

**NSDI Cooperative Agreements Program
Integration with Web Mapping Services
Final Project Summary**

Agreement #: 03HQAG0132

Final Report

Organization

Wisconsin State Cartographer's Office/UW-Madison

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Collaborating Organizations

Over the course of this project and in continuing OGC services efforts our closest collaborators are: Wisconsin Department of Natural Resources, UW Sea Grant (David Hart), UW Environmental Remote Sensing Center (Sam Batzli), Bay Lake Regional Planning Commission (Tony Bellovary), and Jerry Sullivan of the Wisconsin Dept. of Administration/ Division of Intergovernmental Relations (DOA/DIR).

Project Narrative

Our project activities for clearinghouse integration with OpenGIS services are focused in three areas: backlog metadata review/processing; [WISCLINC](http://www.sco.wisc.edu/wisclinc/) Clearinghouse upgrade and relocation; and OGC web services outreach. In each of these areas, we have been successful in reaching our goals (under the grant) yet all of these activities are continuing in an effort to provide outreach, demonstration, and education on OGC services for publication and exchange.

Specifically, successes in these three areas include:

Metadata -

- Collected and reviewed ~ 200 metadata documents (from 47 agencies, of those 41 were counties) that were submitted under a Wisconsin Land Information Board strategic grant initiative in 2001;
- Published 100 metadata documents which required minimal modification;
- Prioritized contributors of remaining 100 documents for follow-up solicitation and metadata authoring assistance if necessary;
- Upgraded metadata documents by inserting ISO theme keywords, and website/download/wms links to on-line linkage fields;
- Developed a current, documented process for intake/review/indexing of new metadata contributions;

- Continuing an ongoing dialogue and contact with metadata producers in the State.

Clearinghouse –

- Collected and archived former Clearinghouse site and contents during state agency server retirement and consolidation;
- Re-cast the Wisconsin Land Information Clearinghouse (WISCLINC) site to be smaller and more focused on finding and using the metadata, websites, and web map services catalogued within;
- Developed a web services viewer for demonstration of viability of OGC services approach which has proved useful and necessary in our outreach efforts;
- Developed and documented more automated clearinghouse maintenance functions;
- Leveraged these efforts and used office staff to catalogue over 200 web sites in Wisconsin that contain webmapping applications, geospatial data, or related documentation (e.g. County Land Records Modernization Plans).

OGC Services Outreach –

- AJ Wortley has given presentations on this work, OGC services, and moving toward a services-oriented architecture regionally (Great Lakes Data Exchange), in Wisconsin (Wisconsin Land Information Association), and locally (~ 5 guest lectures on UW campus over 3 semesters.)
- Authored 15 demonstration WMS services in order to demonstrate utility and interoperability to state agencies; statewide services include DRGs (3 scales), re-processed Census boundary information from the Dept. of Administration (6 services), and assorted environmental and boundary themes from the Dept. of Natural Resources (6 services).
- As a result of this outreach, are currently engaged with and invited to continuing discussions and educational sessions at the Dept. of Natural Resources on implementing OGC services.
- Are also working with UW Sea Grant, UW Env. Remote Sensing Center, and Bay Lake Regional Planning Commission on WMS service authoring.

Strengths and Weakness

Our continuing strength is our long-term connection with and communication paths to local government geospatial data producers in Wisconsin. As our outreach work progresses, we are confident that there are many potential contributors who are yet untapped and willing to collaborate. The other major strength of this project is our ability to sustain the work begun under this grant beyond the end date. This remains a primary area to which office resources are allocated.

That said, our primary weakness and obstacle to more rapid progress is a lack of official coordination and guidance at the State level in areas such as updated standards for geospatial content and exchange. Until such time as Wisconsin has a champion State agency or Geographic Information Officer (one may be hired in 2005) to spearhead wider adoption and integration of efforts across the state enterprise, we cannot expect to so easily convince local agencies of the importance of this work.

Recent work in the State ranging from Census review of local data for TIGER modernization, to FEMA floodplain mapping efforts, to a DNR/EPA data exchange (CDX) project have highlighted the need for interoperable data exchange standards and show promise of increased activity in pursuing these standards in the near future.

Our current and future activities then are to 1) continue to prioritize and contact state and local agencies for metadata contributions to the repository; 2) continue to refine the WISCLINC interface to provide easy search and browsing of repository contents; and 3) remain engaged in State forums and coordination activities for integration of these efforts into statewide enterprise architecture plans.

Status of Clearinghouse Node

- Site Name: **Wisconsin Land Information Clearinghouse (WISCLINC)**
- How many metadata entries? ~ **120** from overhaul/update (and climbing)
- How many metadata entries with OGC WMS references in them? ~ **12**
- Issues in metadata management and service:
Most if not all localized issues with management of metadata indexing and service have been resolved upon moving from a remotely-hosted Clearinghouse (at state agency) to moving the site to a local server to which we have more direct access.

Status of Web Map Service

- Software type and version used: **Mapserver 4.4.0**
- Status/Issues with OGC WMS setup:
Setup is straightforward thanks in part to how-to documentation available for Mapserver. We continue to get inconsistent results in testing ArcGIS client support for OGC-compliant services that we have authored. Other independent clients do validate and display our services.
- URL to WMS “getCapabilities” request(s):
<http://144.92.235.152/cgi-bin/scowms.drg?Request=GetCapabilities>
<http://144.92.235.152/cgi-bin/scowms.ctl?Request=GetCapabilities>
<http://144.92.235.152/cgi-bin/scowms.doa?Request=GetCapabilities>
<http://144.92.235.152/cgi-bin/scowms.dnr?Request=GetCapabilities>
- Describe what types and coverage of data are present:
In all cases at the moment, the WMS services are demonstration services of some commonly-used statewide data from our Dept. of Administration (DOA) and Dept. of Natural Resources (DNR). All services have been authored to be accessible in the state’s single-zone projection (Wisconsin Transverse Mercator) as well as geographic coordinates. The following themes are available:
 - Statewide topographic (DRG) in single-zone projection (WTM)
 - Census 2000 boundaries data from DOA
 - DNR 1:24K Hydrography, various boundaries, and land cover
 - Geodetic control from NGS and local sources

Integration

All of our current records are searchable and able to be visualized through the WISCLINC website (<http://www.sco.wisc.edu/wisclinc/>) under “Find geodata.” Our Z39.50 server is running, searchable through the FGDC Clearinghouse search, and is awaiting a current harvest by Geospatial One-Stop. While our first collection was harvested, we have since updated and added to our metadata inventory; however we are told that harvesting may not resume until after Version 2 GOS portal release (~ May 15.)

Next Steps

Our next steps in this project fall into 3 categories: metadata solicitation, OGC service how-to documentation and outreach, and viewer enhancement. We are currently gearing up to solicit statewide updates to our metadata repository specifically targeting local and regional agencies. This activity was delayed in an effort to gauge the pace of state agency efforts to form an enterprise metadata clearinghouse node. As there is no sign that this effort is progressing at present, we have decided to continue to populate the WISCLINC repository in order to capture, record, and archive a more comprehensive view of data activities occurring in Wisconsin.

Our outreach efforts with respect to OGC services have been ongoing in the form of lectures, conference presentations, demonstrations, advice to agencies, and a recent attempt to obtain grant funding to partner with two private companies in assembling an OGC toolkit (primarily cookbook/documentation and publicity materials) for the Wisconsin community. Whether through outside funding or gradual assembly, one of our goals is to provide a step-by-step roadmap to authoring and testing OGC web services.

Finally, in our experience with providing a *preview* viewer for our demonstration WMS services, we have gained some insight into webmap interface improvements that would facilitate a more desirable and effective user experience. Our improvements are currently being incorporated into an enhanced viewer, WISCMAP 2.0, to which we hope to be able to link the catalog of either GOS or TNM map services. We believe creating a more satisfying map viewer experience is essential in demonstrating the viability of this approach to geospatial data publishing and exchange.

Feedback on Cooperative Agreements Program

What are the program strengths and weaknesses?

In our experience with the CAP program over the years, its primary strengths lie in seed funding approach. The requirement and leveraging of matching funds, and more recently, the evolving nature of grant categories to facilitate relevance in other coordination and integration activities, particularly at the federal level, have been very important. One major weakness is visibility that these efforts are considered important and relevant to all or a majority of federal agency geospatial data exchange/integration efforts. Example efforts that seemingly run parallel but do not appear to be “plugged in” to the NSDI would include Census’ TED/TIGER modernization efforts, EPA CDX project

prototyping efforts, and FEMA Map Modernization efforts. We hope that current efforts to address Geospatial Enterprise Architecture within Federal Enterprise Architecture will result in much improved and more consistent standards promotion, points of contact, and exchange requirements.

Where does the program make a difference?

The CAP program makes a difference in Wisconsin in subsidizing outreach and education as part of project efforts, often an under-funded component of standards and technology demonstration and promotion. Also, the CAP program is different (and has made a difference) in seed funding information *infrastructure* whereas many sources of external funding emphasize specific applied areas, many of which could benefit from but do not yet have the advantage of a shared spatial data infrastructure approach within the state.

Was the assistance you received sufficient or effective ?

For this project, the assistance was both sufficient in amount and effective in facilitating our continuing efforts in metadata, web service, and clearinghouse technologies outreach in a forward-looking way.

What would you recommend doing differently ?

I would recommend within given grant categories a high-profile mid-year teleconference requiring a representative from each project to share milestones, successes, and model approaches. This is currently happening with CAP 04 Framework WFS projects and is a refreshing change that I believe has benefited these projects.

Are there factors that are missing or need to consider that were missed ?

No comments.

Are there program management concerns that need to be addressed? Time frame?

It is true that it can be difficult to gauge the timeframe for infrastructure efforts. One interesting approach (whether fiscally feasible I do not know) might be to allow up to 2 years for CAP projects but not allow for project overlap from a given agency. However, a recipient could complete their project within 1 year (or demonstrate certainty of completion) in order to compete for an award in the following year. As long as there is good communication, this might allow some built-in flexibility to advance a project as coordination efforts and efficiencies allow (whether fast or slow) and perhaps encourage diverse applicants from states when there are ongoing projects that would dictate an alternate applicant(s) in a given year.

If you were to do this again, what would you do differently?

No comments.