Request For Proposals

Notice to Prospective Proposers

The West Coast Governors Alliance (WCGA) and National Fish and Wildlife Foundation (NFWF) invite you to submit a proposal to the Regional Data Framework Action Coordination Team for the position of Data Portal Developer. If you have questions, or should need any clarifying information, the contact for this RFP is:

**Todd Hallenbeck**
**RDF Project Coordinator**
West Coast Governors Alliance
Todd.r.hallenbeck@westcoastoceans.org
408.482.6807

7/26/13

The WCGA Regional Data Framework Action Coordination Team (RDF ACT) is seeking a qualified Data Portal Developer (Contractor) to develop a web-based tool to meet the specific needs of the WCGA Marine Debris and Regional Data Framework ACTs using semantic web technology and use case development methods. These needs include, but are not limited to, visualizing the sources, sinks, environmental transport mechanisms, and human drivers of marine debris on land and in the coastal environment.
Purpose and description of required services

The WCGA Regional Data Framework Action Coordination Team (RDF ACT) is seeking a qualified Data Portal Developer (Contractor) to develop a web-based tool to meet the specific needs of the WCGA Marine Debris and Regional Data Framework ACTs using semantic web technology and use case development methods. These needs include, but are not limited to, visualizing the sources, sinks, environmental transport mechanisms, and human drivers of marine debris on land and in the coastal environment.

Background

The WCGA is a proactive, regional collaboration to protect and manage ocean and coastal resources along the entire West Coast. Launched on September 18, 2006 by Governors Gregoire of Washington, Kulongoski of Oregon, and Schwarzenegger of California, the alliance advances regional ocean governance efforts as called for in the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. Governors Gregoire of Washington, Kitzhaber of Oregon, and Brown of California renewed their commitment to this effort in early 2011.

The WCGA seeks to advance the goals of:

- Ensuring clean coastal waters and beaches
- Protecting and restoring ocean and coastal habitats
- Promoting the effective implementation of ecosystem-based management
- Reducing adverse impacts of offshore energy development
- Increasing ocean awareness and literacy among residents
- Expanding ocean and coastal scientific information, research and monitoring
- Fostering sustainable economic development in our communities

After extensive public participation and close coordination with three federal co-leads appointed by the Subcommittee on the Integrated Management of Ocean Resources (SIMOR), the Governors released their Action Plan in July 2008 (http://www.westcoastoceans.org). The Action Plan contains 26 actions to jointly solve some of the most challenging ocean and coastal problems.

In late summer 2008, ten working groups were established including representatives from each of the three states, federal and tribal governments, academia, industry, non-governmental organizations and other interested citizens. Each working group is supported by a Point of Contact who also serves as staff to the Executive Committee. Action-specific work plans were released to the public in spring 2010 and the working groups are currently implementing their plans.

In February 2012, the Regional Data Framework Action Coordination Team was adopted as a new team to work on problems of regional data sharing, management, and coordination.
The RDF goal is to increase the discovery and connectivity of ocean and coastal data and people to help inform regional ocean issues identified by the WCGA. Their first project has been the development of a West Coast Data Registry, a geospatial metadata catalog, built on ESRI Geoportal and using the CSW standard to harvest and publish West Coast regional ocean and coastal metadata from state, federal, and regional partners. The RDF plans to build on this infrastructure, developing a Data Portal with visualization and analysis tools to “mash up” web services representing physical, oceanographic, biological, and socioeconomic data to inform regional ocean issues identified by the WCGA. This contract will help us identify specific WCGA needs and develop the Portal. More information on the RDF ACT can be found at: http://www.westcoastoceans.org/RDF.

Recently, the WCGA identified four regional ocean priorities that it intends to address in the upcoming two years; Sea level rise, ocean acidification, marine debris, and the regional data framework.

**Problem Statement**

Marine debris has been identified by the WCGA as an issue of regional significance for the West Coast. The Marine Debris ACT (MD ACT) of the WCGA brings together stakeholders and experts representing state, federal, regional, tribal, and not-for-profit organizations that have experience with derelict fishing gear and land-based debris, including recovery and cleanup, policy analysis and planning, funding, and research. The MD ACT is tasked to create a framework to identify sources, assess drivers, and establish a baseline to prevent and reduce marine debris entering our coastal environment, leveraging existing resources and expertise within the three states. Visualizing the sources, sinks, human drivers, and environmental transport of marine debris can help coastal managers, relevant local, state, and federal agencies, and NGOs establish a marine debris baseline, assess the threat of marine debris to sensitive coastal ecosystems, prioritize cleanup efforts, and advocate specific policy outcomes helping them complete their goals. More information on the MD ACT goals and objectives, including their work plan, can be found at the Marine Debris ACT homepage.  

There are several existing systems that can be leveraged to inform the marine debris issues identified above. Recently, the MD ACT developed the West Coast Marine Debris Database, an online tool that cleanup groups can input data into to track the amounts and locations of debris collected. Additionally, the West Coast Data Registry is a geospatial metadata catalog to harvest and publish West Coast regional ocean and coastal metadata from state, federal, and regional partners. Finally, the Regional Associations of the Ocean Observing Systems (SCCOOS, CeNCOOS, NaNOOS) have existing portals for accessing real time oceanographic data, such as

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surface currents. Additionally, other relevant data systems and sources of data may be identified in the use case development process.

Semantic web technologies represent a promising approach for integrating data from multiple WCGA partner data systems to address complex, interdisciplinary science, policy, and management questions. This project will demonstrate this approach, by creating one easy-to-use web-based tool that meets the needs of the WCGA MD ACT. This project will encounter numerous challenges, particularly the integration of data with various formats, temporal dimensions, characteristics, and data vocabularies.

Theoretical and applied solutions to resolve these problems have been developed using semantic web technology (Berners-Lee and others, 2001). Semantic web technology is based on a data model for specifically and unambiguously describing data subjects and their relation to other entities. Specific nodes of information are programmed to link to each other according to formal semantic rules provided by an ontology (Noy and McGuinness, 2001). These automatically created networks of knowledge can access any part of their structure so that information users can query and customize the data. These functions serve to more precisely integrate data and convert information from one form to another, and thus allow a more complex context of meaning to be developed from the source information. When connected over the Internet, these networks are often called the semantic web or linked data.

**Objective**

Use the semantic web technology approach to data integration, and use case development method for software development, to meet the needs of the WCGA Marine Debris and Regional Data Framework ACTs. The project will produce a web-based tool for visualizing information related to the sources, sinks, environmental transport, and human drivers of marine debris on land and in the coastal environment. This web-based tool will help the WCGA MD ACT, coastal managers, and NGOs establish a marine debris baseline, assess the threat of marine debris to our coastal ecosystems, prioritize cleanup efforts, and advocate specific policy outcomes helping them complete their goals. The web-based tool will have a focus on the land-sea interface and will utilize and draw data from multiple WCGA partner data systems, including state, federal, and regional catalogs.

**Methods**

Development shall follow the approach developed for Data.gov by researchers from Rensselaer Polytechnic Institute and Stanford University (see http://www.data.gov/semantic). The approach is iterative, with the stages diagrammed as follows:
Semantic web technology development processes developed at RPI (Peter Fox, written communication, 2012).

**Development stages**

1. **Create a Project Team**
   - a. Facilitator to liaison communications between Technologist/Web GIS Experts and Domain Experts (Contractor Staff)
   - b. Marine Debris Domain Expert(s) to supply knowledge of resource management questions to be addressed by Use Case (supplied by WCGA)
   - c. Technologist/Web GIS Expert(s) to do programming, semantic web development, web GIS development, data viewer development on outcomes of use case (Contractor Staff)
   - d. Data Modeler(s) to integrate and model data sets that are necessary to address the Use Case (Contractor Staff)
   - e. Scribe to help take notes and share information between the contractors and domain experts (Contractor Staff)
   - f. Consultant(s) to provide additional expertise and consultation services about the use case process, web GIS development, or domain expertise (Contractor Staff, as needed)

2. **Develop Use Case centered on Marine Debris ACT goals and objectives:**
   - a. Goal(s)
   - b. Summary
   - c. Actors
d. Pre-Conditions  
e. Triggers  
f. Basic and Alternative Flows  
g. Post Conditions  
h. Activity Diagram  
i. Resources and Services  
j. Analyze the use case  

3. Develop geospatial data products, information models, and ontologies  
a. Geospatial data products  
b. Logical information model  
c. Physical information model  
d. Ontology development  

4. Review use case, models and ontology by domain expert(s)  
a. Does the information model make sense?  

5. Define technology stack to be used in the project  
a. Technical design  
b. Define portal architecture requirements  

6. Develop portal prototype  

7. Analysis, evaluation, and beta testing of the prototype portal

The Contractor shall complete this project with up to three iterative cycles of development (steps 2-6) whereby they seek feedback from the Project Team and other domain experts in at least 3 webinars. At least one in-person meeting of the Project Team will be needed to define the scope, objectives, and constraints of the use case. If budget allows, we encourage a second in-person meeting two-thirds of the way through to test and refine the web-based tool. The Contractor will present the working prototype to the Project Team, invited users, and the Regional Data Framework ACT, for Stage 7 analysis, evaluation, testing.

Because WCGA partners with limited resources may implement the software developed for this project, we prefer proposals to deliver Open Source (as defined by http://www.opensource.org) software running on Open Source platforms, and/or to deliver Open Source software running on the ESRI GIS platform (http://www.esri.com), which is widely used by WCGA partners. Also given the dynamic nature of this issue and sources of information, we will encourage and give preference to systems that use and provide continuously updating and best available information, as opposed to simple snapshot approaches.

References  

Services requested

The WCGA Regional Data Framework ACT is seeking qualified applicants to develop a web-based tool to meet the specific needs of the WCGA Marine Debris and Regional Data Framework ACTs using semantic web technology and use case development methods. Semantic web technology integrates multiple data sources to help answer complex, interdisciplinary science and policy questions, and enables easier integration with regional data sources. Use case development helps ensure that the Marine Debris ACT and real user groups approve the software, and enables easier software extensions to meet future needs. The contractor shall develop one web-based tool for solving the problems identified through use case development process focused on visualizing information related to the sources, sinks, environmental transport, and human drivers of marine debris on the West Coast. We anticipate the Contractor will propose a Team of use case, semantic web technology, and web GIS experts, with significant experience in every phase of development, and expertise for each role in the Project Team (i.e. Facilitator, Technical Specialist/Web GIS Expert, Data Modeler, scribe) described above, except Domain Experts. A team approach is appropriate because of the integrated varied skill sets needed to successfully complete the project. Skills in communication and web development are two distinct but important aspects of the project. It is expected that most data services will be created and hosted by public agencies, institutional partners, and other members of the wider West Coast Data Network. The RDF Coordinator will help to improve communication among these entities and promote the interoperability of the data services they provide.

The following activities, estimated percent effort, and associated deliverables for the Data Portal Developer have been identified:

**Activity A:** The Contractor shall convene a Project Team, comprised of Contractors and individuals from the RDF ACT and MD ACT, through at least one workshop or in person meeting, to develop the use case scope, restraints, Marine Debris geospatial data products, and other requirements. (30%) – Due October 2013

**Activity B:** The Contractor shall conduct up to three iterative development cycles, through prototype and evaluation. Contractor deliverables include: all versions of all intermediate products, including but not limited to text descriptions, concept maps, models, charts,
ontologies, and software source code; working prototype portal; and complete portal and user documentation and best management practices. The Contractor’s proposal shall include the details of delivery, including product descriptions and formats, and the proposed timeline for each major step of the development cycle. The final portal and all documents must be delivered by the dates specified in the contract. (60%) - Due June 2014

Activity C: The Contractor will work with the RDF ACT to integrate the software or web application into the RDF website and ensure seamless connectivity with the West Coast Data Portal and Federal Ocean.data.gov. (10%) - Due on or before September 30, 2014

Proposal Requirements and Information

Title of Position: West Coast Regional Data Framework Data Portal Developer

Work Location: California, Oregon or Washington. Travel throughout the West Coast might be required.

Direct Questions to: Todd Hallenbeck
RDF Program Coordinator
West Coast Governors Alliance
408.482.6807
Todd.r.hallenbeck@westcoastoceans.org

Compensation: The Data Portal Developer will provide services described in this RFP as an independent contractor for the duration of 12 months or until the project is completed. Compensation for the entire project, including travel, to be commensurate with experience will be for up to $110,000.

The Data Portal Developer will report to the Project Team, comprised of members of the RDF and Marine Debris ACTs, with regard to fulfillment of the Contract duties and work task scheduling. The RDF Project Coordinator will, in consultation with members of the RDF and MD ACTs, have the authority to terminate the contract with the Contractor in the event of unsatisfactory or nonperformance of the Contractor’s duties.

The Data Portal Developer shall be an independent contractor and is not in any way considered an employee or agent of any governmental agency. No fringe benefits are provided. As an independent contractor the Data Portal Developer will be responsible for direct payment of Federal, State, or local taxes and will provide their own equipment such as a computers, software, phone lines, etc. necessary to complete the required tasks.
Selection Criteria

The skills required include strong communication and organizational skills and knowledge of geospatial data discovery (e.g. catalog), visualization (e.g. web-maps), and dissemination services (e.g. data access/download).

We anticipate and encourage that potential contractors propose a team approach to this RFP, seeking to incorporate the range of expertise needed to successfully complete the project. In this approach, different team members may satisfy different minimum qualifications. Please indicate in your proposal who is satisfying which requirements.

MINIMUM QUALIFICATIONS (listed in order of importance):

• Significant use case development experience. Proven experience developing software and web applications using the semantic web technology approach. 
• Advanced degree in natural science, computer science, or related disciplines, and/or 7-10 years professional experience. Experience in coastal and marine disciplines preferred. 
• Demonstrated knowledge and experience integrating and modeling geospatial data. 
• Demonstrated experience developing web GIS applications. 
• Demonstrated experience conducting outreach, facilitation, and managing diverse user communities. 
• Familiarity with web development and maintenance.

ADDITIONAL DESIRED KNOWLEDGE AND SKILLS:

• Demonstrated ability to communicate to users with a range of disciplines and technical skills regarding the use of geospatial data. 
• Knowledge of West Coast marine and coastal data, including oceanographic data types and formats. 
• Experience with data integration and temporal modeling. 
• Familiarity with common metadata and web service standards. 
• Effective analytical, problem-solving, communication and interpersonal skills.

Submission of Proposal

PROPOSAL REQUIREMENTS:

A. To ensure an objective and fair review of all proposals, a complete proposal submission will consist of the following six (6) components:
1. Transmittal Letter - Covering highlights, unique qualifications, and intended approach for this project. The letter should include all key contact information including mailing address, email address(es) and phone number(s). Length: Eight (8) pages maximum
2. Professional Background – Provide a summary of all professional and/or project experience, including succinct biographical information in the form of a resume or CV, for each member of the project team. Length: Three (3) pages maximum/person
3. List of References – Provide a list of references for your work, including contact name, address, telephone number, nature of work, and length of engagement. Length: One (1) page maximum
4. Detailed Budget – Provide a proposed budget, including hourly rate for project team, expected travel, and other costs. Length: Two (2) page maximum
5. Past Work – Provide at least two examples of past projects or relevance to this proposal. Include relevant URLs, web pages, reports, etc… Length: Four (4) pages maximum
6. Available facilities – Provide a description of resources available to perform the Contractors duties, e.g. computer, software, internet connection, etc. Additionally include any known restrictions on travel availability. Length: One (1) page maximum

B. Proposals should provide straightforward and concise descriptions of the proposer’s ability to satisfy the requirements of this RFP. The proposal must be complete and accurate. Omissions, inaccuracies or misstatements may be cause for rejection of a proposal.

C. Proposals received by 5:00pm PST, Friday Aug 30th will receive full consideration. Late submittals will be considered at the RDF ACT’s discretion.

D. Email submission of the proposals is preferred. Please send your submission to todd.r.hallenbeck@westcoastoceans.org.

Proposal Evaluation:

After it is determined that the minimum qualifications have been met, a panel of reviewers from the Marine Debris and Regional Data Framework ACTs will evaluate and rank the proposals based upon the quality of proposal (40%), strength of experience (40%), and the demonstrated capacity for completion of the project (20%).

Anticipated timeline: Proposal Review: Sept 1-13
Contract negotiations: Sept 16-20
Work Commences: Oct 1
A. Proposals must be submitted for the performance of all the services described herein. Any deviation from the work specifications will not be considered and will cause a proposal to be rejected.

B. A proposal may be rejected if it is conditional or incomplete, or if it contains any alterations of form or other irregularities of any kind.

C. Costs incurred for developing proposals and in anticipation of award of the agreement are entirely the responsibility of the proposer.

D. A proposer may modify a proposal after its submission by withdrawing their original proposal and resubmitting a new proposal prior to the proposal submission deadline. Proposal modifications offered in any other manner, oral or written, will not be considered.

E. A proposer may withdraw their proposal by submitting a written withdrawal request signed by the proposer. A proposer may thereafter submit a new proposal prior to the proposal submission deadline. Proposals may not be withdrawn without cause subsequent to proposal submission deadline.

F. The awarding agency may modify the RFP prior to the date fixed for submission of proposals by the issuance of an addendum to all parties who received a proposal package.

G. The RDF ACT reserves the right to reject all proposals.

H. The RDF ACT will not accept alternate contract language from a prospective contractor. A proposal with such language will be considered a counter proposal and will be rejected.

I. No oral understanding or agreement shall be binding on either party.