Cooperative Agreement Program Number: 05HQAG0136

Project title: Enhancing Missouri's Local Government Geospatial Capabilities - Empowering Local Governments to Support and Maintain the Missouri "Structures" for Numerous Potential Applications in The National Map.

Final Report   **Date of Report:** June 8, 2007

Project start and end dates: October 1, 2005 – Sept 30, 2006 (No Cost Extension granted to March 1, 2007 – actual end of project June 6, 2007)

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U.S. Geological Survey (USGS) –
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Data themes: (list)

Southeast Missouri Regional Planning Commission (SEMO RPEDC – counties of Perry, Madison, Iron, Ste. Genevieve, Bollinger, Cape Girardeau, St. Francois, Washington)
Collected or updated – Schools, Care Facilities, Fire Stations and Police Stations

Northwest Regional Missouri Regional Councils of Government (NW MO RCOG - counties of Atchison, Gentry, Holt, Nodaway, Worth)
Collected or updated – Education Facilities, Health Facilities, Government/Military Installations, Industrial Sites, Commercial/retail locations, Regional Roads, County boundaries, County Towns

Mid-America Regional Commission (MARC – counties of Jackson, Platte, Clay, Cass, Wyandotte, Leavenworth, Johnson)
Collected or updated – 10m Contours, Cities, County Boundaries, Interstates, Parks
Kansas City Natural Resource Inventory, Watersheds, Flood Plains, Soils, Streams

Kaysinger Basin Regional Planning Commission (KBRPC – counties of Bates, Benton, Cedar, Henry, Hickory, St Clair, Vernon)
Collected or updated – Cemeteries, City Boundaries, Schools, MoDot Facilities, Landmarks, points of Interest, Leaky UG Tanks, Super fund sites, Toxic releases, Vulnerability Assessments, '93 Flood Extent, Rivers, County Boundaries, Regulated Facilities, Airports, GNIS, Lakes, Dams, Senior Centers, Nursing Homes, Medical Centers, Hospitals, Day Care Facilities, Libraries, Court houses, City Halls, Bridges, Minutemen Silos, Landfills, State Offices

Meramec Regional Planning Commission (MRPC– counties of Dent, Crawford, Phelps, Maries, Osage, Gasconade)
Collected or updated – Illegal Dumpsites

Adair County
Collected or updated – Roads, Bridges, Culverts

City of Warrenton
Collected or updated – Flood plains, City limits

Missouri cities of St. Joseph and Raymore are processing newly collected Critical Infrastructure data layers they've agreed to share through MSDIS with appropriate users.

Project Summary

a. The project -

The project, though extended to 19 months in accomplishing the final deliverable (a mirrored National Map site), has drawn to a successful conclusion. There are some associated processes such as the Help Desk, data collection, posting and maintenance that MSDIS will continue to attend to – but all deliverables have been achieved.

The major tasks the project was to accomplish were -

- o Provide advanced GIS training to locals as part of continuing relationship with locals encouraging their providing local data for TNM
- o Upgraded TNM services – redundancy and speed of data access.
- o Coordination - Expanded and formalized active coordination outreach between local government, state, and federal GIS activities.
- o Support to local government entities regarding funding opportunities
- o Redundant TNM availability for the potential development of local emergency response applications based on data served at MSDIS.

It should be noted that a large portion of the project and funding allocations met the project's original timelines. All ESRI instructor authorization, all regional classes, all coordination, planning and purchasing were completed on time. The mirror TNM site and final upgrading of TNM services caused the project timeline to extend when they were rolled into the larger MSDIS site upgrade. Leveraging and coordinating with this system –wide upgrade was the only sensible to do.

The challenges consisted of getting so many staff members (15) from so many organizations (6) in two states to cooperate on something like a timeline. The major accomplishment is that they finally did and we can provide much better web services because of it. I have included a short excerpt from the report provided by our technical team on their return from installing the MSDIS and TNM mirror site in Kansas.

National Map Back-up – Kansas Mirror Site (DASC, KU – Lawrence)

The following describes activities for placing a back-up version of the Missouri National Map application offsite at the Kansas Digital Access and Support Center (DASC) within the Kansas Geological Survey.

Much of the configuration of files and data was accomplished on-site in Missouri before transporting the servers to Kansas. ArcIMS was installed without completing the post-install as that requires a full domain setting on the server. While this could be accomplished here it was decidedly less guess work to complete the task after delivery. The servers were unloaded from the racks in the MU Telecom building, transported to Kansas, and placed within the rack units that were reserved for us. One small problem with the UPS was discovered after placing it in the rack. The rack mounts are too wide for the unit and will have to be replaced in the near future. All connections were made and the machines were turned on to determine if all drives were working and if the network was working correctly. The network administrator assigned 3 separate IP addresses for the 3 machines and entered them in while we were on site. We returned Wednesday. The National Map backup went live at roughly 3PM Thursday afternoon. We used Remote Desktop to access the servers and configured the AXL file for the difference in locations of files. The last step was to enable the WMS-connector and select the National Map Service to be used for the default National Map Application. We will be working with the National Map Catalog team to figure out exactly how the fail-over will be handled – but the National Map Backup servers at our Kansas mirror site are up, functional and available in the event of a catastrophic failure at Missouri's MSDIS.

Minor impediments were common – particularly on the technical side - but these were usually overcome through teamwork and a large amount of web research. Some of these impediments included things like power outlets in remote locations, rack space and rack mountings, new software functionality and geodatabase service issues.

As for a recommendation for implementation and development for future project success - this project – after the shift to including the TNM redundancy in the MSDIS site rebuild and mirroring – was definitely too large to be accomplished in the time provided – at least knowing what we know now. And yet we can't say we wouldn't do the same thing again faced with the realities here. We do know that the final result justified the means and delays.

b. Data themes -

The data layers received are listed above and all metadata for those data layers to be served will eventually be available through TNM and GOS. Long term maintenance remains to be seen but maintenance language is included in all data sharing MOAs.

The data requested from local government concentrated on critical infrastructure – largely buildings and facilities etc… When local government had these layers – or could create these layers - we found them largely ready to provide them to TNM for serving in the public domain. In some cases data layers were provided that may prove too sensitive for inclusion in publicly available NM services. Our state HS Geospatial sub-committee – working with our State Emergency Management Agency will determine which

layers may be served to the public. Ultimately many additional (and un-requested - but appreciated) data layers were provided by local governments and municipalities eager to provide some data even if it did not fit the project specifications. Many – especially rural local governments are just beginning to collect geospatial data – some are even further behind in just starting to edit/update other's data for their own purposes. Those that participated (and we continue to see new offerings) did so out of a sense of obligation for the ArcGIS training received - at first. MSDIS sought to create a data sharing culture within these regions that would engender long term relationships and commitments. Time will either confirm or repudiate this portion of the project's long term goals.

User requirements for a national level spatial data infrastructure must include better communication and continued incentives for local governments to participate. It is only those that are using the data daily that can really hope to maintain its accuracy. Many local governments have a traditional mistrust of federal and state agencies that only hard work in the form of assistance / incentives (whether that be in the form of training, workshops, data or grant funding) can overcome. Most want to believe that they are providing data to those that really need it – once they find out that others do.

c. Data maintenance -

The operational capability to maintain and update the data layers received for this project frankly depends on the local government's ability to maintain funding and staff levels. Those entities that have maintained both have been very helpful in providing updates and maintaining their data layers. Others require continued investments of time from MSDIS for them to pick up where past staff members have left off in maintaining the data. In some cases there are state agencies that might be expected to pick up data stewardship for certain layers, but some have been reluctant to do so. This is a constant educational process and requires more work in Missouri to establish even the data stewards for the more important NSDI layers.

d. Issues & challenges -

There were a number of issues encountered during this project the most significant of which I'll discuss last. All were eventually overcome but a few that should be mentioned are:

- o Far more local government data has been received than expected – this has caused a backlog in posting that data that was exacerbated by the third issue mentioned below. MSDIS is just now beginning to have the resources available to make a serious dent in that backlog.
- o Funding – FGDC funding amounts seem to continually shrink while the size of the tasks required to garner funding increase.
- o Lastly the "technical" issue – the opportunity to fund the complete hardware replacement of the MSDIS site and create a mirror site in Kansas has occurred only once in our existence. It was too good to pass up such funding which led to the final project task being extended. The complete redesign of the MSDIS hardware site – its duplication and all the associated tasks and staff involved required that this project's final task of creating a redundant site capability for TNM be included. A relatively small amount of funds ($11,000) for a server and software for the project task ended up becoming part of the larger project. The larger project has now been completed allowing this final report to be written and the staff to begin to post local government data realized by the project.

After several years of participation in the CAPS these are my observations…
For the CAP to be truly effective it needs to be a study in consistency – that means RFP dates, information dissemination, documentation, web presence, funding and reporting – these are all areas that in recent years consistency has been lacking. This has made it very difficult to build a program that users feel comfortable with and in which they can reach their (and its) maximum potential.

e. Working Relationships -

The working relationship between all participating partners has been refreshing. Most participants clearly see the need for such efforts and are willing to reciprocate any interest shown in their programs and data. Plainly there is far more work to be done with local government but also far more reward for doing so. They welcome geospatial information and assistance.

The relationship with USGS is well developed and has proven long term results. It is - I think – because it has been beneficial to both parties.

A formal agreement exists between USGS and the Missouri GIS Advisory Committee and is on file with Mr. Ray Fox – the Missouri USGS liaison. Follow-on activities include a round of Metadata training in the eight state Mid-America Geographic Information System Consortium (MAGIC) under the 2007 CAP CAT I agreement and some provision for NHD stewardship here at UMC/MSDIS provided by USGS through the Missouri Information and Technology Division.

Email the report to the CAP coordinator and the CAP technical lead.