Incorporated Research Institutions for Seismology

Request for Proposal

IRIS Data Management System
Data Product Development

February 9, 2011

RFP
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I. Background

A.   Information about IRIS

The Incorporated Research Institutions for Seismology (IRIS) is a consortium of U.S. educational and not-for-profit organizations dedicated to exploring the Earth's interior through the collection and distribution of heterogeneous geophysical data. For more information about IRIS please visit http://www.iris.edu/hq/about_iris/.

B.   Information about this RFP

The IRIS Data Management System (DMS) is issuing this Request for Proposals (RFP) to invite individuals at Full Member Institutions of the IRIS Consortium to participate in the development of data products. Historically, the IRIS DMS has focused on the management of raw waveform data. Recently the DMS has initiated a data product effort to create products derived from and to complement the raw waveforms. This effort includes community input in the form of the IRIS Data Products Working Group.

This RFP is being issued because IRIS believes there are many data product ideas and existing data products in the community that are valuable and would benefit a wider audience if openly available from the IRIS Data Management Center (DMC). The intention is to complement the existing data product development effort at the DMC with the expertise and resources of the community. We do not anticipate funding of external product development to be an on-going activity within IRIS. In addition to receiving new products, the DMS will use this process to better understand the types of products, systems and approaches that are taking place in the community.

Traditionally, data products are the results of processing applied during research projects. As processing techniques of waveform data have matured they have become accepted by the community and make ideal candidates for products useful to a wider audience. Data products are often reductions of raw data that serve either as insightful summaries of the time series data or as new foundations, or stepping-stones, to higher levels of research. Products can span the range of plots or movies derived from waveform data to the modernization of unique data sets that are otherwise unavailable.

The DMC manages an archive including over 18,000 globally distributed stations spanning over 40 years with new stations being added continuously. Currently, most data is collected in near real-time. Rapid access to this growing data set is a distinct advantage for production of products that require a large data set. Another advantage of researchers collaborating with the DMC on data products is that the long term creation and management of the products will not need to be done by individual research groups.

II.   Project Description

The IRIS DMS program requests proposals for the development of specific data products and, when appropriate, the software to generate them automatically. Data products should be generally useful to as much of the IRIS community as possible. The total anticipated funding is $100,000. IRIS intends on making 4 to 6 awards up to $25,000 per award. Funding may be used to support all project expenses including indirect costs and student or PI salary. The level of funding is targeted as small to medium product development projects or to productize results from otherwise funded research projects.

All products will be archived and served from the IRIS DMC, either from the DMC's primary waveform repository or the DMC's product management system. In the case of products that are routinely generated, the software system will need to run at the IRIS DMC.

III.   Tasks and Deliverables

A.   Description of Need

We would like to challenge the community to think of valuable and novel data products that will be used by the current and future IRIS community. As the volume of raw data available to the community and the number of methods used to process them continue to grow, data products that bridge the gap between raw data and the research frontier will become increasingly important. IRIS will consider any product that is deemed valuable to our community.

B.   Requirement Details

Types of data products that we envision include:

- Products which serve as stepping stones to further processing, i.e. pre-processing for more advanced processing. Examples include the calculation of envelope functions and the calculation of receiver functions;
- Visualizations of the data in ways that provide insight to geophysical processes and/or the data set;
- The "productization" of research results which are generally useful;
- Educational products that increase accessibility to data and information for non-researchers;
- Modernization and availability of currently inaccessible data sets. Examples include the conversion and documentation of unique data sets such as the seismic recordings from the Moon or other data sets that require updating for modern requirements;

Proposals must clearly address the input, computational, maintenance and storage requirements discussed below. The input and computational requirements are only appropriate for products that will be generated at the DMC.

Input requirements

Proposals for products to be generated at the DMC must identify all input information needed to create the product such as raw time series data, metadata, response information, CMTs, model data, etc. For input requirements not available at the DMC the proposal must identify how needed input will be collected. Please include an estimate of the storage required for the input requirements.

Computational requirements

Proposals for products to be generated at the DMC must include estimates of the computing resources required for the software system that generates the product. For example, the number of cores and expected run time for generating a single product, memory and other hardware requirements. The DMC has traditional, potentially virtualized, servers and has access to larger scale computing facilities through the University of Washington. Contact the DMC with questions regarding potential computing power that may be applied to your transferred product.

Maintenance and storage requirements

Proposals must include estimates of the level of maintenance required. For products to be generated at the DMC this includes the supporting software system. For all products please include estimates of the storage requirements, and estimates for the growth rate if applicable.

Information on Product Management

The IRIS DMC will be responsible for the long-term management of products. Whether products are managed as part of the SEED waveform archive or the product management system appropriate metadata are required to describe the product. The metadata are used both as a record of product creation and as search parameters. For products that ultimately end up as time series in SEED format the metadata should be described in SEED with the likely addition of external documentation referred to by the SEED metadata. For products that end up in the product management system metadata must be generated in an appropriate form of XML.

The DMC's product management system uses XML-based metadata that typically includes parameters common to all products such as geographical extent and time range in addition to product-specific parameters. The DMC will work with product developers to determine the metadata requirements for each product. The product management system is focused on the following functions:

- Storage of product data (metadata and primary data) including handling updates to products with a simple versioning scheme.
- Retrieval of product data for end users including search interfaces (web and web-service).

The product management system is, in particular, not suited to be a framework for product generation or translation. Products must be fully formed in their delivery format before being submitted to the system.

C.   Other Criteria

- Products must be fully documented including all processing steps and parameters.
- Products must be able to be distributed free of charge, without any licensing requirements.
- The software required to generate products must be easily maintained and efficient in operation.
- The software required to generate products must be fully documented.
- The software required to generate products must operate on either Linux (preferably) or Solaris >= 10.
- The source code of the software required to generate products must be submitted to the DMC and furthermore be distributable from the DMC free of charge, without any licensing requirements beyond licenses approved by the Open Source Initiative (www.opensource.org).
- Highly portable software that can be transferred between current and future versions of Linux, Solaris and MacOSX will be favorably reviewed.
- Representative data products, and the software to generate the product if applicable, should be available for review and testing within six months of the issuance of the award and a final release version available within one year.
- Resources required to transfer the product and/or software system to the IRIS DMC must be included. When deemed appropriate by the IRIS DMS Program Manager, a one-person trip to the DMC will be required to assist in the integration.

D.   Project Deliverables

The project will result in the delivery of either products or a product generation system to the IRIS DMC that meets the requirements and criteria identified above. Products should be in a form that does not require further processing by DMC systems to archive and manage.

IV.   Award Conditions

This award will be issued as a Cost Reimbursable Subaward Agreement. Funding for this activity is provided to IRIS through a Cooperative Agreement from the National Science Foundation. Awardee(s) must therefore comply with all terms and conditions as specified in the Subaward Agreement (Appendix A).

V.   Respondent Instructions

Proposals must be from individuals at Full Member Institutions of the IRIS Consortium, see http://www.iris.edu/hq/about_iris/membership/member_institutions/ for current membership.

A.   Proposal Evaluation Criteria

Proposals will be evaluated on the basis of both the written proposal and any written correspondence received as part of the clarification of the RFP. However, IRIS may use information other than that provided by the Respondent in its evaluation.

An evaluation panel consisting of members of the IRIS DMS staff, the IRIS Data Products Working Group with input from the DMS Standing Committee, the USArray Advisory Committee and selected members of the IRIS community will rank proposals on the following criteria (not listed in order of priority):

1. Scientific and educational relevance and impact of proposed product;
2. Probability of success of the project;
    a. Track record of PIs
    b. Experience in the relevant domain(s)
    c. Experience in creation methods (programming, etc.) proposed
    d. Planning for transfer to the DMC
3. Cost-benefit analysis of tasks proposed;
4. Soundness of product creation method proposed;
5. Resources available at proposing organization; and
6. Clear estimation of resource requirements at the DMC.

Proposals must be sure to address all criteria specified in this RFP.

B.   Proposal Budgets

A typical proposal should be for $25,000 or less. Product proposals for larger amounts will be considered but are likely to be considered only if funds are available after considering all proposals for $25,000 or less.

Proposal budgets must be submitted electronically in Excel format using the budget template found in Appendix B. Please refer to the "Instructions" sheet in the budget workbook prior to entering budget detail. Detailed budget justifications for all costs should be provided along with the budget.

C.   Key Personnel

Key personnel to be committed to the project should be identified. The qualifications of key personnel should be included in the proposal. The proposal should identify the process to be used to notify IRIS before reassigning a key person, which is subject to the approval of IRIS.

D.   Proposal Length

The proposal should be concise and clearly identify the specific data product and method of production that will be developed. It should be limited to 8 pages (excluding cover page, figures and budget pages) in length with 1-inch margins and 12-point font. Proposals may reference electronic supplements available on the Internet. The 8-page proposal with budget pages and figures must stand on its own with respect to the evaluation.

E. Transmittal Information

The proposal should include a cover page with the following information:
- Name and Address of the Responding Organization
- Project Title
- Project Period of Performance (May 1, 2011 – April 30, 2012)
- Name, Title and Contact Information of the Key Technical Personnel,
- Name, Title and Contact Information of the Key Administrative Personnel, and
- Name, Title, Contact Information and Signature of the person authorized to submit the proposal.

F. Supplemental Information

Any supplemental information furnished by a Respondent after the due date for receipt of proposals will not be considered, unless IRIS formally requested such information. IRIS may request a Respondent to furnish such supplementary information as is required, in the opinion of IRIS, to assure that the Respondent is sufficiently competent and financially sound to successfully perform the contemplated work.

G. Rights of Retention

Following submission of proposals and final evaluation, IRIS will have the right to retain the proposals, maintaining them in confidence. All documents submitted in response to this RFP shall become the property of IRIS.

H. Clarification of RFP

Any questions, requests for clarification or requests for data in connection with this RFP shall be made no later than **5:00 PM EST Tuesday, February 22, 2011** via email to:

DPDev-proposal@iris.washington.edu

Questions and all responses will be publicly posted at: **http://www.iris.edu/hq/rfp/dpdev/q&a**

I. Cost of Proposal

IRIS will not reimburse the Respondent for their cost of preparation and submission of a proposal.

J. Confidentiality

The recipient of this Request for Proposal acknowledges that this RFP, including without limitation any addenda to this RFP, or oral information about this RFP, are IRIS' proprietary and confidential property (hereinafter "Proprietary and Confidential Information"). News or other information releases pertaining to this RFP shall not be made without prior written approval from IRIS.

K. Proposal Submission

Proposal submission deadline is **5:00 PM EST Friday, March 11, 2011** and should be submitted in electronic form (Adobe PDF or MS-Word) to:

DPDev-proposal@iris.washington.edu

The proposal must be received by the proposal submission deadline to be considered for this award.

L. Other

By submitting a proposal, the Respondent agrees to all applicable provisions, terms and conditions associated with this Request for Proposal.

VI. Awardee Selection

IRIS reserves the right to make an award based solely on the information provided, to reject any or all proposals, to accept any proposals, or to effect any combination of proposals. IRIS reserves the right to conduct discussion or request proposal revisions, if deemed necessary.

The awardee(s) selected for the award(s) will be chosen on the basis of IRIS evaluation and determination of which Respondent will provide the greatest benefit to IRIS, not necessarily on the basis of lowest price. IRIS has no obligation to reveal how proposals were assessed. Therefore, proposals should contain your best terms within the proposed functional and technical approach.

IRIS reserves the right to reject any or all proposals that are deemed to be non-responsive, late in submission or unsatisfactory in any way. IRIS shall have no obligation to issue an award for work, goods and/or services as a result of this RFP.

Awards will be contingent upon the availability of funds and IRIS will solely be responsible for determining which, if any, proposals will be funded.

VII. Preliminary Schedule

The following schedule may be changed or modified by IRIS:

The timeline for this project is:

1. RFP issued: February 9, 2011
2. Respondents' requests for clarification of RFP due: February 22, 2011
3. IRIS response to request for clarification of RFP due: March 4, 2011
4. Proposals due: March 11, 2011
5. Awardee(s) selected: April 8, 2011
6. Respondents notified of determination: April 13, 2011
7. Subaward issued: May 1, 2011