# ESIP 2014 Testbed Request for Proposals

# I. Introduction

The ESIP Products and Services Committee with the ESIP Testbed Configuration Board are seeking proposals to carry out recently funded work to expand the ESIP Testbed.

The Testbed serves as a forum for innovative collaboration across all sectors of the ESIP Federation by enabling Federation committees and clusters to develop, test, and improve availability and accessibility of member products and services. The Testbed is intended to offer a unified environment to gain consensus on community best practices and approaches to utilizing technological advances that are of interest to the ESIP Federation community.

This year, we encourage participants to offer solutions that do one or more of the following:
- Further goals of committees, clusters and working groups by implementation of demonstration technologies using the ESIP Testbed resources and infrastructure
- Build upon the initial research and work of a previous Testbed project
- Leverage the Testbed to respond to a posted seeker project through the Thriving Earth Exchange (TEX - http://thrivingearthexchange.org/)

This RFP has the following sections; please make sure to read each as you prepare to respond:
  I.    Introduction
  II.   Resources for your Project
  III.  Past Testbed Projects
  IV.   Thriving Earth Exchange
  V.    Reporting Requirements
  VI.   How to Respond

# II. Resources for your Project

ESIP has resources you could leverage for your proposed project. These are listed in this section.

## Funding
ESIP can provide between $5,000-$7,000 for a testbed project - it is up to your team in your proposal to outline a budget and justification for amount requested. Regardless of amount requested, you should provide a breakdown of the budget and how the funds will be used, as part of your proposal. Proposals are reviewed on a first-come basis; there is no guarantee that a project will be funded but one's chances are better if submitted early. Of course, projects that require no funding are also welcome.

## Testbed Portal

The Testbed Portal is the registry of the testbed projects, and provides a place for project documentation, content registration, and document sharing for your project work. The URL for the Testbed Portal is http://testbed.esipfed.org.

## Testbed Cloud Servers

If you need a location to host your project for development, testing, and user feedback, ESIP can provide an Amazon Cloud Server instance for you to use.  The instance can remain up for the initial project timeframe, but plans should be made to migrate your project to another environment after the duration of your project in keeping with project lifecycle expectations. Additionally, your proposed budget should include estimated costs and duration for running the Cloud Server instance.

If you plan to use ESIP Amazon resources, make sure to include information about what type of Amazon instance you will require (see the Cloud Computing Adoption Advisory Tool" calculator described below as a starting point for this), how long you will need the resource, and the plan for user feedback and access of the resource. Where there is collaborative development, team members can share an Amazon instance password.

## Cloud Computing Adoption Advisory Tool

This tool - the result of a Testbed project itself - assists domain experts in selecting the most suitable cloud solution platform for their project needs. Although the output of the tool should be considered a rough estimate to be checked against actual information from Amazon, it is a good starting point. For more information and access to the tool, see http://testbed.esipfed.org/node/1244 .

## ESIP GitHub Repository

Code for testbed projects should be archived in GitHub and included in the ESIP GitHub organization at https://github.com/orgs/ESIPFed . This is a public organization, but you will need to be a member of the organization to create a repository here - please contact Erin Robinson (erinrobinson@esipfed.org) with your GitHub username for access.

## Webex

If you would like to set up regularly scheduled or group calls, contact Erin Robinson and she can provide webcast and dial-in for you to use.

## Meeting Space

ESIP also provides breakout session capabilities at the twice annual ESIP meetings to be used for planning sessions, feedback and presentation of your work, and other project-related meetings. Erin Robinson is also the contact for submitting a meeting session proposal.

# III. Past Testbed Projects

Projects outlined in this section were funded by ESIP through the Testbed in the past and may be starting points for follow-on projects in this funding round. Examples of follow-on projects might be answering additional questions posed by the initial projects that are important to complete the work or analysis of the product or service being tested, building out interfaces or other technologies that leverage the projects, or other innovative work.

If your solution is based on one of these previous projects, please explain how your solution uses the previous project's research and/or technology, and the ultimate benefit that your solution addresses.  Note:  While follow-on research is encouraged, the purpose of the testbed is not to provide funding for ongoing maintenance or operations of a product or service, so projects requesting this type of funding are not likely to be accepted.

## Testbed Task 1: Expert Skills Database

The Federation collectively includes an exceptionally wide range of expertise among its participating members. These expert skills of Federation members will be categorized in a knowledge base and offered as a service. It used the master ESIP email list of over 700 names and Drupal tools to enable any member to associate their name to a skill and associated expertise level. Currently, the skill list consists of 60 information technology (IT) skills, but members can add additional categories. A GUI enables users to search this skill list by multiple criteria - see http://www.expert-skill-system.com.

## Testbed Task 2: Unique Data Identifiers

The Preservation and Stewardship Cluster and the NASA Technology Infusion Working Group have been considering permanent naming schemes for data products http://wiki.esipfed.org/index.php/Preservation_and_Stewardship. These identifiers can serve as references in journal articles and must include versioning representations. Many naming options have been promoted, but the best choices for Earth science data require careful examination. Two datasets may differ only in format, byte order, data type, access method, etc., creating facets (dimensions) not relevant to classification schemes for books (Library of Congress, Dewey Decimal). This testbed registers several Federation datasets using multiple naming conventions to evaluate the practical differences between them.

## Testbed Task 3: Semantic Registration of Data and Services

The Semantic Web Cluster has been developing ontologies for Data Service, Data types, and science concepts http://wiki.esipfed.org/index.php/Data_Service_Ontologies. The testbed enables providers to register their products and services semantically, which will provide more precise descriptions of their offerings.

## Testbed Task 4: Cloud Computing Resource Calculator

Many scientist and geospatial application providers are considering transforming their current computing infrastructure into clouds (IaaS and PaaS);  however, it is a big challenge to select the

most suitable cloud platforms and configuration solutions for the cloud novices and even for experienced cloud users.  The Cloud Computing Resource Calculator meets this need by providing an advisory tool for:

1) Helping cloud novices understand the basic concepts and potential applications of cloud computing providers, services and technologies;

2) Assisting cloud computing early adopters to easily and effectively select the best solutions based on their unique application requirements; and

3) Periodically collecting/updating the mainstream cloud platforms' information and build an expert system and database.

The project description and the tool link are available at  http://testbed.esipfed.org/node/1244

## Testbed Task 5: Data and information Quality

An automatic classification/annotation system that assesses, monitors, and accurately reports on the quality of ESIP data and services. The project sought to include: (1) a quality model and classification engine that established a set of quality metrics for data and services. The engine will automatically derive the quality of ESIP products and services, (2) work on metadata quality which is not usually addressed, and (3)  accounting feedback from users to help rate quality of data and services.

## Testbed Task 6: Open Search and Discovery

The Discovery cluster provides a medium for Federation members to coordinate
on development, deployment, and creation of interoperable specifications for
Discovery services such as OpenSearch, DataCasting, and ServiceCasting. The initial vision of the Discovery Testbed was to support the following items:
- Setup validation for registration of ESIP services
- Encourage the ESIP Community to register their services
- Provide some form of a service cast of registered services
- Chaining together of data and services - e.g., exploring data and services mapping, brokering

The Esri Geoportal Server was used in this case to provide such an interface. For more information, see the project page at
http://wiki.esipfed.org/index.php/Discovery_Testbed_Work_Plan; the live instance is available at http://23.23.211.222:8080/geoportal/ .

## Testbed Task 7: Data Stewardship

The datasets to be addressed will include a relatively simple image  collection and a second containing granule--level data objects such as a longtime series from  multiple sensors / satellites.  The project tasks include:     (1) Preparing,  transforming  and  performing

quality control tasks on the metadata for each dataset in a storage environment that can be queried, and appended to add the identifiers from each scheme to each entity in the two datasets, (2) Map the existing metadata for each dataset into the metadata requirements for each identifier scheme for the purposes of identification and citation, (3) Track and discuss the implementation issues associated with each task per the questions previously identified by the Data Stewardship & Preservation cluster (see the initial list on the ESIP wiki at:
http://wiki.esipfed.org/index.php/Implementation_Issues_to_be_addressed ), and others as they arise, (4) Bring implementation issues to the Data Stewardship cluster as needed for discussion and resolution/decision, (5) Develop list of practical considerations for each identifier scheme, and (6) develop draft set of best practices for discussion at future ESIP Federation meetings.

## Testbed Task 8: Linked Open Research Data for Earth and Space Science Informatics

The ability to discover the technical competencies of other researchers in the Earth and Space Science Informatics (ESSI) community can help in the discovery of collaborations. In addition to collaboration discovery, social network information can be used to analyze trends in the field, which will help project managers identify irrelevant, well-established, and emerging technologies and specifications. This information will help keep projects focused on the technologies and standards that are actually being used, making them more useful to the ESSI community.

This problem was addressed with a solution involving two components: a pipeline for generating structured data from AGU-ESSI abstracts and ESIP member information, and an API and Web application for accessing the generated data. For more information, see
http://wiki.esipfed.org/index.php/Linked_Open_Research_Data_for_Earth_and_Space_Science_Informatics .

# IV. Thriving Earth Exchange

http://thrivingearthexchange.org
The Thriving Earth Exchange (TEX) is a leading platform for making a positive impact on the planet and society. Unique in its focus and ability to bring solution Seekers, scientist problem Solvers, and Sponsors/funders together, the TEX facilitates action to improve the sustainability of our planet.

ESIP would like to support the TEX through projects in the Testbed. Although not a requirement for submitting a testbed proposal, the TEX provides project ideas and potential resources with which respondents can partner to deliver a solution that shows benefit to the Seekers in TEX and the ESIP Community.

If you respond to this RFP with an idea listed on the TEX, please include in your project plan what resources are needed from ESIP to help you be successful, and a timeline for moving the project from the ESIP Testbed to the TEX Seeker's environment.

# V. Reporting Requirements

Projects chosen for funding will be expected to do the following as part of Reporting Requirements:

- Create a project page on the Testbed Portal (http://testbed.esipfed.org) that explains what your project will achieve, your project plan, and timeline
- Define when and how your project will be concluded; if longer term sustainability is a goal, please describe why it would be maintained in the Testbed longer than the project duration
- During or at the conclusion of your project, post any resultant code and/or a snapshot of the Amazon instance to the ESIP GitHub organization repository, and place the link on your project page in the Testbed Portal
- At the conclusion of your project, complete a "State of the Art" description on the ESIP Commons (http://commons.esipfed.org/node/add)
- You will be asked to present your project progress at Product & Services meeting calls at its halfway point, and also upon its completion
- Presentations/Posters at ESIP Summer &/or Winter meetings are highly encouraged

# VI. How to Propose

### Document Guidelines

A proposal should be **3 pages in length or fewer** and should specify:

a) Project description; how project fits in with previous Testbed work, if applicable
b) Project plan, budget, and timeline. If you plan to use ESIP Amazon Server resources, provide information about what kind of Amazon instance you need, and include the cost to run the instance for the duration of your project in your project budget
c) Names and descriptions of roles for team members
d) Any special skills or intended outcomes that the proposer can bring to the task
e) The ultimate benefit that your solution brings to the ESIP community

### Submission Instructions

Proposals may be submitted by any ESIP organization, an individual within such an organization, or a team of such individuals. Civil servants are restricted from receiving ESIP funds. The proposal should include a CV for any participants (not part of the 3-page proposal). Proposals or inquires should be sent to the ESIP Testbed Configuration Board at tcb@esipfed.org for vetting.

### Deadlines

Proposals may be submitted during and up to the consideration deadline for the fiscal year. For FY2014 projects, please submit your proposal by or before **April 30th, 2014**. All project work for FY2014 must be completed by **September 30th, 2014** - please consider this end date when you propose your project plan. Proposals are reviewed on a first-come basis; there is no guarantee

that a project will be funded but one's chances are better if submitted early.

For FY2015 projects, proposals must be submitted on or before **October 1st, 2014**, or on or before **April 30th, 2015**.