have to include this in the strategic plan update process and attempt to find a plausible compromise between a totally centralized system and the current distributed network of GIS producers.

Where do we need assistance?

How soon can IGIC re-apply to the CAP grant program for additional 50 States funding? While the current project is proceeding well, it is apparent that additional business plans will be necessary to expand benefits to more users. Through the current project, IGIC has gained valuable experience through use of the ROI tool and plans to use it for other projects, small and large. It is likely that IGIC would re-apply for funding to redo its strategic plan and/or include creating a ROI project to address the additional data layers (floodplains, land cover/use, soils, buildings, utilities, etc) needed by previously mentioned groups currently outside the scope defined by the framework layers.

FGDC 50 States could also start to organize within their NSGIC meetings group sessions for states with similar centralization/decentralization issues. The Wisconsin governance report shows differences among the state programs along the continuum of strictly volunteer councils to centralized IT/GIS mergers. While there are many successful implementations of the centralized GIS enterprise, IGIC would benefit from seeing examples of more distributed structures, and whether they enjoy the same level of benefits that states with integrated enterprise GIS enjoy.

FGDC and NSGIC could provide more information on the likely costs and procedures to be used when *Imagery for the Nation* begins operation. This would help us prepare our

IGI scenarios that include a switching over from the state's ortho program and individual county ortho programs.

IGIC appreciates FGDC commitment to the 50 States program and helping us to move in a positive direction through this grant and its support services. Thank you very much.