E.7 SUPPORT FOR OPEN SOURCE TOOLS, FRAMEWORKS, AND LIBRARIES

NOTICE: November 10, 2020. Phone number for Steven Crawford has been updated.

Amended October 19, 2020. This amendment releases the final text for this program element. Optional notices of intent to propose are requested by November 19, 2020 and the due date for proposals is January 19, 2021.

1. Scope of Program

1.1 Motivation

Open source software tools, libraries, and frameworks play an increasingly prominent role in SMD-related science research and applications. As the adoption of open software accelerates the rate of scientific discovery, the National Academies’ has recognized the growing need among the NASA science community to provide sustained support and maintenance of these types of software in their 2018 report *Open Source Software Policy Options for NASA Earth and Space Sciences*. This program is designed to provide support the sustainable development of open source software, tools, libraries, and framework that are critical for SMD scientific objectives.

1.2 Objectives

SMD seeks proposals for the improvement and sustainment of high-value, open source tools, frameworks, and libraries that have made significant impacts to the SMD science community. We are seeking proposals that satisfy the following objectives:

- Open source software tools, libraries, and frameworks that have significant usage in the NASA science community, developed following open and collaborative practices, and are aligned with the scientific vision and data strategic plan of SMD.
- Proposals should look to improve the sustainability and utility of these packages through improvements to adding extensions, documentation, infrastructure, and maintenance of the software.

This program seeks to support projects under active development and usage, and it does not support updating of legacy software that is no longer supported, which can be supported under other calls. We are not soliciting the development of new open source tools, frameworks, or libraries with this call.

2. Programmatic Information

2.1 Eligibility

Participation is open to all categories of U.S. institutions (except as provided below), including educational, industrial, and not-for-profit organizations, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), NASA Centers including JPL, and other Government agencies.

Proposals from non-U.S. institutions are welcome, but they must be for funding of a co-investigator at a U.S. institution. Foreign participation in Teaming Arrangements or Leveraging Relationships may only be proposed at no cost to NASA.
To be eligible to be the subject of work in a proposal to this program element, the open source software tools, libraries, and frameworks proposed must have already been released under a generally accepted, open source license (e.g., Apache-2, BSD-2-clause, GPL) at the time this call has been released.

2.2 Funding

It is anticipated that the funding available for awards made in response to proposals to this program element will be $1.5 million per year. This is expected to support 5-10 projects for the call. The awards will be for a maximum duration of three years.

Funding to non-governmental organizations will be administered through either grants or cooperative agreements. NASA will negotiate with the selected proposing organizations and will administer all funding. All funds for a given team will be sent to the proposing institution, which must in turn provide any research and salary funding to funded team members at non-governmental organizations. That is, only one Cooperative Agreement or Grant will be negotiated per selected proposal.

3. Proposal Preparation

Proposals must be prepared in accordance with the instructions given in the ROSES Summary of Solicitation and the NASA Guidebook for Proposers. The proposal must be submitted via NSPIRES or Grants.gov by the organization’s Authorized Organizational Representative (AOR). A budget and other specified information is required.

The Science/Technical/Management section of the proposal must contain a detailed statement of the proposed work within 15 single-spaced pages including figures and tables. Proposals must adhere to formatting requirements (e.g., margins, font sizes, line spacing). Please see section IV(b)ii of the ROSES Summary of Solicitation for complete guidelines.

The following elements must be included in the proposal to allow for the evaluation of the proposal:

- A clear description of the software and relevance to the SMD science community and the relationship to NASA SMD scientific vision and data strategic plan. This should include:
  - the impact of the software in the SMD science community.
  - the current usage in the SMD science community.
  - the current status of development of the software package.
- The sustainable activities to be undertaken for the software must be described.
  - This may include, but not be limited to, adding extensions, documentation, infrastructure, and maintenance of the software.
  - A discussion that demonstrates that the requested resources are necessary and sufficient for success in achieving the proposed effort. The resource discussion should include how many hours at what specific level of support persons are required.
  - This should include aspects of how information about the software is disseminated to the community, which may include documentation, training, workshops, and/or publications.
The project management for the software must be described. This must include:
- governance and development model for the project.
- information including how the license the project is using.
- metrics for assessing the successful implementation of sustainability.
- collaboration with related projects.
- the inclusive practices of the project to foster community development (e.g. code of conduct, contributors’ guides, open development model).

The proposals must clearly state the process of adding extensions, documentation, and maintenance of the software to support the user community and should include an assessment of the potential impact to the SMD science community of the proposed work.

A data management plan must be included. If there are any underlying data that are part of the software, then a clear management plan for those data should be included. The management plan should include sustainable plans for both the data and the software. In addition to the aspects outlined in Section 2 of E.1 the Cross Division Research Overview, as part of the data management plan, the sustainability of the software should be described.

4 Proposal Review and Evaluation

Proposals will be evaluated against the three evaluation criteria: Intrinsic Merit, Relevance, and Cost, as defined in Appendix D of the NASA Guidebook for Proposers and as described in Section VI(a) of the ROSES Summary of Solicitation.

In addition to the definitions given in Appendix D of the Guidebook for Proposers, the evaluation of proposals submitted to this element will include the following additions/clarifications:

A. The evaluation of relevance will include the alignment of the software with the SMD scientific vision and data strategic plan.
B. The evaluation of impact as part of Merit will include an assessment of usage in the community; open source software, tools, libraries, and frameworks that are currently widely used in the community will be prioritized for support.
C. The evaluation of impact may include the level of collaboration and coordination as a strength. However, the absence of this is not in and of itself a cause of weakness.

5. Summary of Key Information

<p>| Expected program budget for first year of new awards | ~$1.5M |
| Number of new awards pending adequate proposals of merit | ~5-10 |
| Maximum duration of awards | 3 years |
| Due date for Notices of Intent | See Tables 2 and 3 of this ROSES NRA |
| Due date for proposals | See Tables 2 and 3 of this ROSES NRA |
| Planning date for start of investigation | 6 months after proposal due date |</p>
<table>
<thead>
<tr>
<th><strong>Page limit for the central Science/Technical/Management section of proposal</strong></th>
<th>15 pp; see also Table 1 of ROSES.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td>This program is relevant to the questions and goals of the Science Mission Directorate as described in the <a href="#">Science Plan</a>. Proposals that are relevant to this program are, by definition, relevant to NASA.</td>
</tr>
<tr>
<td><strong>General information and overview of this solicitation</strong></td>
<td>See the <a href="#">ROSES Summary of Solicitation</a>.</td>
</tr>
<tr>
<td><strong>Detailed instructions for the preparation and submission of proposals</strong></td>
<td>Please see ROSES <a href="#">Summary of Solicitation</a> Section I(g) Order of Precedence, Table 1, and the <a href="#">NASA Guidebook for Proposers</a>.</td>
</tr>
<tr>
<td><strong>Submission medium</strong></td>
<td>Electronic proposal submission is required; no hard copy is required or permitted.</td>
</tr>
<tr>
<td><strong>Web site for submission of proposals via NSPIRES</strong></td>
<td><a href="http://nspires.nasaprs.com/">http://nspires.nasaprs.com/</a> (help desk available at <a href="mailto:nspires-help@nasaprs.com">nspires-help@nasaprs.com</a> or (202) 479-9376)</td>
</tr>
<tr>
<td><strong>Web site for submission of proposals via Grants.gov</strong></td>
<td><a href="http://grants.gov">http://grants.gov</a> (help desk available at <a href="mailto:support@grants.gov">support@grants.gov</a> or (800) 518-4726)</td>
</tr>
<tr>
<td><strong>Funding opportunity number for downloading an application package from Grants.gov</strong></td>
<td>NNH20ZDA001N-OSTFL</td>
</tr>
</tbody>
</table>
| **Point of contact concerning this program.** | Steven Crawford  
Science Mission Directorate  
NASA Headquarters  
Washington, DC 20546-0001  
Email: steven.m.crawford@nasa.gov  
Telephone: (202) 358-1310  
[updated November 10, 2020] |