

EarthCube Working Group Proposal

1. Working Group name:

EarthCube Components Test-bed Working Group

2. Submission date:

December 09, 2014

3. Short name (no more than 3 words):

Test-bed WG (TWG)

4. Statement of need and work (500 words max):

Two items were identified as priorities in the Oct 6, 2014 TAC meeting:

- Begin facilitating community convergence on an EarthCube Architecture
- **Coordinating a test bed for EarthCube components**

Clearly, there is a need for EarthCube to support development and validation of EarthCube components. Clear objectives, definition and capabilities of the test bed will allow these intersections to be better defined and illustrated. **The TWG will define a test bed working with the EC and user communities that will be capable of facilitating the integration of separately funded EC components and promote collaborative planning, testing and integration of technologies.**

This test bed will be used by EarthCube participants, particularly, EarthCube funded project teams, EarthCube working groups, and users. It should provide an infrastructure that is a hands-on, collaborative prototyping environment designed for rapid development and assessment. Its architecture and operation should be open and should encourage widespread participation. To create a practical capability and to minimize the costs of participation, the test bed should allow easy and rapid interfacing of technologies into a central test and evaluation environment. This environment should be expandable as represented by cloud computing or similar capabilities. In addition, it will have provisions for other interested groups to engage with.

Specifically, the test bed seeks to:

- Serve as a common ground for prototyping, testing and integration of EarthCube components and products
- Facilitate verification and validation of technologies, use cases, architecture design, components, scalability, interface specifications and standards
- Provide a platform for demonstration and showcasing of EarthCube technologies for Earth cube science users, technologists and the broader geosciences community.

Given the broad range of activities in the funded projects, the development of the test bed should be phased to enable rapid and early prototyping of a selected subset of capabilities.

5. End goal and deliverables:

The TWG proposes to carry out the following:

1. Define and then send a request to all funded projects (including Conceptual Design projects) soliciting their needs. This could be done in collaboration with other TAC working groups, as part of a more comprehensive survey. The request should include (1) How the test bed can support their test and integration needs; (2) What interfaces the building block exposes (if any); and (3) The timeframe of interest for interface with and utilization of the test bed.
2. Work with the TAC and other working groups to identify elements where the test bed will intersect and could support the working group objectives. This includes, for example in the TAC, use cases, gap analyses and standards.
3. Assess existing relevant test beds and capture their characteristics.
4. Document requirements of the test bed including technical and operational requirements.
5. Provide a web-based community forum for feedback on test bed requirements.
6. Define a high-level test bed architecture that will meet the above objectives.
7. Formulate recommendations for steps forward including potential test bed implementations and plans for test bed sustainability.

Deliverables include:

- An inventory of funded projects' test bed needs
- A list of existing relevant test beds and their attributes
- Test bed requirements for EarthCube
- Forum to solicit and collect feedback
- High-level test bed architecture
- Recommendation for next steps

6. Committed participants (at least 3 and at least from 3 different organizations):

Ken Keiser
Emily Law
Chris MacDermaid
Jay Pearlman
Mike Stults
George Percivall
Don Middleton
Danie Kinkade

7. Chairs (specify their time commitment to the working group):

Emily Law, Co-Chair
Ken Keiser, Co-Chair

8. Final deliverables (with dates for draft releases and public requests for comments):

Test Bed requirements (April 2015) and Recommendations for test bed implementation (July 2015).

9. Timeline (no more than one year, with concrete goals for the first 3 months and planned goals for the rest of the quarters):

Inventory of Funded projects test bed needs (February 2015)
Test Bed requirements (April 2015) and
Recommendations for test bed implementation (July 2015)

10. Alignment with EarthCube goals and/or Standing Committee priorities:

The test bed is an area of intersection between the other working groups of the TAC (for example, in support of addressing gaps and use cases), the building blocks, the architecture concepts and the RCNs/user community.

11. Risk assessment (what might lead to failure, how to mitigate those risks):

The work is to be done on a volunteer basis. Time and commitment is uncertain, thus a risk factor. More than one WG co- chair will allow bridging gaps due to other commitments
Response from the Funded Project PIs is desired and may be difficult to get in some cases. Personal contacts will be used to solicit response. Funding will be necessary to stand-up test bed capabilities.

12. Resources available to the working group (eg, datasets, people, IT, etc):

The following are planned and need to be supported:

- One face to face meeting
- Webex, workspace support
- Interface with EC funded projects (including face to face meetings where appropriate) for detailed discussions of requirements and interfaces
- EC-funded web and computing resources to support conceptual design of a test bed for the integration and testing of technologies

13. Requested total estimated budget and brief budget justification:

The requested budget will provide support for working group meetings and interfaces. Where visits to building blocks and others for detailed requirements and interface discussions are necessary, support for travel and meetings is included. A budget consistent with the schedule is provided on a separate page. The amount requested is: \$9895 for the period 6 months.

- Travel for F2F meetings for 6-8 persons (example location: Boulder, CO)
- Travel for 1-person for meeting with key funded PIs (Boulder, Washington DC, Los Angeles/San Diego)
- Included at no cost - support from governance for organizational activities, web meetings and web site.

14. Initially appointed host (the host will be committed to respond to inquiries about the group and will put on the group's web site a clear description of status, the host can rotate to other people throughout the life of the working group):

Emily Law