Federation of Earth Science Information Partners
Partnership Application

Please complete all sections to the fullest extent possible and forward completed application to: Carol Meyer, carol.meyer@earthsciencefoundation.org. If you have any questions, please contact her at 877.870.3747.

I. CONTACT INFORMATION

A. Primary Contact/Principal Investigator

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II. ABOUT YOUR ORGANIZATION

A. ORGANIZATION/DIVISION/PROJECT NAME:

University of North Carolina-Chapel Hill / RENCI (Renaissance Computing Institute) / iRODS Development and Support

B. OVERVIEW OF YOUR PRIMARY ACTIVITIES in regards to the Earth Sciences Community (200 words or less)

New technologies allow the collection of increasing amounts of data, and communities face growing needs for state-of-the-art data management that respond to demands for data use and support. The integrated Rules-Oriented Data System (iRODS) is a policy-based middleware for managing data collection life cycles. It establishes a data grid framework to support and facilitate the development of specialized data services for data sharing, re-use, re-purposing, and archival/retrieval. iRODS is used in many communities, ranging from library catalogs and records, bioinformatics, and Earth Sciences.

The Renaissance Computing Institute (RENCI) is a research institute at UNC-CH whose primary mission is to advance the science of CyberInfrastructure through partnerships with researchers and application-driven groups. A main science driver for RENCI's activities is within the Earth Sciences community, in particular coastal oceanography, with close ties to NOAA IOOS and regional association activities. In all communities, sound data policies are critical, and software such as iRODS allows implementation and enforcement of policies for distributed digital data is essential for supporting those policies. RENCI is working to expand iRODS use and to support it as a long-term and sustainable solution for data management.

C. Please list and briefly describe the primary product(s) or service(s) that your organization provides (will provide) to the Earth Sciences community.

- *RENCI works to support iRODS data management technology. Support can include training, troubleshooting and bug fixing, and specialized rules and module development. Community iRODS code is released 2-4 times per year; the first Enterprise iRODS-E code is expected out in 2012, with subsequent releases expected at roughly 18-month intervals.*

- *iRODS is in use or being evaluated by several Earth Sciences Communities (climate - NASA, NCDC; hydrology - CUAHSI; oceans - OOI). iRODS runs on a variety of underlying storage systems and abstracts out policy implementation, making data management independent of storage infrastructure and location. This greatly enhances interoperability. RENCI can aid users with the adoption of iRODS, its customization to meet local needs, and to its extension to wider communities.*

- *Interoperability is a driving force for iRODS development and support: integration with netcdf is under investigation now and new drivers are created regularly, as funding permits, in response to user requests for expanded infrastructure support.*

D. Please give a main website address for the proposed Partnership:

http://www.renci.org
http://www.irods.org

III. HOW YOUR ORGANIZATION WILL BENEFIT FROM/CONTRIBUTE TO THE EARTH SCIENCE INFORMATION PARTNERS (ESIP) FEDERATION

A. Describe current or anticipated users of your products and services and how you think the Federation can help you better serve this population. (200 words or less)
Current and prospective iRODS users in the Earth Sciences area include: NASA, NOAA/NCDC, NSF's OOI, and CUAHSI. There are many others outside the Earth Sciences communities: French National Library, the Broad Institute at Harvard and MIT, the Sanger Institute, and others. Participating in ESIP will allow RENCI and the DICE group to communicate with the larger Earth Sciences community to better understand data management concerns, needs, and requirements. Additionally, RENCI is interested in the intersection between its other data science initiatives (focused in the biomedical and informatics areas) and Earth Sciences. We anticipate that the ESIP forum will generate interesting discussions about the larger data management field and broaden these discussions with lessons learned in other areas.

B. Describe any Earth science technologies that you have developed and are willing to bring to the Federation's efforts to provide best-practices. (200 words or less)

*iRODS is not an Earth Science focused technology, but rather a generalized data management middleware and strategy that applies to essentially any data with a need for policy-based access, archival/retrieval, re-use/re-purposing needs. RENCI is committed to iRODS applications and development, and will contribute its substantial expertise in iRODS to Earth Sciences communities to convey lessons-learned and our best-practices experience**, where appropriate and invited to do so**.*

C. Describe how your proposed membership would contribute to the efforts and the mission of one or more standing committees, working groups and/or clusters. See Page 3 for descriptions of the different activities of the various standing committees, working groups, and clusters. (200 words or less)

RENCI's iRODS activities are most closely aligned to the Data Preservation and Stewardship cluster and the Information Technology and Interoperability committee. Our connection to the Data Preservation and Stewardship cluster is through the iRODS software and technology itself, by providing a technology that supports many of the activities of this cluster as well as its individual members.

iRODS also bridges across and between heterogeneous infrastructures to facilitate data sharing between administratively separate groups. It supports the implementation of transformations and services that allow cross-disciplinary interoperability. Interoperability is thus a principal mission of iRODS and aligns it and RENCI closely to the IT and Interoperability committee.

D. Describe your own use of Earth science information and data and how you would see this use enhanced by your partnership in the Federation. (200 words or less)

RENCI has a research focus area in coastal oceanography, specifically in coastal hazards and risk assessment. This focus area uses coastal data from NOAA's National Ocean Service and National Data Buoy Center as well as LIDAR and bathymetric data sets. RENCI also operates a real-time storm surge and waves forecasting system for North Carolina (nc-cera.renci.org) that provides storm surge and wave information to end users (e.g., coastal National Weather Service offices, local coastal emergency management groups) during hurricane season. We would be particularly interested in engaging in discussions about best-practices in risk and hazard communication, as well as potential collaborations in the iRODS/Earth Sciences cross-section. As a pilot project, RENCI and NOAA's National Climate Data Center have prototyped a Q2 precipitation re-analysis using iRODS for data management and computer resources at RENCI used for the analyses. These analyses are treated as iRODS rules that are acted upon when new Q2 data is put into the iRODS data grid. We would benefit substantially from other use cases and driving problems for both iRODS and our Earth Sciences focus area.

IV. YOUR CHOICE OF MEMBERSHIP TYPE. PLEASE PICK ONE.

ESIP-I (primarily a data center/archive) ☐

ESIP-II (primarily a research center) ☒

ESIP-III (primarily applications and education) ☐

ESIP-IV (primarily a sponsoring member) ☐

V. Any other comments about your proposed membership and its relation to the Federation that you wish to provide.

RENCI, in partnership with the DICE group at UNC, submitted and won one of the second round NSF DataNet awards; ours is the DFC (the DataNet Federation Consortium). This award is important toward growing a national data infrastructure at the service of interoperability between groups and disciplines. We already collaborate with DataOne, an existing ESIP member.

RENCI would also be interested in potentially hosting a local ESIP discussion group in the Research Triangle Park area.

Thank you for your application for partnership in the ESIP Federation.

List of Federation Committees and Clusters

Administrative Committees

Executive Committee: Comprised of all standing and administrative committee chairs, ESIP Type Representatives, the President and Vice President of the Federation. Oversight body for most day-to-day activities of the Federation, acts on behalf of the Assembly between meetings.

Constitution and Bylaws: Provides counsel on matters related to the constitution and bylaws and other related issues (e.g. amendments to government documents)

Finance and Appropriations: Oversees financial resources of the Federation, including the annual budgeting process.

Partnership: Reviews and processes all applications for membership before making applications available for review by members of the Federation. Deals with other membership-related issues.

Standing Committees:

Commercial Development: Promotes a forum wherein commercial development of Earth science information can be fostered. (inactive)

Community Engagement: Provides a forum for the Federation to promote partner products and to engage new users for data products and services. (inactive)

Education: Provides a forum to make accessible to educators and learners at all levels in both formal and informal educational contexts the Earth science data, information, tools, and curricula available within the ESIP Federation.

Information Technology and Interoperability: Provides a forum for discussing information technology and interoperability issues of the Earth science community and serves as a central point for activities in this realm.

*Products and Servic*es: Provides a forum for defining best practices and defining requirements for earth science products and services. Currently is involved in developing an inventory of partner products and services.

Clusters (presently active, April 2009):

Web Services
Semantic Web
Data Preservation and Stewardship
Decisions
Air Quality
Federated Search
Water