

**2009 NSDI Cooperative Agreement Program Proposal
Category 2: Behind the Portal - Use of GOS Map and Data Services**

Interim Report

GOS Dashboard –

An Enterprise GIS Desktop Dashboard for the Geospatial One-Stop (GOS) Portal

Submitted By:

The Carbon Project
25 Mall Road, Suite 300
Burlington, Massachusetts, United States 01803

info@TheCarbonProject.com

www.TheCarbonProject.com

1.0 Project Summary

Our project, the *GOS Dashboard – an Enterprise GIS Desktop Dashboard for the Geospatial One-Stop (GOS) Portal*, is developing an enterprise application to enable at-a-glance visualization of geospatial assets and monitoring of key GOS Portal search functions (Figure 1). This effort is supported by a 2009 NSDI CAP grant and is focused on designing, developing, documenting and deploying an open source enterprise application to enable “at-a-glance” visualization of geospatial assets and monitoring of GOS Portal search functions.

Currently, the NSDI community does not have a way to integrate GOS Portal search functions into the desktop environment. Simple to understand and high in ROI, the GOS Dashboard has the potential to fill this gap and become a "must-have" for all federal enterprises. The software is being jointly designed in support of governmental activities by The Carbon Project (www.thecarbonproject.com) and the government (US Army Corps of Engineers and appropriate FGDC/NSDI representatives), and is based on government business requirements.



Figure 1 – The GOS Dashboard as deployed in September 2009 on a Windows 7 Desktop



This effort is important because the GOS Portal (www.geodata.gov) has matured to a point where broad uptake and use is now dependent on the capacity to make data discovery, access and use easy for enterprise GIS users. Organizations that use the GOS Portal must also consider how they can monitor key GOS Portal search functions and link data and services into enterprise GIS applications like ArcGlobe, ArcExplorer, the Gaia SDI Platform and other applications. These requirements will continue to increase as data access transitions from a file-based environment to the web services environment.

During the reporting period The Carbon Project released the first version of the open source dashboard for Geodata.gov, the federal government's information service for maps and data. This release was followed by initial testing with Geodata.gov and a variety of NSDI services, including WFS and WMS from MassGIS. Testing showed the GOS Portal yielded near-instant access to the NSDI services. In addition, The Carbon Project established an online Forum for collaborative discussion of GOS Dashboard functions. Finally, The Carbon Project conducted the first online workshop for the open-source GOS Dashboard - the beginning a community dialog on the functions of the dashboard with NSDI users and developers.

1.1 Lead Organization Information

The Carbon Project®

25 Mall Road, Suite 300, Burlington, MA 01803

Internet Address of Applicant: <http://www.thecarbonproject.com>

Collaborating Organizations:

U.S. Army Corps of Engineers

Nancy Blyler

Phone: 202.761.5540, Nancy.J.Blyler@usace.army.mil

Internet Address: <http://www.usace.army.mil>

FGDC-endorsed standards selected for the project:

OGC Catalog Service for the Web (CSW) FGDC Profile, ebRIM Profile, and Version 2.0.2 'baseline'

OGC Catalog Service Version 2.0.2, Z39.50 Profile

FGDC Content Standard for Digital Geospatial Metadata, Version 2.0

North American Profile (Draft), ISO 19115 Metadata

Principal Investigator:



Nuke Goldstein, Chief Technology Officer (CTO)

Carbon Project, Inc., Phone: 703.491.9543, FAX: 703.491.0873, info@thecarbonproject.com

1.2 Geographic Scope or Area

Nationwide

1.3 Project Background

The scope of the project supported by this NSDI-CAP grant is to design, develop, document and deploy an open source enterprise application to enable “at-a-glance” visualization of geospatial assets and monitoring of GOS Portal search functions. Currently, the NSDI community does not have a way to integrate GOS Portal search functions into the desktop environment. Simple to understand and high in ROI, this Enterprise GIS dashboard has the potential to fill this gap and become a "must-have" for all federal enterprises.

This effort is important because the GOS Portal has matured to a point where broad uptake and use is now dependent on the capacity to make data discovery, access and use easy for enterprise GIS users. Organizations like USACE that use the GOS Portal must also consider how they can monitoring of key GOS Portal search functions and link data and services into enterprise GIS applications like ArcGlobe, ArcExplorer and other applications. These requirements will continue to increase as data access from a file-based environment to the web services environment.

To meet this challenge, this project is developing and deploying an open source enterprise application, the GOS Dashboard, as a key component of USACE and NSDI Business Process requirements. This project leverages The Carbon Project’s four-year investment in developing NSDI applications and solutions. Specifically, The Carbon Project offers unique experience in all facets of NSDI application development including CS-W, WMS, WFS, GML, GMLsf, GeoRSS, ESRI technology and enterprise SOA.

The project is based in part on The Carbon Project’s experience developing GeoRSS applications in the Canadian Geospatial Data Infrastructure (CGDI), including interoperability projects in Canada where government organizations highlighted a solution for collaborative data maintenance and integration partnerships based on standards-based web services combined with a GeoRSS ‘GeoSynchronization’ mechanism¹.

¹ Results of the CGDI project are highlighted in an online video http://www.youtube.com/watch?v=YIZLc_qHYZc

This effort builds on this foundation and develops an open source enterprise application, the GOS Dashboard, as a key component of the USACE enterprise, the NSDI, and The National Map.

2.0 Project Milestones

The “GOS Dashboard – an Enterprise GIS Desktop Dashboard for the Geospatial One-Stop (GOS) Portal” project is being conducted as a series of tasks using an integrated activities framework, which is an evolution of project management processes developed over the course of numerous SDI engineering efforts. The activities framework outlines tasks that can be combined and adapted as necessary to address the requirements of SDI engineering projects, and are executed in a cross-organizational team infrastructure. This framework forms the basis of the Project Work Plan established and consists of three high-level tasks: Development and Integration, Community Outreach, and Project Coordination (Figure 2).

Development and Integration and Community Outreach accomplishments are summarized in the following sections.

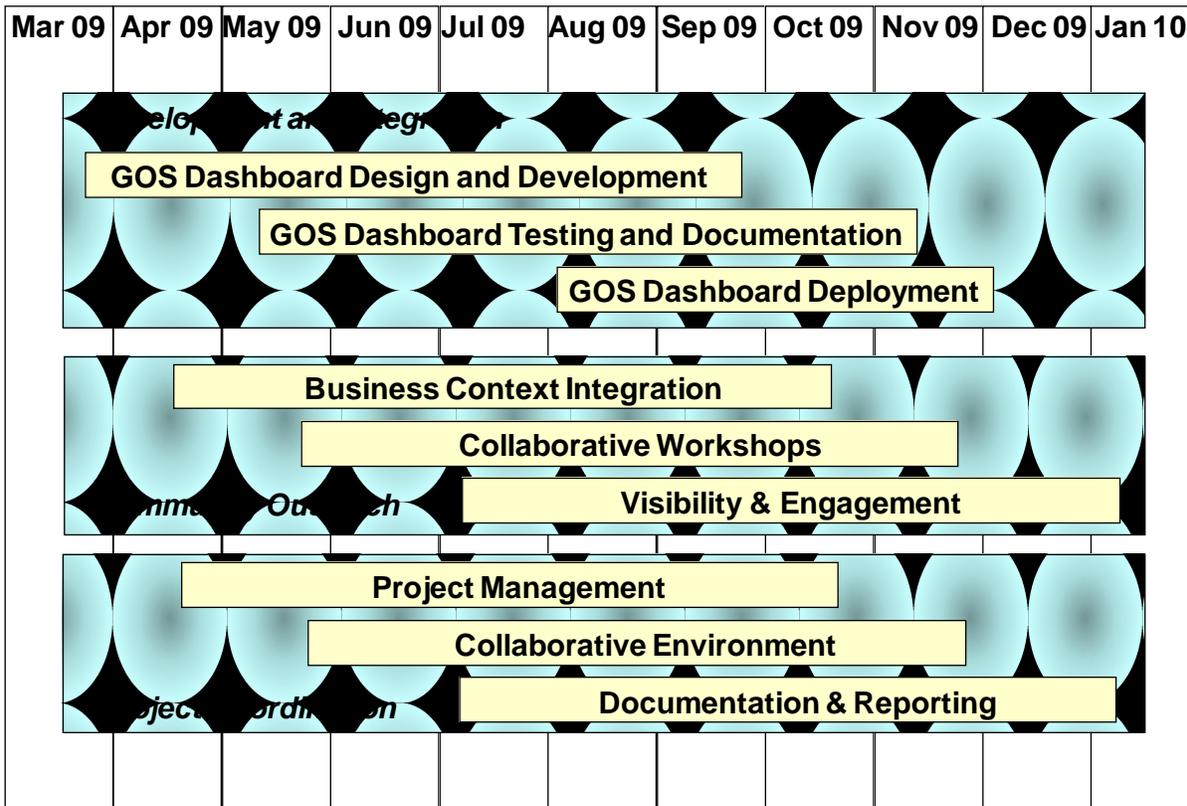


Figure 2 – GOS Dashboard Project Framework

2.1 Development and Integration Summary

Geodata.gov contains a vast amount of geospatial data. With the help of a robust filtering and searching mechanism, the site allows for retrieval of that data. With the GOS Dashboard, we attempted to make things easier for the casual desktop user. Instead of having to open a web browser to retrieve that data, users are now able to view changes in a feed form and access data of interest with a few button clicks - straight from the desktop. Key design elements include:

- GeoRSS data retrieval based on user filtering.
- Extensive filtering mechanism, built to mimic geodata.gov website both in style and functionality.
- Bounding box display in Bing Maps w/current RSS feed items.
- Integrated FGDC Status Checker
- External application launching from the gadget (ex. Gaia)

The GOS Dashboard enhances the common RSS reader functionality in both Windows Vista and Window 7 with tools suited for the GOS users. Among the features are the ability to easily configure the feed's search criteria, view the data's polygonal footprint on a mini-map, and accessing GIS products directly with the data published.

To create the GOS Dashboard we used the GOS Portal flexible GeoRSS feed generator. Based on the options specified by the user, a query is generated and the results are returned in a GeoRSS format. As discussed, in the GOS Dashboard options we try to mimic the website's look and feel for search & filtering as much as possible in both style and functionality, making some improvements when necessary. However, there is a GeoRSS server limitation of only 100 results, and those results are displayed 4 at a time, much like the default RSS gadget that comes with Windows Vista. We also emulated the default RSS styling when displaying the current feed items as well as the paging capabilities. The desktop Gadget was been tested in both Windows Vista and Window 7 and works well in both environments.

Installation

To install the GOS Dashboard, all users need to do is download and double-click on the GOSGadget.gadget file, and the following security dialog will appear (Figure 3).



Figure 3 – GOS Dashboard Installation

Users just need to click on install and the gadget will appear in the Vista or Windows 7 sidebar

Main Viewable Area

The main viewable area of the GOS Dashboard displays 4 GeoRSS feed items in a list (Figure 4). Users can navigate the list by pressing the up and down arrows in the navigator. The results are limited to 100 by the server, as discussed. On the Bing map below the 4 GeoRSS feed items, the bounding boxes of each feed item are displayed (each in a different color).

When a feed item is selected (by clicking on the title), the map will display only the current feed item bounding box. Double-clicking the feed title will open up the metadata in a browser window.



Figure 4 – The Main Viewable Area of the GOS Dashboard

The Item “Flyout” Window

The Flyout window appears when users click on a feed link. This form displays the feed description (as sent from the server). The description usually contains a few links that users can follow for additional information about the item. This view is similar to the common RSS reader view, with an added toolbar at the bottom. This unique bar shows various GIS applications that can be triggered by the associated data (Figure 5). The icons in this bar allow easy navigation to external services/applications that display the feed geospatial data, and a status of the GOS resources. When not applicable the icons are grayed out. Currently, Arc Explorer, ArcGlobe and Gaia, and “Status” are supported:

- **Map** shows the data or service on a Geodata.Gov online ArcExplorer.
- **Globe** shows the data or service on ArcGlobe.
- **Gaia** adds capabilities of the OGC service (if available) to the Gaia application.

- **Status** shows a reliability Score from the FGDC Status Checker² (via REST API).

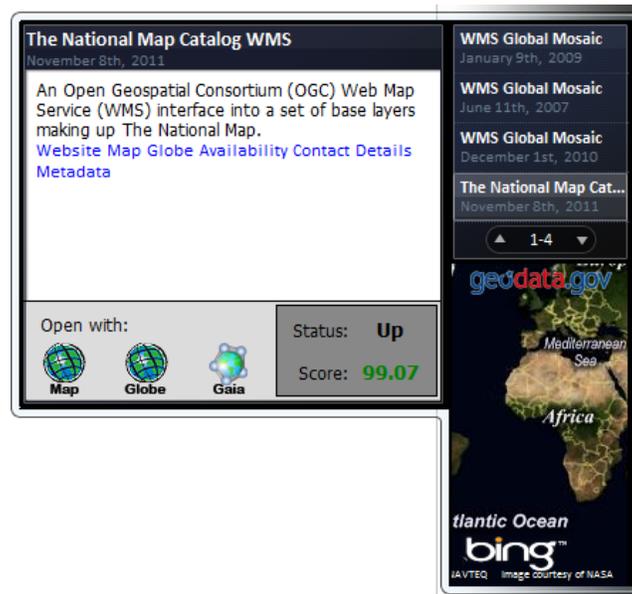


Figure 5 - The Flyout window appears when users click on a feed link

Setting GOS Dashboard Configuration

Most Vista gadgets have a configuration option (Figure 6). The existing RSS reader gadget from Microsoft only allows the user to select the feed from existing subscriptions and adjust the maximum number of aggregated items. This is not adequate for a GOS user, for example changing the feed search properties is not possible and requires manual re-subscribing to the feed (using a new URL) and reloading of the gadget. The GOS Dashboard gadget offers a Settings configuration window that is much more suited for the task.

The Settings window is where feeds search parameters are set. The top of the dialog allows keywords to be set. The keyword defaults to “map” if nothing is specified. The other filtering options correspond very closely to those that appear on the *geodata.gov* website. To expand a filtering section, users just click on the blue header bar. The GOS Dashboard configurable search elements include:

- Search keywords
- Content type (e.g. live data, geographic services)

² <http://registry.fgdc.gov/statuschecker/index.php>

- Data categories (e.g. Transportation)
- RSS update interval (e.g. once a day, every hour etc.)

Once configured the GOS Dashboard will construct the required query and update the feed items accordingly. There is no need to restart the gadget or re-subscribe the feed.



Figure 6 - The Settings window allows GOS users to set feed search parameters.

The external applications section of the Setting window allows feed items to be opened up with *Gaia*. If users don't have *Gaia* installed, a link to the free download site is provided. The path settings is by default the application default installation path. The *Search* button allows automatic detection of the *Gaia* path.

Desktop GIS Workflow

A sample desktop workflow where a user selects an NSDI Service of interest from the GOS Dashboard, reviews its information and launches a desktop application (Gaia) is depicted below in Figure 7.

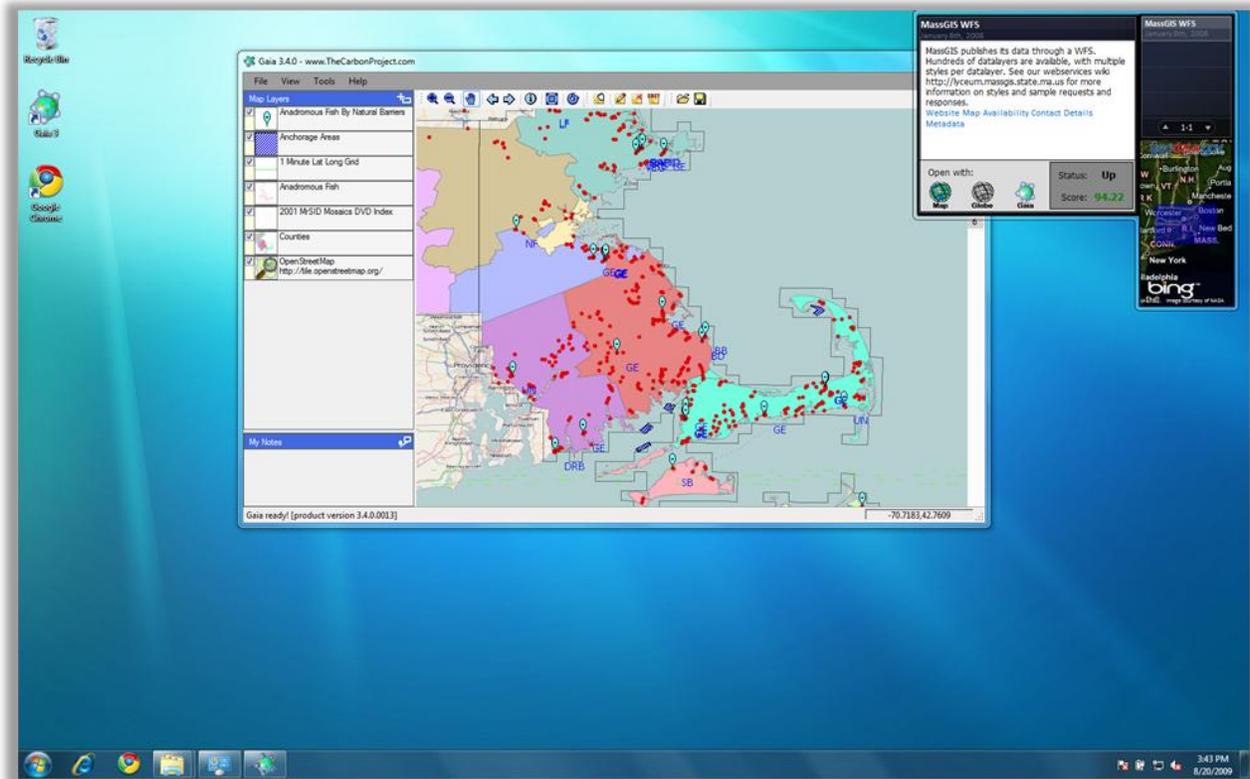


Figure 7 – A GOS Dashboard in use on the desktop

2.2 Community Outreach Summary

This project has already delivered a Dashboard application that can be widely used for discovering data and services through geodata.gov. As part of this project, we have also engaged in a consistent community outreach program that has reached users across the NSDI. A significant component of this community engagement has been efficient use of collaborative engagement tools on the Internet, including YouTube, Blogs, online meetings and an interactive Forum.



Specifically, The Carbon Project has released the first version of its open source dashboard for Geodata.gov, the federal government's information service for maps and data. This release was followed by initial testing with [Geodata.gov](http://geodata.gov) and a variety of NSDI services, including WFS and WFS from MassGIS. Testing showed the GOS Portal yielded near-instant access to the NSDI services. In addition, The Carbon Project established an online Forum for collaborative discussion of GOS Dashboard functions. Finally, The Carbon Project conducted the first online workshop for the open-source GOS Dashboard - the beginning a community dialog on the functions of the dashboard with NSDI users and developers.

Key GOS Dashboard information and Community Outreach Links include:

- GOS Dashboard Download Site -
<http://thecarbonportal.net/modules.php?op=modload&name=Downloads&file=index&req=viewdownload&cid=6>
- GOS Dashboard Announcement –
http://www.thecarbonproject.com/news_geodatadash.php
- GOS Dashboard Forum –
<http://www.thecarbonportal.net/index.php?name=PNphpBB2&file=viewforum&f=6&sid=5d70000420e36a493e7f07f56b4d1a6e>
- GOS Dashboard Video Preview –
<http://thecarbonproject.com/Videos/GOSGadget1/GOSGadget1.htm>
- GOS Dashboard Slideshare Presentation –
<http://www.slideshare.net/CarbonProject/gos-dashboard-enterprise-gis-dashboard-for-geodatagov>
- MassGIS Testing Quick Look -
<http://carboncloud.blogspot.com/2009/08/gaia-and-gos-dashboard.html>
- Summary of First GOS Dashboard Workshop -
<http://carboncloud.blogspot.com/2009/09/success-at-gos-dashboard-workshop.html>

Our community engagement process is iterative and will continue in the next reporting period (Figure 8).

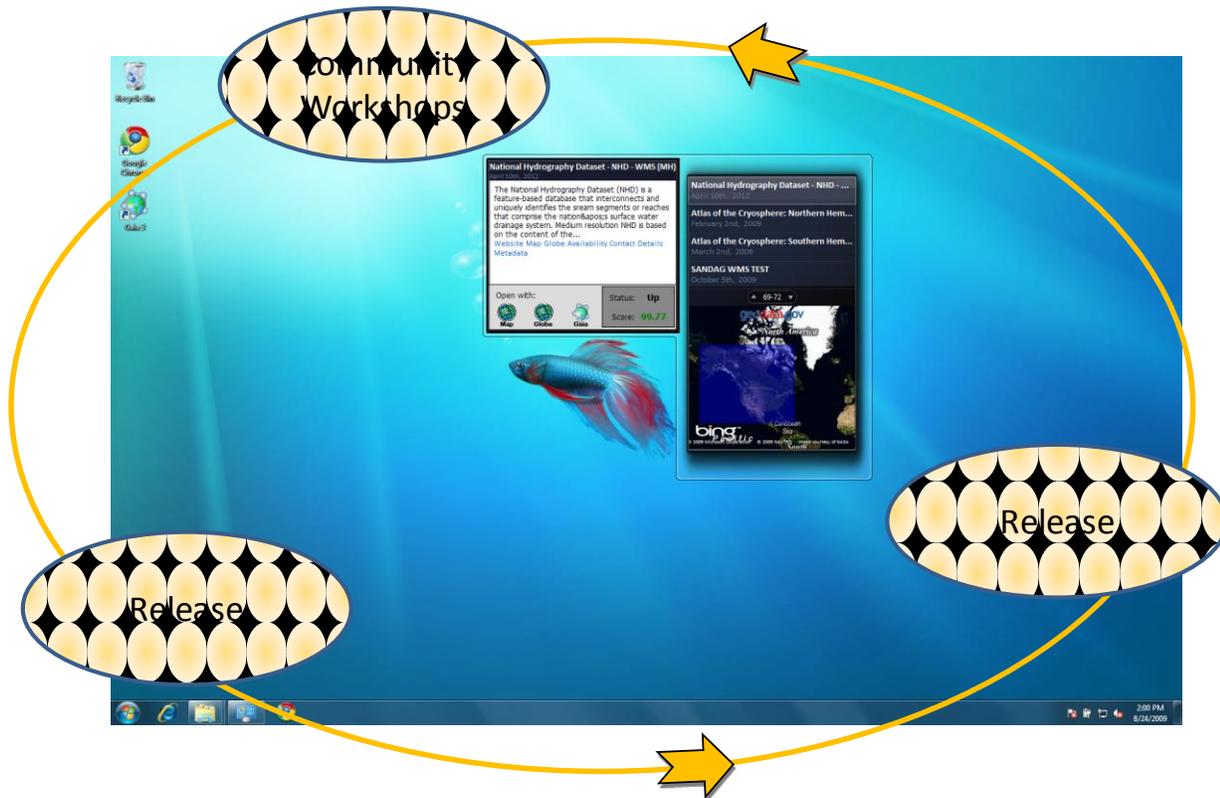


Figure 8 – The Carbon Project is conducting an iterative community workshop/release process

Conclusion

Our project, the *GOS Dashboard – an Enterprise GIS Desktop Dashboard for the Geospatial One-Stop (GOS) Portal*, is developing an enterprise application to enable at-a-glance visualization of geospatial assets and monitoring of key GOS Portal search functions. This effort is supported by a 2009 NSDI CAP grant and is focused on designing, developing, documenting and deploying an open source enterprise application to enable “at-a-glance” visualization of geospatial assets and monitoring of GOS Portal search functions.

During the reporting period The Carbon Project released the first version of the open source dashboard for Geodata.gov, the federal government’s information service for maps and data. This release was followed by initial testing with Geodata.gov and a variety of NSDI services, including WFS and WMS from MassGIS. Testing showed the GOS Portal yielded near-instant instant access to the NSDI services. In addition, The Carbon Project established an online Forum for collaborative discussion of GOS Dashboard functions. Finally, The Carbon Project conducted the first online workshop for the open-source GOS Dashboard - the beginning a community dialog on the functions of the dashboard with NSDI users and developers.