Request for Proposals
4/21/08

Evaluation of the IRIS EDUCATION AND OUTREACH Program

I. Purpose

The aim of this RFP is to design and implement a third-party Program Evaluation of the Incorporated Research Institutions for Seismology Education and Outreach Program (IRIS E&O) that will inform the work of an external panel review process. This evaluation will be based primarily on data that the program has collected as part of its continuous improvement efforts, though it is anticipated that some additional data may need to be collected. IRIS is a consortium of over 100 research universities and institutions dedicated to monitoring the Earth and exploring its interior through the collection and distribution of seismological data. Funded through a cooperative agreement with the National Science Foundation under the Division of Earth Science's Instrumentation and Facilities program, IRIS has developed four core programs to serve the seismological community. These programs are the Global Seismographic Network (GSN) consisting of over 140 broadband seismic stations, a Data Management System (DMS) to store and deliver over 40 terabytes of digital data, a program to support networks of portable seismographs for investigating the tectonics of the lithosphere and structure of the earth (PASSCAL), and an Education and Outreach (E&O) program.

II. The Evaluation Context

The design and implementation of an evaluation for the IRIS E&O Program shall include conceptualization, analysis of collected data, minor collection of supplemental data, and interpretation in appropriate collaboration with IRIS E&O staff. The evaluation shall produce information concerning IRIS E&O at the program level that documents effectiveness of meeting the goals of the program including but not limited to the following:

1. Serving the IRIS community and recognizing the research and education achievements of IRIS seismologists
2. Increasing society's understanding and appreciation of seismology
3. Increasing the quality of seismology education
4. Encouraging and supporting the development and global participation of a diverse Earth science workforce.

The program evaluation shall draw upon multiple methodologies to provide evidence demonstrating how the program works, allocation of resources, program improvement and worth of the investment relevant to all components of the program. The contractor may propose additional data collection and evaluation methods to examine participation experiences and trends over the life of the program.

III. Background

Through its E&O Program, the IRIS Consortium is committed to making significant and lasting contributions to society's understanding of the Earth system through seismology and the unique resources of the IRIS Consortium. The IRIS E&O course of action is to examine existing resources related to seismology education and communicate with potential users in order to identify their needs. Then, based on these assessments, the program seeks to develop/enhance/implement products and activities that meet these needs and are grounded in research-supported best-practices. To achieve our mission, these products and programs are designed to serve a spectrum of audiences including the general public, students and teachers in grades 6-12, and post-secondary students and faculty, including the IRIS community. In line with the strengths of the IRIS Consortium, the exploration and explanation of seismic data are at the core of all IRIS E&O activities.

IRIS created the E&O Program in 1998 to support and augment its existing three core programs, in recognition of the need to communicate the results of scientific research to the public more effectively and to enhance society's understanding of seismology. Funded largely from the core IRIS NSF grant, the initial program consisted of one staff member and a small number of components. Since 2002, the E&O program has slowly grown into its current size of 4.5 FTE, which has allowed for the development of the following key elements:

- *Summer internships*, where 50 undergraduates have conducted research at 25 different institutions and over 80% have gone on to pursue advanced degrees
- *Professional development experiences,* where over 680 teachers and college faculty have attended 1-day or longer IRIS workshops, and those instructors now annually impact the learning of an estimated 50,000 students
- *Seismographs in schools*, where over 120 schools are operating AS1 seismographs and using recorded seismic data as part of their instruction
- *IRIS/USGS museum displays*, with over 13 million people each year visiting the 3 museums where we have major displays
- *IRIS/SSA Distinguished Lectureship*, with nine lecturers having given over 45 presentations to public audiences of up to 400 people each at science museums and universities throughout the US
- *Web pages and interactive software*, with 1.8 million visitors to the IRIS Web site in 2006, and the largest percentage using the Seismic Monitor to examine the Earth's seismicity in near-real time.
- *Publications*, where over 75,000 IRIS educational posters have been distributed to schools, colleges and universities, including 22 countries worldwide.

A more detailed overview of these and other core elements of the IRIS E&O program can be found in Appendix A.

Existing Assessment Efforts

In an effort to continuously improve the products and programs offered, and to ensure the most effective use of both time and financial resources, IRIS E&O activities are assessed via a combination of internal and external assessments. To date this strategy has focused primarily on internal formative assessments, given the on-going nature of the vast majority of our efforts, with occasional external evaluations used to validate conclusions from our internal assessments.

Examples of the types of assessment data we have collected and used to drive the continuous improvement of our programs include:

- Website statistics
- Quantities of materials distributed
- Number of participants
- Participant attributes and perceptions
- Follow-up surveys and interviews.

Specific examples are given in Appendices A, D and E. We collect assessment data for all new activities and continue to collect assessment data for ongoing activities where new data may be of use in improving the activity. The logic model for the program and its description are in Appendices B and C.

In addition to informing IRIS E&O staff's day-to-day activities, summative and formative assessment data are reported to the IRIS E&O Standing Committee. This oversight body, comprised of members of the seismology and geoscience education communities, meets twice each year to review the activities of the E&O Program, provide regular guidance to the running of the key elements of the program, recommend improvements and additions to the program, and to approve the annual budget. This committee, through its chairman, then reports to the IRIS Board of Directors, which has the ultimate authority for the E&O Program.

IV. Evaluation Perspective and Guiding Questions

The evaluator shall design and conduct a *program level* evaluation of IRIS E&O. The evaluation should be a systematic examination of all components of the IRIS E&O Program and the events, processes, and outcomes of the program across activities. The evaluation should include:

- conceptualizing theories of change underlying various components of the program,
- posing significant, empirically-testable questions relevant to the issues to be addressed in relation to program goals,
- providing a coherent and explicit chain of reasoning for the conclusions drawn and the remaining alternative or rival interpretations of the findings,
- aiming for an evaluation that is understandable and credible to users of the information on all sides of the issues studied.

The following questions are proposed to guide the program evaluation of the IRIS E&O Program. The questions will ultimately be addressed by an external review panel, with data

presentation and preliminary analysis by the evaluator. The evaluator shall also generate specific evaluation questions based on reviews of the IRIS E&O materials (e.g., website).

1. How has the IRIS E&O Program influenced K-16 faculty and student understanding of earth sciences, attitudes toward data acquisition and use in relation to earth sciences, and the relevance of earth sciences to society?
    a. How might this information contribute to program improvement, program understanding, and demonstration of the worth of the investment?
    b. How might this information benefit other earth science E&O programs that have similar goals but involve different scientific disciplines?

2. How has IRIS E&O assisted scientists in advancing formal and informal education and in disseminating the broader impacts of their research?

3. How have IRIS E&O activities utilized current technologies in order to meet their education and outreach goals? Are they properly positioned to take advantage of future changes and improvements in technology?

4. How well does the balance between specific education and general outreach activities within the E&O Program reflect the goals of the Program and the needs of the consortium?

5. How well does the scientific content of the IRIS E&O product deliverables align with the charge and nature of the IRIS program?

6. How well do E&O Program activities align with current best practices? How has formative assessment been used to guide the Program as it has matured?

7. How has the management of the Program and oversight by the IRIS community contributed to the outcomes of the Program?

V. Scope of Work

The scope of work over a short term contract (4-5 months) includes programmatic evaluation:

- to assess the IRIS E&O program on its nationwide impact using quantitative analyses as well as subjective summative evaluation.

- to develop a tool and mechanism for assessing the extended (summative) impact of the program beyond the tenure of this contract.

VI. Project Management

The selected evaluation consultant will report to John Taber, IRIS E&O Program Manager. The evaluator will work closely with Michael Hubenthal, who has conducted the majority of the internal evaluations of the program. A steering committee comprised of individuals from NSF

(Lina Patino, David Lambert, Wyn Jennings), IRIS (David Simpson, John Taber, Michael Hubenthal) and the IRIS community (Michael Wysession, chair of the E&O standing committee) will meet at least once to be briefed on the progress of the evaluation and then for a presentation on the final findings. Through these meetings the steering committee will have the opportunity to provide direction to the evaluation consultant through the project manager.

VII. Award

Contingent upon available funding through the National Science Foundation, a subaward will be issued to a responsive and qualified organization whose proposal is most advantageous to IRIS based on the criteria identified below. The subaward agreement will be a cost plus fee award, subject to applicable NSF award terms and conditions.

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.

VIII. Deliverables and components

The program evaluation general deliverables and major components of the work to be addressed in response to this RFP are outlined below. In addressing these deliverables the evaluator should incorporate how they would address the requirements in all of the above sections and should reflect a deep understanding of the program and matching of evaluation activities to that understanding.

1. Hold initial meeting.

Within ten working days following the contract award, the Evaluator shall meet with IRIS E&O staff and NSF staff in the Washington, DC, metropolitan area to discuss and review the activities and requirements of the contract. The Evaluator, in cooperation with IRIS E&O staff, shall prepare an agenda for this meeting that shall include discussion of the project objectives, project tasks, and the project schedule. The Evaluator will share the agenda with NSF staff.

2. Prepare a revised evaluation plan.

Within ten working days following the initial meeting, the Evaluator shall provide IRIS E&O with the minutes of the initial meeting describing each issue discussed and the conclusions reached at that point, and an updated evaluation plan that includes strategies (a) to interact with the IRIS E&O staff, (b) to assess the IRIS E&O program on its nation-wide impact; quantitative analyses as well as subjective summative evaluation, (c) to maintain sensitivity to the project's scope and cycle of events, (d) to include the activities that the Evaluator shall undertake addressing all contractual requirements outlined in the above statement of work, and (e) to develop a tool and mechanism for assessing the extended (summative) impact of the program beyond the tenure of this contract. This plan shall provide specific information on estimated timeframes, specific activities such as meetings and interviews, and the planned participants (Evaluator staff and non-Evaluator staff) in the activities.

At the time of this submission, the Evaluator shall arrange for a one-day meeting within 10 working days following the submission with IRIS E&O staff and NSF staff to review the submission in the light of all requirements.

3. Report progress.

Invoices shall identify costs incurred and briefly describe work performed during the period being invoiced.

4. Produce final report.

The Evaluator shall provide IRIS E&O with a draft of a final report no later than 14 days prior to submission of the final report. The final report shall address all contract requirements and additionally include at least the following content organized according to the evaluator's judgment for communication: Title Page, Table of Contents, Executive Summary, Introduction, Study Goals, Background and Theoretical and Methodological Rationale, Specific Studies (including hypotheses or evaluation questions, method, results, conclusions, and alternative plausible interpretations), Summary, References, and Appendices.

The Evaluator shall prepare the final report in the format necessary to be shared electronically. IRIS E&O will indicate the proper format to the Evaluator at the time of this task. This final report is due by the end of the contract and will include an oral presentation to the Steering Committee. This report (both written and Powerpoint) will be the property of the IRIS Consortium and the National Science Foundation. The evaluator may not individually publish results from the evaluation or details of the evaluation process. However collaborative publications with the IRIS Consortium will be considered. The report will serve as one of the primary inputs to a review panel to be convened after the evaluation is complete. The panel will be comprised of expert peers, both from within the IRIS membership and the geoeducation community as well as from outside of the geoeducation community. Making recommendations about the program's future will primarily be the responsibility of the review panel. A second presentation of the final report to the review panel will occur in October or November, 2008.

IX. Proposal Format

Questions about the proposal submissions should be directed in writing to <bids@iris.edu>. Responses to questions will be posted at http://www.iris.edu/about/ENO/rfp/responses.htm.

A formal proposal of no more than 10 pages (excluding price information) must be submitted to <bids@iris.edu> as a pdf file by **May 30, 2008**. Attachments of example reports are encouraged.

RFP responses should include within the 10-page limit:

a. Evaluation Plan
b. Evaluator Qualifications (Background/References/Experience)
c. Management Plan and Timeline

Price information must include (maximum 3 pages):

a. NSF Budget Form 1030 (see Appendix F)
b. Detailed Budget Notes/Cost Justification – Respondents must clearly state their organization's pricing structure, and the basis for their proposed budgets. All fees, charges, billing rates, etc. must be explained in detail.
c. Payment Schedule – Payments should be tied to performance or deliverables. IRIS proposes payment of monthly invoices for costs incurred up to 70% of the total award value, final progress payments contingent upon delivery and acceptance of the draft final report and the final report. Respondents should identify their proposed payment schedules.

Additional Materials – Attachments of example reports will not count towards the stated page limit of this RFP.

X. Review Criteria

Proposals will be reviewed by IRIS staff and the IRIS E&O standing committee chair, based on the following criteria:

Quality of the planning support and work plan (45 points). Sound planning support is proposed. The work plan is clear, coherent, innovative, and reasonable. The work plan meets or exceeds the requirements contained in the Scope of Work (Section V) and addresses the questions to the external review panel (Section IV).

Quality of personnel (30 points). The evaluator and its partners and consultants are a team with appropriate background/experiences to successfully complete the work. The skills of the diverse staff and consultants match the project needs. The Project Director has the background to lead the project. The Project Director and other staff have the time available to work on the project.

Management plan (15 points). There is an appropriate organizational structure and management approach. The staffing plan reflects understanding of project needs and the importance of coordination of a range of activities and communication networks and feedback patterns. The timeline is appropriate, including a timely dissemination of information.

Proposal budget (10 points). Costs are reasonable for the proposed work and within anticipated funding limits.

XI. Duration and Estimated Level of Effort.
It is expected that the tasks in this statement of work will require up to the equivalent of 0.5 FTE or $100,000, and the evaluation should take no more than 5 continuous months.

Respondents will be notified of the RFP results by June 21, 2008.