

Interim Progress Report

Agreement Number:

07HQAG0105

Project Title:

Making the Case for Geo-Enabling Decision Processes in the Great Lakes

Report Date:

1/31/2007

Organization:

Great Lakes Commission

Project Leader:

Pete Giencke

734-971-9135

pgiencke@glc.org

Project Background:

In 2005, the *Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes* was published and distributed as a comprehensive management plan to address significant environmental problems affecting the Great Lakes ecosystem. The Strategy recommended a 550,000-acre regional wetlands restoration goal in the Great Lakes region. To coordinate federal actions to achieve this long-term goal and other near-term wetlands commitments in the Great Lakes, the Great Lakes Regional Collaboration Wetlands Subcommittee was formed in 2006 with broad federal participation¹. This committee was created under the auspices of the Great Lakes Interagency Task Force². The Task Force was established by a 2004 Executive Order³ obligating federal agencies working within the Great Lakes region to collaborate on nationally significant Great Lakes environment and natural resource issues, which were subsequently identified in the Great Lakes Regional Collaboration Strategy. To implement near-term actions of the Strategy, the Interagency Task Force developed a Work Plan that identified federal agency commitments, including a commitment to restore 200,000 acres of wetlands as a near-term priority toward the Great Lakes Regional Collaboration goal of restoring 550,000 acres.

In support of the near-term 200,000-acre restoration goal, the Wetlands Subcommittee has identified the need for a comprehensive, spatially based system to track, monitor and report on wetlands loss, degradation and restoration in the Great Lakes region. At present, there exists no such system, limiting the region's ability to diagnose areas of need and evaluate restoration progress.

¹ The Wetlands Subcommittee is comprised of the US Environmental Protection Agency (EPA-lead), the US Fish and Wildlife Service (FWS), the National Resource Conservation Service (NRCS), the US Corps of Engineers (COE), the US National Oceanic and Atmospheric Administration (NOAA), and the US Geologic Survey (USGS).

² <http://www.epa.gov/greatlakes/collaboration/taskforce/index.html>

³ <http://epa.gov/greatlakes/collaboration/taskforce/eo.html>

Furthering Geospatial Capabilities in the Region

In response to this regional, multijurisdictional information gap, the Great Lakes Commission (GLC) is building a web-based *Spatial Decision Support System (SDSS)*. Through the aggregation and normalization of disparate wetlands data and the creation of web-based geo-analytical tools, the SDSS will facilitate comprehensive baseline tracking and analysis of wetlands change over time. This project will provide Federal program managers with the requisite tools to better assess and manage wetland acreage under their purview. They and their State, Local, and NGO counterparts will be able to work collectively to track, monitor, and report on wetlands gains and losses in the region to better support the Interagency Task Force's near-term restoration goals.

The SDSS is being built using only free and open source software (FOSS) and adheres to established "open standards" in the creation of project-related products and services. This approach will (a) reduce development costs associated with the purchase and acquisition of software needed to assemble and deliver geospatial data, (b) facilitate the wholesale customization of the tools, allowing for a more focused and usable product, and (c) minimize the downstream costs required to sustain and extend the project (and associated toolkit) after the life of the CAP Grant.

Summary of project activities:

In building a business case for the use of an integrated, geo-enabled decision support system, the Great Lakes Commission has identified four major components to be included in the SDSS which are required to serve the needs of multiple Federal programs across the domain. These system-specific abilities include:

- The system identifies and integrates all publicly-available wetlands data within the Great Lakes, using national, state and local sources. These data are currently inconsistent in scale, resolution, accuracy, temporality and classification, which makes baseline comparison among different wetlands datasets very difficult. The aggregation and normalization of this information across time and space will better support trend assessments and restoration progress reports.
- The system integrates data from the U.S. Army Corps of Engineers' (USACE) Great Lakes Habitat Initiative (GLHI) database with complimentary data from other sources. The GLHI project includes an inventory of site-specific actions to protect and restore wetlands and aquatic habitat across the Great Lakes region. By leveraging this database, efforts to identify and account for areas of wetlands change (i.e., restoration gains) can be better understood and managed throughout the region.
- The system provides a suite of user-friendly query and analysis tools to help users discover and analyze aggregated wetlands datasets. These tools will facilitate comprehensive interagency tracking, reporting, and analysis within the Great Lakes region.
- The system provides a mechanism whereby registered users of the SDSS are able to upload and edit wetland geometry residing within the system. This "wiki

style” editing will allow users within the region to more confidently identify areas of wetlands change, along with providing better spatial and temporal resolution of the wetlands coverage in the region.

- The system makes value-added wetlands data available through a variety of file formats and as Open Geospatial Consortium (OGC) web services. This breadth of products and services will maximize the accessibility and extensibility of otherwise unconnected wetlands data.

Project Personnel

Personnel working on this project possess demonstrated expertise in supporting Federal geo-enabled business practices. This group includes:

PETE GIENCKE: Mr. Giencke is a Project Manager at the Great Lakes Commission and the Principal Investigator on the CAP Grant. Mr. Giencke has experience developing tools and products that support Federal business processes. He most recently served as the principal developer on the Great Lakes Habitat Restoration Initiative (GLHI: <http://glhi.org>). The GLHI is a USACOE-funded project with broad stakeholder involvement at the federal level. It was developed to support the assessment and evaluation of restoration activities across the Great Lakes region. Mr. Giencke has a B.S. in Geography and a Master’s degree in Geographic Information Systems from the University of Minnesota Twin Cities.

GUAN WANG: Mr. Wang is a Program Specialist at the Great Lakes Commission and is providing developmental support on the Spatial Decision Support System. Mr. Wang has international experience developing products and services to support of business processes. Mr. Wang has an M.S. in Chemical Engineering from University of Tianjin, China and a Master’s degree in Geographic Information Systems from Eastern Michigan University.

STUART EDDY: Mr. Eddy is a geographer and project manager with the Great Lakes Commission’s Data and Information Management program. Mr. Eddy has worked for three years coordinating mapping and data delivery services for the U.S. Environmental Protection Agency Region 5 Oil Planning and Response Section, including maintenance of the Region 5 Inland Sensitivity Atlas project, Environmental Benefit Analyses for sensitive sites along the Great Lakes and Mississippi River, and spill response exercises in conjunction with the U.S. Coast Guard and other agencies. He has also supported the establishment of the Great Lakes program within the U.S. Integrated Ocean Observing System, a multi-agency effort initiated by the National Oceanic and Atmospheric Administration.

RICHARD GARCIA: Mr. Garcia is a Senior Program Specialist at the Great Lakes Commission and is providing support with collecting and managing wetlands-related data. Mr. Garcia has seven years of experience collecting and mapping GIS data and maintaining websites for the U.S. Environmental Protection Agency Region 5 Oil Planning and Response Section’s Inland Sensitivity Atlas Project. Mr. Garcia holds a B.A. in Urban and Environmental Geography from the University of Illinois at Chicago.

CHRISTINE MANNINEN: Ms. Manninen is a program manager, overseeing budgets and project deliverables. Ms. Manninen is a senior level manager at the Great Lakes

Commission, with more than 12 years of experience in information management and Internet product development through large-scale projects including the Great Lakes Information Network (GLIN) and the Great Lakes node of the U.S. Integrated Ocean Observing System (GLOS).

Project Timeline and Next Steps

The start date for this project was August 1, 2007. The Commission has broken the project into two parts including:

- Part One: Project outreach and data assembly and aggregation (8/2007 – 2/2008), and
- Part Two: Toolkit development and product education/promotion (2/2008 – 5/2008)

First-stage Tasks:

Part one of this project focused on building awareness of the project in the region, especially among Federal Program Managers and members of the Wetlands Subcommittee. A second focus was the assembly, aggregation, and normalization of wetlands-related data to be used by the SDSS.

Work completed thus far includes:

- Kick-off meeting (7/6/2007)
- Project scope of work finalized (07/1/2007)
- GLC official project start date (8/1/2007)
- GLHI teleconference (8/15/2007)
- Business case draft completed (09/11/2007)
- Project website launched (11/1/2007)
- Initial outreach to Wetlands Subcommittee (11/7/2007)
- GLHI Meeting, Chicago IL (12/11/2007)

Second-stage Tasks:

The tools associated with the SDSS will be completed in the second half of the project. These tools will require several weeks of beta testing, and will incorporate feedback received from organizations participating in the beta testing program. The toolkit will be unveiled at workshops to be tentatively hosted in April 2007 in Lansing, Mich., and Ann Arbor, Mich.

These workshops will provide hands-on instruction in use of the new tools. The toolkit will be marketed through the Great Lakes Information Network (GLIN) to Federal Program Managers, members of the Wetlands Subcommittee, and federal partners. It is assumed that much feedback will be received at these workshops, which will be cataloged and included in the final draft of the project report. This feedback will be

considered in the development of the final version of the toolkit, which will then be released to the public through GLIN.

Second-stage tasks include:

- Second draft business case
- Finalize data aggregation/integration
- Database integration
- Finalize tool development
- SDSS beta testing
- GLC seminar (Lansing, Mich.)
- GLC seminar (DC?)
- Complete final draft of business case
- Public release of project report, data, and tools

Future Directions:

As was the case with the Great Lakes Commission's prior (2004) CAP Grant award, this project will be used as a vehicle to further the geospatial capabilities of Federal programs in the region and those of the Commission's core constituency – the eight Great Lakes. Given the open source nature of the project and the associated extensibility and cost-effectiveness of the project, the potential to maintain and extend this project for use with other themes and in other regions is large.

Project Materials

While the SDSS is not yet live, several resources related to project are already available for public consumption. These include:

- Data being assembled through this project are being integrated into the Great Lakes Information Network's Geospatial One Stop-compliant GIS Clearinghouse (GLIN GIS: <http://gis.glin.net/ogc>). These data include fully-compliant FGDC metadata and are made available in multiple common geospatial formats (i.e., Shapefile, GeoRSS, GeoJSON, KML) along with as OGC Web Services (i.e., WMS and WFS). Examples of wetlands data being disseminated through the GLIN GIS include:
 - http://gis.glin.net/ogc/services.php#lmb_cstl_wetlands_ifr
 - http://gis.glin.net/ogc/services.php#great_lakes_coastal_wetlands
- A project wiki, including both the Common Geo-Enabled Business Case and the Applied Cooperative Geo-Enabled Business Case, is being hosted by the Great Lakes Commission. This wiki the primary mechanism through which project materials are being distributed and, in some case, edited. The wiki has enabled the project to incorporate feedback, instantaneously, from project collaborators.
 - <http://glos.us/wiki/display/NSDI/>

Attachments

To inform both Federal program managers and potential users of the project, the Commission has developed a Powerpoint presentation (attached) providing summary-level descriptions of the main components of the SDSS. The presentation is intended as to provide a general overview of the project, and is considered suitable for both technical and non-technical audiences.

Feedback on Cooperative Agreements Program

Within the Great Lakes region, CAP Grants have historically proven to be a very effective way of bringing organizations, ideas, and technology together. Many of these regional pilot projects have been expanded beyond their initial scope of work. Such projects have included:

- The 2006 Minnesota and Wisconsin Fifty State Initiative, whose output (a long-term strategic vision) has been adopted nationwide.
- The 2005 “Developing a Strategic Plan for GIS in Wisconsin” project has evolved into the Wisconsin Geographic Information Coordination Committee (WIGICC), a sanctioned state-wide entity tasked with coordinating GIS activities in WI.
- The 2004 Great Lakes Information Network Data Access (GLINDA) GIS Portal for aggregating regional metadata into a centralized repository. The GLINDA project has morphed into the GLIN GIS, which is currently aggregating and disseminating regionally focused data for the Great Lakes, serving over 10,000 visitors a month.

Despite the overall success of these and other regional CAP-funded projects, there are several weaknesses in the CAP Program, the remediation of which would further the accomplishment of these projects.

- Although the CAP Program is heavily promoted through the FGDC website, there appears to be a significant disconnect between the FGDC and the lay geospatial community, both in terms of CAP Program availability and project results. The CAP Program should seek to promote other recognized geospatial channels (e.g., Planet Geospatial, Where 2.0, etc) by marketing the project outside of standard FGDC channels.
- The CAP Program should encourage and facilitate partnerships among the different CAP Program awardees. Such collaboration has the potential to leverage economies of scale in terms of providing better, cheaper, more extensible products on a yearly basis.
- Finally, funding guidelines should be reviewed and updated to account for the growing need to web-enable GIS data and products. The current stipulation that FGDC funding cannot be used for hardware costs (i.e., bandwidth, servers) is a potentially problematic constraint. For projects that depend on web-enablement, it is necessary to budget for continuing bandwidth, security, etc. to enhance the sustainability of the product.