

### A.4.3 APPLIED INFORMATION SYSTEMS RESEARCH

#### 1. Scope of Program

The purpose of the Applied Information Systems Research (AISR) program is to exploit advances in information science and technology to enhance space science productivity from NASA's space flight missions sponsored by the Office of Space Science (OSS). AISR funds the application of emerging information technologies, concepts, methodologies, etc. to demonstrate their feasibility and potential science return, as well as informing missions and research disciplines of promising techniques and capabilities worthy of broader application and/or further development through full maturity.

The specific goals of the AISR program are to:

- Investigate novel information technologies and computational methods that have the potential to increase productivity of the OSS research and/or education and public outreach endeavors, and which would extend the state-of-the-practice in space science;
- Demonstrate the degree of relevance, applicability, and potential impact of emerging information technologies to OSS missions and programs; and
- Foster interdisciplinary collaborations that span the space science and computer science disciplines.

The AISR program seeks innovative ideas for uses of information technology to increase life cycle effectiveness and efficiency of the OSS research endeavor across all of its science themes. Suggested (unprioritized) objectives for proposals to this program are to:

- Reduce mission development time, risk, and cost through, for example, advanced simulation and design capabilities;
- Increase mission duration and reliability through, for example, autonomous operations and control, improved dynamic scheduling, fault tolerant and/or adaptable computing, etc.;
- Increase data return through, for example, onboard science autonomy and intelligent compression; and/or
- Increase science or educational return from the data through, for example, advanced knowledge discovery, data synthesis and data presentation methodologies.

Background information and abstracts for current investigations in the AISR program can be found on-line at <http://ssds.nasa.gov/aisrp>.

The program strives to foster collaboration and communication amongst its investigators and the space science community. An investigator team meeting is held once a year to

share the status of investigations and exchange ideas. The program also provides an electronic forum within the AISR Web site for investigators to collaborate on an ongoing basis. Investigators are expected to share the conclusions of their investigations, as well as new tools and capabilities resulting from their projects using this forum. Evolution of the forum, as well as infusion/promulgation of results to the broader community are part of the discussion at the annual investigators meeting. Proceedings from recent team meetings are also available on the AISR Web site.

## 2. Programmatic Considerations

Periods of performance from one to five years (typically three years) may be proposed as appropriate to the nature of the contemplated investigation. It is expected that approximately \$4M will be available in Fiscal Year 2004 to support on the order of 20-25 new investigations selected through this solicitation.

As noted above, AISR seeks to benefit all of the OSS science themes (see *NASA Space Science Strategy 2003* in the Publications folder at <http://spacescience.nasa.gov/admin/>), which will require direct and continuing involvement by the themes in the selection and implementation of investigations. It is also expected that benefiting OSS science themes might choose to co-sponsor some investigations of particular relevance with additional funding. Thus, AISR will attempt to broker joint funding as much as possible to extend the selection of the most worthy efforts and foster partnerships with benefiting science disciplines.

The evaluation criteria in the *NASA Guidebook for Proposers – 2003* (see further below) are fully applicable to this program element, including evaluation of scientific and technical merit, relevance to NASA's objectives, and cost risk and reasonableness. The scientific and technical merit of any proposal will be judged against the following factors:

- Objectives for the investigation, the capabilities expected to result, and the benefits to accrue;
- Compelling justification, demonstrating the relevance and importance to space science research or education and how it will extend the state-of-technology; and
- Work plan and schedule, including task break-down, staffing, and other resources, as well as success criteria for the investigation and plans and approach for infusing and/or promulgating the results.

If a proposal is itself based on a previously funded AISR effort, the proposal should identify that work, clearly summarize significant results from it, and demonstrate how the proposed effort is unique and/or extends the capability.

Finally, note that to enable the NASA OSS to properly evaluate the relevance of proposals submitted to its programs, as well as to track their progress towards achieving their goals as mandated by the Government Performance Review Act (GPRA), all research supported by NASA's programs must now demonstrate its relationship to NASA Goals and Research Focus Areas (RFAs) as stated in the latest version of the OSS Strategic Plan in the Publications folder at <http://spacescience.nasa.gov/admin>; see also the discussion in Section 1 of the *Summary of Solicitation* of this NRA. Therefore, all proposals to this program element must state their perception of this relevance in terms of the Goals, Science Objectives, and RFAs given in Table 3 found in the *Summary of Solicitation*. The appropriate place for this statement of relevancy is in the introduction to the proposal's "Scientific/Technical/Management" section (see Section 2.3.5 in the *Guidebook for Proposers*). The index numbers in this table may be used to identify a specific RFA, for example, "Goal I, Sun-Earth Connection Theme, RFA 1(c)" or "Goal II, Astronomical Search for Origins, RFA 3(b)."

### **IMPORTANT INFORMATION**

- As discussed in the *Summary of Solicitation* of this NRA, the Office of Space Science (OSS) now uses a unified set of instructions for the preparation and submission of proposals given in the document entitled *NASA Guidebook for Proposers Responding to NASA Research Announcement - 2003* (or *NASA Guidebook for Proposers* for short) that may be accessed by opening <http://research.hq.nasa.gov/> and linking through "Helpful References," or by direct access at <http://www.hq.nasa.gov/office/procurement/nraguidebook/> (note that the updated 2003-edition of the *Guidebook* is used for this solicitation).
- Section 6 of this NRA's *Summary of Solicitation* contains the Web address relevant to the electronic submission of a Notice of Intent (NOI) to propose and a proposal's *Cover Page/Proposal Summary/Budget Summary*, as well as the mailing address for the submission of the hard copies of a proposal.

The schedule for this program is as follows:

Release	December 10, 2003
NOIs due	January 22, 2004
Proposals due	March 10, 2004

For further information, contact the Discipline Scientist for this program element:

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