

SECTION 1. PROJECT ADMINISTRATIVE INFORMATION

CDI Science Support Framework Elements: Web Services, Applications, Publishing/Sharing

Project title: Evaluating TerriaJS, an open-source, standards-based framework for geospatial portal development.

Lead USGS cost center requesting funding: Caribbean-Florida Water Science Center

USGS Principal Investigator:

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Collaborators:

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- Cameron Hunt, Director, Metanomy, Inc; 429 22nd St. S., Saint Petersburg, FL 33711; (843) 654-4708; cameron.hunt@Metanomy.org
- Richard Knudsen, State Scientific Support Coordinator for Oil Spill Response, Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, Center for Spatial Analysis, 100 Eighth Ave SE, Saint Petersburg, FL, 33701, (727) 502-4855, richard.knudsen@myfwc.com
- Richard Signell, Research Oceanographer, USGS, Woods Hole Coastal and Marine Science Center, 384 Woods Hole Rd, Woods Hole, MA 02543; (508) 457-2229; rsignell@usgs.gov

Short Description:

This project will explore web portal construction with [TerriaJS](#), a new Australian Government-funded open-source framework ([WebEx and Demo Videos](#) from USGS Tech Stack Meeting, June 18, 2015) that utilizes [Open Geospatial Consortium](#) (OGC) and community-standard web services for catalog search and data retrieval. We will construct two regional portals (1. Tampa Bay and 2. the Northern Gulf of Mexico) that facilitate querying web services on ScienceBase and other catalog services, and integrate data from the distributed services into products that inform coastal managers that deal with oil spills and other anthropogenic and natural disasters.

List of anticipated deliverables from the project:

- Reporting on the feasibility, applicability and resources required to develop geospatial data portals based on the TerriaJS infrastructure. This will be documented on Github (either on the TerriaJS repository or a new USGS repository), at the CDI annual meeting, and linked from the CDI wiki.
- Web Portals for Tampa Bay and the Northern Gulf of Mexico. The Tampa Bay portal will be hosted at tampabaymap.org and the Northern Gulf of Mexico portal will be hosted at USGS.
- Software and documentation enhancements will be contributed back to the community via TerriaJS Github Pull Requests or Wiki improvements.

SECTION 2. ESTIMATED BUDGET

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. PERSONNEL (SALARIES including benefits):		
Federal Personnel Total	\$32,000	\$18,250
Collaborator Personnel Total:	\$	\$12,250
Total Salaries:	\$32,000	\$30,500
2. TRAVEL EXPENSES:		
Travel Total (Per Diem, Airfare, Mileage/Shuttle) x 2 of Trips:	\$3,000	\$
Other expenses (e.g. registration fees):	\$300	\$
Total Travel Expenses:	\$3,300	\$0
3. OTHER DIRECT COSTS: (itemize)		
Equipment (inc. software, hardware, purchases/rentals):	\$	\$
Publication Costs:	\$	\$
Office supplies, Training, Other Expenses (specify):	\$	\$
Total Other Direct Costs:	\$0	\$0
Total Direct Costs:	\$35,300	\$30,500
Indirect Cost (#%):	\$13,414	\$0
GRAND TOTAL:	\$48,714	\$30,500

SECTION 3. PROJECT SUMMARY

In the past, web portals have been developed at relatively high effort and cost, with web developers working with highly skilled data specialists on custom solutions that meet user needs. TerriaJS holds the promise of making web portal construction much cheaper and easier, as well as accessible to a wider community. We propose to evaluate TerriaJS by using it to build two portals, gathering knowledge of applicability, performance and ease of use, and documenting best practices and lessons learned so that the USGS and the entire geospatial and met-ocean community can benefit.

We foresee multiple benefits from this approach. One is the demonstration of a complete workflow (Search, Access, Visualize) using standard web services and 100% open source software. Another is entrainment of additional USGS, NOAA, State, and academic scientists into the CDI process and their science products into a standardized web services framework. By working with the investigators to get their products connected, we hope to grow awareness of the benefits of the standards-based approach, awareness that can be passed along to colleagues.

We will query [ScienceBase](#), US Integrated Ocean Observing System ([US-IOOS](#)) and [data.gov](#) catalogs for TerriaJS-supported services using OGC [Catalog Service Web \(CSW\)](#); work with collaborators to identify connections to other appropriate data and services; then demonstrate integration of hydrodynamic, sediment, and oil spill trajectory transport model output from USGS, NOAA ([GNOME](#)), and multiple partners with GIS layers important to oil spill response and recovery. Model output will be obtained using OGC Web Map Service (WMS) from [THREDDS](#) and the new [Sci-WMS](#) server (developed by US-IOOS) for unstructured and staggered grid data. Spatial coverages will be obtained via ESRI Representational State Transfer ([REST](#)) and OGC services identified by research collaborators.

We propose to build two portals on the TerriaJS framework. While each instance will have duplicate software, the geospatial area of interest will be different, which will drive slightly different analytical processes, data sources, and model outputs. We believe that applying our approach to at least two different geographical areas helps us evaluate our efforts at a general scientific and analytic level, as well as a technical level due to different types of models and base data each instance will require.

The first instance of the portal will focus on Tampa Bay, with emphasis on displaying hydrodynamic models and oil spill trajectory model data. We already have a beta site active (<http://tampabaymap.org>), and have been performing initial data discovery and integration so as to better scope the level of effort required for this project.

A second instance of the portal will focus on the Northern Gulf of Mexico, and a top priority will be integrating the [USGS Sand and Oil Aggregate \(SOA\) model](#) for surface residual ball prediction with [hydrodynamic and oil spill trajectory models](#). We believe that selecting an area previously affected by DeepWater Horizon allows us to use valuable historical data and to confirm the usefulness of the TerriaJS approach.

While the two portals will have collateral benefits to regional environmental issues and to researchers, the principal product of this work is really a deeper knowledge of TerriaJS capabilities, configuration, performance and the TerraJS development community. We believe TerriaJS could be a game-changer for the geosciences, putting powerful standards-based web portal development into the hands of many more people, improving the efficiency of existing web portal developers, and accelerating development of web-based tools by harnessing the development efforts of the international open-source geospatial community.