

Representative Task Order 3 (RTO3)

EOSDIS Web Infrastructure Evolutionary Development and Sustaining Engineering

Background

The EOSDIS includes a Web Infrastructure that presents the capabilities of the EOSDIS to science and other end users. The Earthdata web Infrastructure (WI) consists of the Earthdata.nasa.gov web site as well as integrated COTS products that facilitate user support and feedback. The WI also includes software development, requirement gathering, code repository, testing and bug tracking, document management, and content management tools. A significant capability within the Earthdata WI is the Earthdata Code Collaborative (ECC), as described in the Quick Reference Guide referred to in the document section. The ECC is a “GitHub” like capability for contributing, discovering and sharing software developed throughout EOSDIS. The software contained within the ECC is available to approved users, including DAACs and winners of NASA solicitations (e.g. [Advancing Collaborative Connections for Earth System Science](#) and Sea Level Rise Portal).

The WI components are integrated to provide a seamless and fast user experience. The Earthdata WI is highly available, using a series of redundant hardware servers and network paths, to serve the multitude of NASA Earth Science data users. This web infrastructure is interoperable with other EOSDIS systems such as EOSDIS Clearing House (ECHO), User Registration System (URS), ESDIS Metrics System (EMS), Global Imagery Browse Services (GIBS) and Distributed Active Archive Centers (DAAC). Content within the website is gathered from across EOSDIS and approved prior to posting for public viewing. It is important that the Earthdata WI be accurate, innovative, and meet the highest standards of usability, since this website and these components are often the first encounters users have with EOSDIS.

The purpose of this task is to sustain, operate, and continually evolve the WI to meet the needs of the EOSDIS user community and other EOSDIS elements. The period of performance for this task is 24 months, starting on April 1, 2015.

The following assumptions shall be made in your approach to this representative task:

- Earthdata WI will continue to serve the current users without disruption to services.
- Earthdata WI hardware and software will be transitioned in place.
 - The Earthdata WI system (hardware and software) is housed at the GSFC building 32 C101 and the ESDIS Project is the responsible official.

- Current major COTS software components include, but are not limited to, Drupal, Atlassian Software (Jira, Confluence, Bamboo, Stash), Atlassian plugins, Jama, Kayako User Support Tool, Linux, Postgres, MySQL
- Current major hardware components include, but are not limited to F5 load balancers, firewalls, Linux servers, Fiber Channel SANs, Tape backup systems and other network equipment.
- No change in network components or configuration will be required on this task.
- Current hardware and software for the Earthdata WI have been thoroughly tested and systems meet current security guidelines and regulations.
- Development staff will be located at the contractor's offsite facility.
- System administration will be performed onsite (at GSFC), however system administration and operations staff will be located at the contractor's offsite facility.
- Within the current baseline, Jira, Jama and Stash (COTS) are used to handle configuration management of Earthdata WI.
- Within the current baseline, The Earthdata WI is built using PHP, Java, JavaScript, Clojure, Ruby, Python, C, Perl, MySQL
- Interactions with Earthdata WI end users will generally be via email and phone.
- All software developed for the Earthdata WI will be maintained in the EOSDIS Code Collaborative (ECC) where it will be available to all approved EOSDIS users for viewing and usage.
- The Earthdata WI is architected to operate with minimal intervention 24 hours per day 7 days per week. Earthdata platform has backups and redundant network connections in GSFC Building 13.

Related Documents

- https://earthdata.nasa.gov/sites/default/files/field/document/EarthdataIntegrationQuickReference_v1_Final.pdf
- http://science.nasa.gov/earth-science/earth-science-data/open-solicitations-earth-science-data-systems/#ESDR_earth
- <http://www.section508.gov/index.cfm?FuseAction=Content&ID=12>, particularly Subpart B – Technical Standards 1194.22 Web-based intranet and internet information and applications.

Work To Be Performed

The contractor shall be responsible for maintenance, development, and operations of all systems and software of the Earthdata WI. Components developed for the Earthdata WI must work in a coordinated way to provide a seamless user experience. The

contractor shall improve collaboration and development tools, including the website backend and user interfaces, requirement and bug tracking capabilities, continuous integration services and automated testing. A significant new application hosting capability will be added to the Earthdata WI for hosting community-developed projects. This capability will be used as a primary platform for hosting applications in a reliable, scalable and cost-efficient manner.

Specific elements are numbered below for ease of tracking task order requirements.

RTO3-1 New Capability Design and Development

RTO3-1.1 The contractor shall conduct and deliver an architectural evaluation of the system software and hardware and make recommendations for improvements.

RTO3-1.2 The contractor shall develop and implement approaches for improving the user interface and usability of the Earthdata website and collaboration tools. Prior to development, the contractor shall hold a review of the current architecture (software and hardware) and proposed changes and enhancements to the Earthdata website and collaboration tools.

RTO3-1.3 During the contract period of performance, EOSDIS services and tools will need to continually evolve. One opportunity for evolution is through the infusion of technology developed through NASA's Advancing Collaborative Connections for Earth System Science (ACCESS) Program (<https://earthdata.nasa.gov/our-community/community-data-system-programs/access-projects>) into the Earthdata WI. Software developed by ACCESS projects has traditionally been difficult to integrate into EOSDIS in general, Earthdata WI in particular, because of varying levels of support for software security requirements, portability, standards, interoperability, robustness, documentation, scalability and long term maintenance. Within this scope, the contractor shall develop a framework and process to identify, categorize and evaluate software submitted by ACCESS projects to the ECC. This evaluation should include concepts for selecting and ultimately operating ACCESS project software as a component of EOSDIS.

RTO3-1.3.1 The contractor shall create requirements for evaluating ACCESS projects for incorporation into the Earthdata WI. These requirements shall be evaluated and verified in collaboration with the wider EOSDIS community. The contractor shall present requirements and approaches to EOSDIS by October 31, 2015.

RTO3-1.3.2 The contractor shall define and implement an operational concept for selecting, evaluating, testing, adapting and running software selected from ACCESS projects for the Earthdata WI that meet NASA security, portability, standards, interoperability, robustness, documentation, scalability and long term maintenance requirements. The contractor shall describe, organize and hold a review of the operational concept by January 15, 2016.

RTO3-1.3.3 The contractor shall evaluate, gain approval, refactor, document, deploy and operate at least one ACCESS project using the framework and evaluation criteria developed previously. The selected ACCESS project shall integrate seamlessly with other Earthdata WI components as needed and agreed to. The contractor shall provide the necessary hardware to run the selected ACCESS project by January 15, 2017.

RTO3-2. Sustaining Engineering and Operations

RTO3-2.1 The contractor shall sustain and operate all systems and software within the Earthdata WI, including collaboration tools, user support tools, user feedback tools, system administration, application administration, system backups, and system security and software administration. The contractor shall release an improved Earthdata.nasa.gov website user interface, including an improved information architecture by March 31, 2016. All operations and maintenance documents shall be completed by March 31, 2017.

RTO3-2.2 The contractor shall perform modifications, updates, and alterations to operations to improve responsiveness and reduce cost.

RTO3-2.3 The contractor shall ensure that the web infrastructure is highly available. The contractor shall implement capabilities and processes to ensure hardware and software systems are continuously available, even in the event that computer hardware in GSFC Building 32 is unavailable.

RTO3-2.4 The contractor shall be responsible for addressing user questions about EOSDIS that come through the Kayako user feedback tool and/or website inquiries. The contractor shall ensure timely resolution of user issues and questions, e.g. how do I use ECHO, where can I search for science data, and how can I contact a science expert.

RTO3-2.5 The contractor shall integrate new types of Earth Science data content into the Earthdata WI by working with ESDIS partners, such as DAACs and other national and international agencies.

RTO3-3. The contractor shall support and maintain development/test and production environments for all Earthdata activities, including all COTS products.

RTO3-4. The contractor shall identify and present capabilities to increase interoperability of web services across EOSDIS. Interoperability should cover interoperability within science disciplines and DAAC services.

RTO3-5. The contractor shall develop innovative components and tools to enhance interoperability of Earthdata web infrastructure with other EOSDIS systems.

RTO3-6. The contractor shall be responsible for communicating and coordinating with the various Earthdata WI stakeholders, which include the DAACs and ESDIS.