National Aeronautics and Space Administration

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Clarified October 18, 2016

Cooperative Agreement Notice (CAN)

Solar System Exploration Research Virtual Institute

CFDA No.: 43.001

Step-1 Proposals Due: September 23, 2016
Step-2 Proposals Due: November 21, 2016

NOTICE: October 18, 2016. The prohibition (in Section 4.1.2) on changing the PI between Step-1 and Step-2 has been deleted. Moreover, to give offerors time to make these changes, the timing of the requirement to inform NASA has been diminished from 30 days to 15 days in advance of the Step-2 due date. New text is in bold and deleted text has been struck through. The due date for Step-2 proposals remains unchanged: Step-2 proposals are due November 21, 2016.

Changes from Draft CAN to this Document:

- Addition of Human Research Program (HRP) research objectives (Section 1.1, 1.4)
- Institute Requirements: HRP funded teams will participate in annual HRP investigators workshop (Sec 1.3)
- Addition of Mars regolith as an option for targeted studies (Section 1.4)
- Addition of dust/regolith studies related to human health and performance (Section 1.4)
- Citizen Science and Public Engagement section clarified (Section 1.5)
- Questions on CAN are permitted up to 15 calendar days prior to the Step-2 proposal due date (Section 4.1.1, 4.1.3)
- Information about how NASA will respond to Step-1 proposals has been added to Section 4.1.2
- Moved Section 4.2.2 Institutional Commitment to Section 5.1.1.1
- Added information on profit regulations for commercial entities (Section 4.3)
- Added dataset public release timing (Section 5.1.3.2 and A.2.3)
- New section on proposer for Review of Applicants in the Federal Awardee Performance and Integrity Information System (FAPIIS) (Section 5.3)
- Added information on human test subject requirements (Sec 6.2)
- Added text to Award Reporting Requirements (Sec 6.3)
- The details of requesting NASA-Provided High-end Computing Resources has been updated (Section 8.4)
- Budget Summary and Details section updated (Section A.2.3)
- Removed most of Certifications and Representations and placed it as an online certification (Section A.4)

NASA SOLAR SYSTEM EXPLORATION RESEARCH VIRTUAL INSTITUTE
COOPERATIVE AGREEMENT NOTICE

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SOLAR SYSTEM EXPLORATION RESEARCH VIRTUAL INSTITUTE COOPERATIVE AGREEMENT NOTICE

1.0 FUNDING OPPORTUNITY DESCRIPTION

1.1 Introduction to the Funding Opportunity

NASA, through the release of this Cooperative Agreement Notice (CAN), is announcing an opportunity for the submission of multiinstitutional team-based proposals for research as participating members of the Solar System Exploration Research Virtual Institute (SSERVI), hereafter referred to as "the Institute." Proposals must clearly articulate an innovative, broadly based research program addressing basic and/or applied research fundamental to understanding the nature of the Moon, Near Earth Asteroids (NEAs), the Martian moons Phobos and Deimos, and the near space environments of these target bodies, to enable eventual human exploration of these destinations. Nondestination targets, such as the study of comets and/or main-belt asteroids, may provide critical information relating to the origin and evolution of the proposed target bodies; therefore comparative planetary investigations that include comets and/or main-belt asteroids are within the scope of this CAN provided the prime focus of these investigations is on the Target Body(s). Proposed research that complements current Institute Teams, or addresses important research areas not currently covered in the Institute, will also be given strong consideration (see: http://sservi.nasa.gov/sserviteams/). Proposals in the areas of astrophysics and heliophysics that are enabled through human and robotic exploration of the Target Bodies are also solicited through this Cooperative Agreement Notice (see Section 1.4).

This CAN will, henceforth, use the term "Target Body(s)" to refer to Earth's Moon, Near Earth Asteroids, and the Martian moons Phobos and Deimos.

CAN objectives specific to this release can be found in Section 1.4. The Institute is supported by a partnership between the NASA Science Mission Directorate (SMD) and the Human Exploration and Operations Mission Directorate (HEOMD). In particular, the Human Research Program (HRP) is considering supporting research that contributes to their risk reduction for human exploration. NASA anticipates that up to three new teams will be selected through this solicitation at up to $800K per team per year for the first two years of the award and up to $1.3M per team per year for years three through five. These values are firm caps per award, which represent everything, including indirect costs, as well as civil servant costs. Additional solicitations are planned for release at approximately two and a half to three year intervals. Proposers are free to propose amounts less than these for all years.

Proposals must also articulate plans to advance the full scope of Institute objectives (http://sservi.nasa.gov/overview/).

Participation in this solicitation is open to all categories of organizations (see Section 3.1). Proposals involving multiple cooperating organizations must be submitted by a single institution,

which becomes the Lead Institution. The Lead Institution must be the Principal Investigator's (PI's) home institution. The intent of this solicitation is to provide funding to U.S. institutions. However, U.S. proposers are encouraged to identify collaborations involving SSERVI international partners (http://sservi.nasa.gov/internationals/) on a no-exchange-of-funds basis.

Detailed proposal content and submission requirements for responding to this CAN are contained in Appendix A. Additionally, the *NASA Guidebook for Proposers* contains overarching policy and procedural information for responding to this CAN. In the event that information in this CAN differs from or contradicts the information in the *NASA Guidebook for Proposers*, the information in this CAN takes precedence. The *NASA Guidebook for Proposers* can be found at: http://www.hq.nasa.gov/office/procurement/nraguidebook/

1.2 Definitions and Terms

- Authorized Organizational Representative's (AOR): Proposing institution's business office representative responsible for requests and agreements between NASA and awarded institution.
- *Citizen Science*: Scientific research conducted, in whole or in part, by amateur or nonprofessional scientists. Formally, citizen science has been defined as "the systematic collection and analysis of data; development of technology; testing of natural phenomena; and the dissemination of these activities by researchers on a primarily vocational basis."
- *Citizen Science and Public Engagement (CS/PE) Working Group*: A group comprised of representatives from each team who lead Team CS/PE activities and support the Institute Central Office in engagement efforts
- *Co-Investigator (Co-I):* A member of the proposal's investigation team who is a critical "partner" for the conduct of the investigation through the contribution of unique expertise and/or capabilities. A Co-I must have a well-defined, sustained, and continuing role in the proposed investigation, serve under the direction of the PI, and may or may not receive funding through the award (see Section 3.2).
- *Collaborator:* An individual who is less critical to the proposal than a Co-I but who is committed to provide a focused but unfunded contribution for a specific task(s). (See Section 3.2)
- *FTE*: Full-Time Equivalent
- *HEOMD:* NASA's Human Exploration and Operations Mission Directorate
- *HRP:* Human Research Program
- *Institute:* Solar System Exploration Research Virtual Institute
- *Institution:* Any research organization
- *IRP:* Integrated Research Plan
- *ISRU*: *In Situ* Resource Utilization
- *ITWG:* Information Technology Working Group: A group comprised of representatives from all Institute teams tasked with assisting teams in getting connected and developing methods and technologies that push the boundaries of collaborative technologies
- *Institute member:* An individual Team participant identified as such by a Team PI

- *Lead Institution:* PI's home institution and the research organization submitting the proposal, either individually or on behalf of a group of cooperating institutions
- *Moon (Lunar):* Earth's moon and its environs, including first and second Earth-Moon Lagrange points
- *Martian moons:* Phobos and Deimos
- *NASA HQ:* NASA Headquarters
- *NEA:* Near Earth Asteroids
- *NEO:* Near Earth Objects
- *Science Outreach (Engagement):* Activities aimed at promoting public awareness (and understanding) of science and making informal contributions to science education.
- *SSERVI Central Office:* The management headquarters based at NASA Ames Research Center
- *Subject Matter Experts (SMEs)*: Scientists and engineers with bona fide expert knowledge to ask compelling scientific questions and then find ways to answer them within the objectives of NASA SMD.
- *PHO:* Potentially Hazardous Objects
- *Principal Investigator (PI):* An individual who is the leader of the proposing research team *and responsible for the quality and direction* of the entire proposed investigation and for the use of all awarded funds (see Section 3.2)
- *PSD:* Planetary Science Division
- *SMD:* NASA's Science Mission Directorate
- *STEM:* Science, Technology, Engineering and Mathematics
- *Target Body(s):* One or more of the following Solar System bodies: Moon, Near Earth Asteroids, Martian moons (Phobos, Deimos)
- *Team:* A Group of individuals who will carry out the proposed research
- *Workshops without Walls:* Virtual one- to three-day workshops done entirely by videoconference
- *WYE:* Work Year Equivalent

1.3 Overview of the Institute

The Institute is an innovative, virtual research organization that leverages knowledge and expertise from the science and exploration communities to support NASA's goals in lunar and planetary science and human exploration of the Solar System. It also supports NASA goals in astrophysics and heliophysics that are enabled through human and robotic exploration of the Target Bodies. The Institute is based on the premise that exploration and science are fundamentally intertwined: exploration enables science, and science enables exploration. The Institute catalyzes collaborative research that fosters cross-disciplinary partnerships within, and between, the science and exploration communities beyond the scope supported by traditional Research and Analysis (R&A) grants. Linking a diverse community of researchers, Institute teams investigate basic and applied science questions that enable a deeper understanding of the formation, evolution, and current state of the Solar System, including questions relevant to human exploration. See Strategic Knowledge Gaps (SKGs) developed by HEOMD at: www.nasa.gov/exploration/library/skg.html

The Institute consists of a geographically distributed network of peer-reviewed and competitively selected teams managed by a small Central Office (SSERVI Central) located at NASA Ames Research Center. The Institute brings interdisciplinary teams together, each with their own set of disciplines and capabilities, to solve science and exploration problems. Teams are expected to collaborate across team lines, as well as within their team, to increase and accelerate the overall scientific return of the Institute and explore new areas of complementary research.

In addition, the Institute fosters a flexible environment of collaboration and cross-fertilization among the individual teams, enabling them to identify and conduct interdisciplinary research. Additionally, by partnering with international academic and Government research organizations, the Institute achieves broad representation across both the domestic and international science and exploration communities.

The prime product of the Institute is research, disseminated through professional publications, workshops, and other communication methods. The Institute serves as a community leader through sponsorship of conferences and activities focused on science and exploration. The Institute supports a robust program to communicate the excitement of science and exploration to teachers, students, and the public, while also developing programs to train the next generation of space science explorers.

The Institute has established a number of international collaborations that provide additional interdisciplinary scientific and technical expertise to the Institute. The Institute encourages collaborations between international partners and domestic teams. The current international partners are: Australia, Canada, Germany, Israel, Italy, The Netherlands, Saudi Arabia, South Korea, and the United Kingdom. International partnerships are conducted with no exchange of funds between the Institute and the international partner (see Section 3.3). Further information, including the contacts for current international partners and the application process for those interested in becoming a new international partner, may be obtained at http://sservi.nasa.gov/internationals/. Note that applications for international partnership are not part of this call for proposals.

1.3.1 Principal Investigators and the Executive Council

The Team Principal Investigators (PIs), together with the Institute Director and Deputy Director, constitute the Institute Executive Council (EC). This Council meets regularly, either by videoconference or in person, to serve as a forum for the exchange of technical and scientific information, as well as the exchange of individual viewpoints concerning priorities and opportunities for further collaboration. The Executive Council is charged with the following specific roles:

- Raise, discuss, and provide insight into issues such as Institute-wide research objectives, mission opportunities for science and exploration missions, and priorities for technology development;
- Comment on the conduct of the Institute and evaluative approaches and metrics aimed at assessing the progress of the Institute;
- Consider and provide perspective on other issues at the request of the Institute Director.

1.3.2 Team requirements for Integration into the Virtual Institute Structure

The virtual institute structure derives its strength from the interdisciplinary and collaborative nature of its teams. To this end, teams will be expected to explore areas for collaboration with other SSERVI teams, as well as with international partners of the Institute. Virtual communication only succeeds if everyone has the means to participate. Therefore, multiinstitutional teams must insure that each institutional component of the team has the technological capability to fully participate in all virtual meetings.

In addition, proposals must clearly discuss plans that address each of the following items.
* denotes items that must also be included in the proposal budget.

Personnel:

- The Principal Investigator (PI) is expected to participate in all Institute events. In the rare event where a PI cannot attend an Institute event, a Deputy PI must represent their team.*
- Identify a Deputy PI(s) who will assist the PI to meet institute requirements. The Deputy PI(s) will have the authority to speak for the PI/team. *
- Identify an information technologist for the lead institution*

Institute Requirements for Participation:

- Participate in virtual monthly Executive Council meetings (PI or in emergency, Deputy PI)
- Attend in-person quarterly Executive Council meetings (PI or in emergency, Deputy PI)*
- Host visiting Central Office and other team PIs for a lead-institution site-visit (approximately once every three years)*
- Have team representative(s) attend and participate in annual Exploration Science Forum at NASA Ames Research Center*
- Teams that receive funding from HRP should attend and participate in the annual HRP investigators' workshop.
- Give virtual/in-person* presentations as part of the Director's Seminar Series
- Participate in, and develop topics for, Workshops Without Walls
- Develop white papers and participate in studies consistent with team expertise and proposed research as requested by NASA
- Provide timely communication and be responsive to the SSERVI Central Office

Reporting:

- Provide monthly reports at virtual EC meetings (1-page template plus publications, 3-minute oral report)*
- Produce Team annual reports (~5 page summary due 6 weeks before annual program year renewal)*

Infrastructure:

- Purchase collaborative technologies for virtual participation as specified by the Institute Central Office (http://sservi.nasa.gov/collaboration-technology-requirements/)*

- Develop and maintain a comprehensive, up-to-date team website*

1.3.3 Electronic Communication and Collaboration

The Institute uses a variety of modern telecommunications and information technology tools to conduct virtual meetings, seminars, and conferences; link the Institute Teams; share knowledge; and enable effective interactions both within and amongst teams. Proposals must present a plan (and budget) for the adequate availability of Information Technology (IT) expertise and equipment to support Team members as they incorporate these tools into their activities. Additionally, proposals must identify a representative from their team who will serve on the Institute's IT Working Group (ITWG). This group, composed of IT representatives from each Team, works together to evaluate and implement the effective use of information technology tools. The Institute's management office will advise on hardware and software for virtual communications and train ITWG members in the use of the equipment and other tools. Proposers are encouraged to learn about the technology used by current SSERVI teams, as this will be the communication basis for the new teams as well (see http://sservi.nasa.gov/collaboration-technology-requirements/).

1.4 CAN Research Objectives

The research scope for this CAN is in the fields of lunar, NEA, and Martian moon studies, with preference given to topics that relate to joint interests of the Science Mission Directorate (SMD) and the Human Exploration and Operations Mission Directorate (HEOMD), including the Human Research Program (HRP). The proposed research should address NASA's basic (science) and applied (exploration) research goals and should include broadly-based investigations that address the objectives of this CAN. The proposed research should be integrated; thus, proposals consisting of tasks addressing multifaceted questions must demonstrate significant scientific connections among the tasks. Proposals that only address a single question should strive to integrate interdisciplinary expertise and methodologies. It is expected that teams bring together broadly-based expertise from more than a single institution. As noted in Section 1.1, proposals that address basic and/or applied research will be considered.

This CAN supports the broad spectrum of lunar, NEA, and Martian moon studies encompassing investigations of the surface, interior, exosphere, and the near-space environments of these bodies. Investigations that link science and exploration are highly encouraged. Investigations of Target Body(s) genesis and evolution, as well as Earth-Moon, Earth-NEO system processes, are welcome. Fundamental research having clear, critical and longer-term implications for acquiring or interpreting data regarding potential human destinations is encouraged, as are research efforts that are relevant to current or future space missions. Supported investigations include, but are not limited to, theoretical investigations, numerical modeling of physical or chemical processes, experimental/laboratory investigations and field studies.

Given the unique properties of lunar and other celestial bodies' dust, there is a possibility that exposure could lead to serious health effects (e.g., respiratory, cardiopulmonary, ocular or dermal harm) or to crew performance impacts during celestial body missions. Therefore, human health and performance studies relating to dust/regolith hazards and mitigations, including those

related to the Martian surface, are encouraged as well. The HRP Integrated Research Plan (IRP) outlines the approach and research activities designed to buy down this risk and should be considered when proposing to this topic of the CAN. The HRP IRP may be found here: https://humanresearchroadmap.nasa.gov/.

Proposals that explore similar features and processes among the target bodies to uncover commonalities and differences are highly encouraged. Additionally, while the topics of this CAN focus on potential destinations for human exploration (the Moon, NEAs, Phobos and Deimos), these topics can sometimes best be considered within the broader context of comparative planetology. Therefore, innovative proposals that focus on Target Body(s) and include comparative studies with other Solar System bodies (e.g. Mercury, main belt asteroids and comets) are appropriate. Mission planning as related to the basic and/or applied research objectives of the proposal may also be appropriate as part of a larger scientific effort. Studies that use mission planning, laboratories, or field sites to investigate questions relevant to future human exploration—including ISRU-related production—are also welcome. Also appropriate are the development and/or enhancement of tools and techniques that facilitate research efforts as described in this section. This applies to technology or instrument concept development (technology readiness level [TRL] 4 or less) related to potential missions to study any Target Body in the scope of this CAN, as long as that effort is required to address the goals of the proposal.

The following broad topics apply to both basic (science) and applied (exploration) research and include examples that may be used as guidelines. Proposals are not expected to address all of these topics, however successful proposals will investigate multiple topics. Development of capabilities to support this scientific research and/or technology development (e.g., environmental chambers), leading to the advancement of understanding of the science and/or approaches for exploration of relevant Target Body environments, is appropriate (an example of a previously funded capability is http://impact.colorado.edu/facilities.html).

- Studies of the origin and evolution of the Solar System as informed by the Moon, NEAs, Phobos and Deimos:
  - Inner Solar System history
  - Origin(s) of Target Body(s)
  - Inventory and evolution of impactor population through time
  - Crater mechanics and distributions
  - Volatile origin, sequestration, and transport
  - Influence of impacts on the evolution of the Earth-Moon system

- The Moon, NEAs, Phobos and Deimos as windows into origin and evolution of planetary bodies:
  - Gravitational properties, interior structure, and thermal history
  - Core formation mechanisms and core structure
  - Magnetic properties
  - Magma ocean studies
  - Role of volatiles in planetary differentiation and evolution
  - Geomorphology as indicators of subsurface processes

- Physical characterization of objects that are potential exploration targets, including Potentially Hazardous Objects (PHOs):
  - Populations
  - Physical and chemical properties such as size, mass, spin state, and composition
  - Structure
  - Mechanical properties
  - Thermal properties
  - Electrostatic and plasma environment
  - Radiation environment in near space and at the surface
  - Orbital evolution
  - Relationship to meteorites
  - Impact hazards for Earth and possible mitigation approaches

- Regolith of Target Body(s):
  - Geophysical and Geotechnical properties
  - Structure
  - Volatile content
  - Mobility
  - Regolith origin and evolution
  - Resource prospecting and ISRU potential
  - Development of simulants for high-fidelity technology/systems testing
  - Toxicology, physical properties, and reactivity relating to human health concerns
  - Regolith comparison between Target Bodies

- Dust and plasma interactions on Target Body(s):
  - Dust composition and size distribution
  - Dust mobility
  - Plasma contribution to dust transport and space weathering

- Human Research Investigations (including dust/regolith on the Mars surface)
  - Physical and geotechnical properties of dust that affect human systems
  - Chemical reactivity of dust based on mineralogy or variations between different target bodies
  - Dust/regolith as it affects human health and performance
  - Technology advancements required to evaluate celestial dust toxicity and/or volatile composition *in situ*

- Robotics- and human-centered investigations:
  - Potential Resources and prospecting
  - Accessibility
  - Exploration relevant radiation environments in near space and at the surface
  - Exploration approaches
  - Propulsion-induced ejecta
  - Approaches to ISRU development
  - Field studies and concept of operations

- o Teleoperated and autonomous systems (including human/robot interactions) for science and human exploration
- o Human health and performance affected by regolith/dust
- o Other potential environmental effects on surface operations and systems for human exploration

- Other innovative investigations:
  - o Leverage exploration of target bodies in order to advance our understanding of fundamental physical laws, composition, and origins of the Solar System and the Universe
  - o Enable future human exploration missions by reducing risk
  - o Contribute to the safety of humans both on Earth and in deep space

1.4.1 Data Analysis

Where appropriate, proposed research should make use of the public data relevant to the Moon, NEAs, Phobos and Deimos, and meteorite and lunar samples. Please see Section 8.1 for more information.

An investigator may propose a study (e.g., scientific, landing site science, cartographic, topographic, geodetic research, etc.) based on analysis of spacecraft data. Proposals may incorporate the analysis of data from more than one mission. Additional information about NASA and other missions can be found at NASA's National Space Science Data Center (NSSDC) at http://nssdc.gsfc.nasa.gov/planetary/. Additional guidelines for flight team members proposing to use flight data in their proposals can be found in Section 8.1.

As a task, Investigators may propose to produce data products (e.g., cartographic products, such as geologic, topographic, or mineral maps, and/or calibration data). Such investigations need not have associated scientific tasks; however, the utility of the proposed data products to the planetary science and human exploration communities must be clearly specified in the proposal and will be judged on this basis. Additionally, tasks proposing to produce software tools must clearly justify their development by demonstrating that the proposed software tools are required to conduct the underlying science/tasks defined in the proposal. Scientific research tasks may also result in data products. Regardless of the nature of the proposal, a plan for archiving and making products readily available must be included in any proposed investigation that will result in the production of data products. NASA reserves the option to require the archiving in the Planetary Data System (http://pds.nasa.gov/), or any other appropriate NASA data archive, of any data products resulting from proposals selected under this CAN. Proposed investigations that will result in a geologic map suitable for publication by the U.S. Geological Survey (USGS) should clearly indicate this intention in the *Proposal Summary,* as well as in the text of the proposal, and must follow the guidelines for USGS map products outlined in ROSES Program Element C.1. Researchers are encouraged to submit any data they produce, appropriate for representation in the form of maps, to the lunar and mapping and modeling project tools for the Moon or other target bodies.

Proposers should refer to the most recent versions of the following documents for information on PDS compliance:

Document	Hyperlink
Proposer's Archive Guide	https://pds.nasa.gov/pds4/propose/proposing.shtml
Standards Reference	https://pds.nasa.gov/pds4/doc/sr/

Additional information on the PDS may be obtained from the following individuals:

Contact	Title	E-mail
William Knopf	Program Executive	william.knopf@nasa.gov
Michael New	Program Scientist	michael.h.new@nasa.gov

Even if proposers don't anticipate having any PDS relevant data archiving, ALL proposers must provide a data management plan. See Section 5.1.3.2 and for more information see: http://science.nasa.gov/researchers/sara/faqs/dmp-faq-roses/

1.5 Citizen Science and Public Engagement (CS/PE)

The SMD Science Education CAN has consolidated all SMD education activities. Therefore, Education is not a requirement or selection criterion for this CAN. However, public engagement, undergraduate research and citizen science efforts remain an important part of Institute objectives. These activities may also include support of programs selected through the SMD Science Education CAN. Collaboration will be an essential part of all of these activities, so discussion between participating teams will be essential. Teams selected under this CAN will have an opportunity postselection to submit additional proposals for small awards from SSERVI Central to support undergraduate research, public engagement, and citizen science activities. No identification of supporting personnel or budgets for these efforts are required for this solicitation.

1.6 NASA Safety Policy

All prospective proposers to this CAN are advised that the highest priority in all of NASA's programs is safety. Safety is the freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment. NASA's safety priority is to protect the public, astronauts and pilots, the NASA workforce (including employees working under NASA award instruments), and high value equipment and property.

All cooperative agreement recipients must work with NASA project/program staff to ensure proper credentialing for any individuals who need access to NASA facilities and/or systems. Such individuals include U.S. citizens, lawful permanent residents ("green card" holders), and foreign nationals (those who are neither U.S. citizens nor permanent residents).

2.0 AWARD INFORMATION

2.1 Award Type and Funding Information

NASA anticipates that up to three new teams will be selected through this solicitation at up to $800K per team per year for the first two years of the award and up to $1.3M per team per year

for years three through five. These values are firm caps per award, which represent everything including indirect costs as well as civil servant costs. Additional solicitations are planned for release at approximately two and a half to three year intervals. Proposers are free to propose amounts less than these for all years.

Annual funding allotments after the first award year will be provided only after the submission of an acceptable progress report (see Section 6.3). Note that all funding awards are contingent upon the availability of appropriated funds.

NASA reserves the right to reprogram, within your team, up to 10 percent of your award towards focused strategic needs within your research topic(s), based on relevant expertise within your selected team. This reallocation will be as needed in response primarily to changing strategic needs and priorities within NASA and will be done to maximize SSERVI's strategic relevance and responsiveness to the Agency and the administration as a whole.

NASA Ames Research Center will negotiate cooperative agreements with the selected lead institutions and will administer all funding. Except as provided below, cooperative agreements will be used as funding instruments for the Institute teams in accordance with regulations at 2 CFR Part 200, 2 CFR Part 1800, and nonregulatory guidance in the NASA Grant and Cooperative Agreement Manual for all institutions except commercial organizations required to provide a cost share. Commercial organizations required to provide a cost share must follow 14 CFR Part 1274. All regulations/guidance are available at http://prod.nais.nasa.gov/pub/pub_library/srba/index.html.

Specific resource arrangements established under this notice will vary depending on the nature of the lead institution, as follows:

a. Institutions of Higher Education and State and Local Governments: Cooperative Agreements will be negotiated.
b. Nonprofit and For-Profit Organizations: Cooperative agreements will be negotiated. See Section 3.4 for information on cost sharing.
c. U.S. Government-Owned, Contractor-Operated National Laboratories (not including Civil Service or military staff laboratories): Necessary resources will be provided via an interagency funds transfer and documented under a Memorandum of Agreement between the sponsoring organization and NASA Ames Research Center.
d. Non-NASA Government-Owned and Operated Laboratories: Necessary resources will be funded via an interagency funds transfer and will be documented using a Memorandum of Agreement between the other agency laboratory and NASA Ames Research Center. Negotiated project resources may be used to cover direct project costs.
e. NASA Centers (and JPL): The necessary resources for NASA-led or JPL-led proposals will be provided via NASA's internal funding procedures. If researchers from other institutions are included on a successful NASA-led proposal, then the necessary resources will be provided by the Center or JPL through the funding mechanisms listed above, as appropriate.

All funding to non-Governmental Co-Is or organizational entities must be routed through the PI's home institution, the Lead Institution. Thus, one Cooperative Agreement will be negotiated

per selected proposal. NASA will fund NASA (including JPL) and other Governmental Co-Is directly. If the PI holds a joint appointment in more than one institution, either organization could be the "home institution" contingent on their willingness to submit the proposal, make the institutional commitment (see Section 4.3) and handle the funds for the entire multi-institutional team.

2.2 Period of Performance

The Cooperative Agreements will have a five-year period of performance. A Cooperative Agreement implies a substantial involvement between, and contribution by, NASA and the recipient, in addition to the provision of research funding.

2.3 Cancellation of CAN

NASA reserves the right to make no awards under this CAN for any reason, including the absence of program funding. NASA assumes no liability (including bid and proposal costs in case of cancellation) for canceling the CAN or for anyone's failure to receive actual notice of cancellation. Should cancellation be necessary, notice will be made to all institutions submitting a Step-1 proposal and it will also be sent to the SMD research solicitations E-mail list (free to all registered users of the NASA proposal data base system at http://nspires.nasaprs.com who have subscribed to the SMD General Subscription List).

2.4 Schedule for Awards

NASA's goal for announcement of selections is approximately five months after receipt of proposals with initial awards in place three months after selection announcement. However, these estimates can change, based on the workload experienced by NASA, the availability of funds, the status of NASA's annual appropriation, and any necessary postselection negotiations with the proposing organization(s) needed for the award(s) in question.

2.5 Description of NASA Contribution

The Institute is a distributed consortium that represents a partnership between NASA and competitively selected member Teams to promote, conduct, and lead integrated multidisciplinary research. The Director and administrative staff of the Institute are located at the NASA Ames Research Center. NASA's contribution to the proposed cooperative relationship under this CAN, through the Institute Central Office, is to coordinate and integrate the work of the individual Teams, facilitate collaboration among the members of the Institute, including its international partners, support links between the NASA science and exploration communities, develop and implement the full scope of other programs and activities, and otherwise further advance the fields of lunar and planetary science and exploration. NASA does this, in part, by providing funding, structure, and management to support the research and other activities of the individual Institute Teams. The Institute will provide the collaborative tools required for Institute integration (e.g. Adobe Connect licensing), strategic and programmatic direction for the Institute through direct communication with NASA HQ/Ames/community stakeholders, and marketing/coordination of Team research results, facilities, and partnerships. See also Section 1.3.

3.0 ELIGIBILITY INFORMATION

3.1 Proposing Organizations

NASA welcomes proposals in response to this CAN from all qualified proposers. Participation in this program is open to all categories of U.S. organizations, including educational institutions, industry, not-for-profit institutions, the Jet Propulsion Laboratory, as well as NASA Centers and other U.S. Government agencies. Historically Black Colleges and Universities (HBCU), Hispanic Serving Institutions (HSI), and Tribal Colleges and Universities (TCU), as well as other minority educational institutions, small disadvantaged businesses, veteran-owned small businesses, service-disabled veteran-owned small businesses, historically underutilized business zones small businesses, women-owned small businesses, and organizations owned and controlled by socially and economically disadvantaged individuals are encouraged to apply. In accordance with Federal statutes and NASA policy, no eligible applicant shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NASA on the grounds of race, color, creed, age, sex, national origin, or disability.

3.2 Principal Investigators and Co-Investigators

Every organization submitting a proposal in response to this CAN must designate a single Principal Investigator (PI) who will be responsible for the quality and direction of the entire proposed investigation and for the use of all awarded funds. Note that this solicitation does not accept the designation of a Co-Principal Investigator; there must be only one PI who is solely responsible for the proposed investigation. As noted in section 1.3.2 above, a Deputy PI(s) must also be named as an individual(s) who will have the full authority of the PI in the event that the PI is unavailable for any reason.

NASA encourages proposers to identify by name those who are most important for the execution of the proposed research. Individuals who are critical for the successful completion of an investigation through the contribution of unique expertise and/or capabilities, and who serve under the direction of the PI, must be identified as Deputy PI(s) and/or Co-Investigators (Co-Is). Postdoctorals funded as part of this CAN should be listed as Co-Is. A Co-I must have a well-defined role in the investigation that is explicitly defined in the Management section of the proposal (see Section A.2.3 below). In addition, for all proposals submitted in response to this CAN, evidence of the commitment of all team members to participate in the proposed investigation is required by way of NSPIRES, even if they are from the same institution as the PI (see Section A.2.3 below). Other team members should be listed as Collaborators. By definition, Collaborators are unfunded.

3.3 Guidelines for Non-U.S. Participation

This CAN does not solicit for international teams. International institutions interested in partnership with the Institute are encouraged to consider the program described below (see 3.3.1) as an alternative to responding to this CAN.

U.S.-based teams may have team members from international institutions. International institutions wishing to participate in such a manner may only do so on a no-exchange-of-funds basis.

3.3.1 International Partners Program

The Institute has initiated a program of partnerships with international organizations to provide collaborative research opportunities for all members of the international lunar and planetary science community. Through this program, and separate from Cooperative Agreement Notices, non-U.S. organizations can propose to become either Associate or Affiliate Partners of the Institute. These partnerships are formed on a no-exchange-of-funds basis.

International partner membership requires a long-term commitment from both the partner and the Institute, together with tangible and specific plans for scientific interaction between the parties that will produce results of mutual benefit to both the Institute and the international partner. The program of research proposed for the International Partners Program should include collaborative activities that address one or more of the objectives defined in the Institute Mission Statement. It is preferred that organizations proposing partnership represent a broad range of academic or research groups able to represent relevant science activity within a country.

Given the collaborative structure of the Institute, proposed activities that support the development and strengthening of relationships with current and potential future Institute international partnerships are highly encouraged.

Current information on this program, the international partners of the Institute, and the definition of and the process for establishing either Associate or Affiliate Partnership, can be found at: http://sservi.nasa.gov/internationals.

3.3.2 Working with Foreign Collaborators

Foreign collaborations are strongly encouraged through this CAN. These collaborations strengthen the Institute scientifically and may provide linkages with other NASA priority activities such as the International Space Exploration Coordination Group. As always, NASA is involved in research with foreign institutions exclusively on a no-exchange-of-funds basis; therefore, funding team members at foreign institutions, even for travel to attend meetings in the United States, is not allowed. However, subject to export control restrictions, foreign nationals who are affiliated with a U.S. institution may be funded investigators and are eligible to receive remuneration through a NASA award for the conduct of research while employed or serving as an invited visitor by a U.S. organization (see Section 1.6 for information on access to NASA facilities and systems).

3.3.3 Procurement Guidelines from Non-U.S. sources

U.S. research award recipients under this CAN, where appropriate, may directly use NASA funds to procure goods, supplies, or services from non-U.S. sources, as opposed to research. Award funds may not be used to fund research carried out by non-U.S. organizations. Further information is available at: http://science.nasa.gov/researchers/sara/faqs/#14 and Section 2.3.10. c(vi) on pages 2-16 of the 2012 *NASA Guidebook for Proposers*.

Finally, the People's Republic of China is a special case. Proposals must not include bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no-exchange-of-funds arrangement. Please see Appendix A4.4 for more information and details for compliance and certification with this restriction.

3.3.4 Export Control Guidelines

Proposers are advised that, under U.S. law and regulations, spacecraft and their specifically designed, modified, or configured systems, components, and parts are generally considered 'Defense Articles' on the United States Munitions List and subject to the provisions of the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130. Export Control Information regarding U.S. export regulations is available at http://www.pmddtc.state.gov/ and at http://www.bis.doc.gov. While explicit inclusion of such material in a proposal is not prohibited, it may, in some circumstances, complicate NASA's ability to evaluate the proposal since occasionally NASA may use the services of foreign nationals who are neither U.S. citizens nor lawful permanent residents of the U.S. to review proposals submitted in response to this CAN. Therefore, proposers to this CAN are strongly encouraged not to include material subject to the provisions of ITAR in their proposals, although the effort being proposed may itself be subject to ITAR (see website noted above). If it is essential to include any export controlled information subject to ITAR in a proposal, a notice to that effect must be prominently displayed on the title page of the proposal that shall state:

> *The information (data) contained in* [insert page numbers or other identification] *of this proposal is (are) subject to U.S. export laws and regulations. It is furnished to the Government with the understanding that it will not be exported without the prior approval of the proposer under the terms of an applicable export license or technical assistance agreement.*

Note that it is the responsibility of the proposer to determine whether any proposal information is subject to the provisions of ITAR.

3.4 Cost Sharing or Matching

Cost sharing is required for commercial organizations to receive a cooperative agreement, unless the commercial organization can demonstrate that it will not receive substantial compensating benefits for the partnership effort. If no substantial compensating benefits will be received, then cost sharing is not required, but may be offered voluntarily and may be accepted. See section

2.3.10 (b) Required Budget Details of the *NASA Guidebook for Proposers*. Reference also 2 CFR §1800.922 and 14 CFR §1274.204, (Costs and Payments), paragraph (b), Cost Sharing.

If an institution of higher education, hospital, or other nonprofit organization wants to receive a grant or cooperative agreement, cost sharing is not required. The award would be made in accordance with the requirements of 2 CFR 200, 2 CFR 1800, and the Grant and Cooperative Agreement Manual.

NASA may accept cost sharing from any type of organization if it is voluntarily offered. Reference 2 CFR §200. 306 (Cost Sharing or matching).

Cost sharing is not part of the peer-review evaluation criteria. However, the Selection Official may take cost sharing into account in decisions between proposals of otherwise equal merit.

4.0 PROPOSAL AND SUBMISSION INFORMATION

4.1 Proposal Submission

All proposals submitted in response to this CAN must be submitted in a fully electronic form. No hard copy of the proposal is required or permitted. Electronic proposals must be submitted by one of the officials at the PI's organization who is authorized to make such a submission. Electronic submission of the proposal by the authorized organization representative (AOR) serves as the required original signature by an authorized official of the proposing organization.

Proposers may opt to submit proposals in response to this CAN via either of two different electronic proposal submission systems: either via the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) at http://nspires.nasaprs.com or via Grants.gov at http://www.grants.gov. Additional information about the NSPIRES system can be found in Section A.1 of Appendix A.

4.1.1 The Two Step Proposal Submission Process

To facilitate the early recruitment of a conflict-free review panel this solicitation will use a two-step proposal submission process, in which a mandatory "Step-1 proposal" is submitted in place of a Notice of Intent (NOI). Although similar to an NOI in content, a Step-1 proposal differs from an NOI in a few important ways, please see Section 4.1.2, below.

Step-1 Proposals are Due: 11:59 p.m. Eastern, September 23, 2016.
Changes may be made to funded investigators only up until 11:59 PM Eastern on October 26, 2016 (one month prior to the Step-2 proposal due date).
Questions are permitted up until 15 calendar days prior to proposal due date.
Step-2 (Full) Proposals are Due: 11:59 PM Eastern on November 21, 2016.

4.1.2 Step-1 Proposals

Like an NOI, the Step-1 proposal is an abbreviated summary of the intended research, but a Step-1 proposal differs from an NOI in a few critical ways. First, a Step-1 proposal must be submitted by the organization Authorized Organizational Representative (AOR), as opposed to the traditional NOI, which may be submitted by any individual. This means that prospective PIs should allow their organizations adequate time to submit these proposals. Second, since this process is to facilitate the assembly of a conflict free review panel, we encourage PIs to invite team members to participate as early as is practicable, so prospective PIs should allow their team members time to confirm their participation via NSPIRES. Finally, a Step-1 proposal is a prerequisite for submission of a full Step-2 proposal later. Only proposers who submit a Step-1 proposal are eligible to submit a Step-2 proposal.

The Step-1 proposal will be limited to the contents of the 4000 character limited Proposal Summary field in the NSPIRES cover pages. No budget is required. Full (Step-2) proposals must broadly contain the same scientific goals proposed in the Step-1 proposal. ~~The PI cannot be adjusted but other~~ Team members may be changed up to **15** ~~30~~ days prior to the Step-2 proposal due date. To add funded investigators between Step-1 and Step-2, proposers must inform the point(s) of contact identified in Section 7 and cc sara@nasa.gov at least **15** ~~30~~ days in advance of the Step-2 due date. Submission of the Step-1 proposal does not obligate the proposer to submit a Step-2 (full) proposal later. Step-1 Proposals will be treated as competition-sensitive material. Step-1 Proposals are to be submitted electronically by entering the requested information through the NSPIRES system at http://nspires.nasaprs.com. Additional information about the NSPIRES system can be found in Section A.1 of Appendix A. **[Changed October 18, 2016]**

For the purpose of generating a Step-1 Proposal, the system will request the following information:

- Principal Investigator's name, institution, mailing address, phone number, and E-mail address
- Name(s) and institution(s) of any Co-Investigator(s) known
- Descriptive title of the intended investigation
- Brief description of the investigation to be proposed

A separate Step-1 Proposal should be submitted for each intended proposal. Note that this Step-1 Proposal is also the preliminary version of the Proposal Cover Page/Proposal Summary; the information will carry over into the final Step-2 Proposal cover pages for your convenience. Additional details regarding the Proposal Cover Page/Proposal Summary can be found in Section A.2.3 of Appendix A.

In order to be able to submit a Step-1 proposal including the required Proposal Cover Page/Proposal Summary, all organizations proposing to this CAN and all participating investigators must be preregistered in the NASA proposal database system (NSPIRES) and have received a User ID and password. This includes the PI and all Co-Investigators and Collaborators. This applies equally for proposals submitted via Grants.gov, as well as for proposals submitted via NSPIRES. NSPIRES registration can be done at the website

http://nspires.nasaprs.com. Early registration is advised. A Help Desk is available at (202) 479-9376 or by E-mail at nspires-help@nasaprs.com.

Following the submission of a Step-1 proposal, the proposer will be notified through NSPIRES whether the Step-2 proposal is "encouraged" or "discouraged," at which point the proposer will be able to submit a Step-2 proposal. No evaluation of intrinsic merit will be performed on Step-1 proposals. The compliance and relevance of the proposed work to this CAN will be the main factor in deciding whether submission of a Step-2 proposal will be encouraged. Please note that the Step-2 proposal evaluation is independent of the Step-1 evaluation.

For clarity, the Step-2 Proposal is defined as the full proposal, the requirements of which are outlined in this CAN.

4.1.3 Questions Related to this CAN

Clarification questions regarding this solicitation should be submitted via E-mail no later than 15 calendar days prior to the Step-2 proposal due date to the designated points-of-contact given in Section 7.0.

Note that, where appropriate, questions and answers will be made publicly available on the NSPIRES web page on which this CAN is posted. It is the responsibility of interested proposers to check for such information prior to the submission of their proposals.

A "frequently asked questions" (FAQ) for this CAN will be posted on the NSPIRES web page associated with this CAN.

4.1.4 Late Proposals

Any proposal submitted after the date and time specified in 4.1 will be handled in accordance with NASA's policy as given in the *NASA Guidebook for Proposers*, Appendix B, Section (g) (also see Sections 3.2 and F.23). Proposals or proposal modifications received after the latest date specified for receipt may be considered only if a significant reduction in cost to the Government is probable or if there are significant technical advantages, as compared with proposals previously received. However, in most cases, proposals submitted after the due date will not be reviewed or considered for selection. In such cases, it is entirely at the discretion of the proposer to decide whether or not to resubmit it in response to a subsequent appropriate solicitation.

4.1.5 Withdrawal of Proposals

The proposer may withdraw a proposal at any time prior to the official award. Proposers must notify NASA if the research proposed in response to this CAN is funded, in whole or in part, by another proposal or organization. Additionally, NASA must be notified of other changed circumstances that dictate withdrawal of the proposal or termination of evaluation.

4.2 Content and Form of Proposal

Detailed requirements for the content and form of a proposal can be found in Appendix A of this

CAN.

4.2.1 General Scope

Proposals should clearly address the five evaluation criteria (see Section 5.1) and clearly articulate:

1. The innovative research program to be pursued (e.g., the value to science and exploration that derives from addressing questions common to multiple Target Bodies) (Scientific and Technical Merit)
2. A plan to support other Institute and NASA objectives (Other Institute Objectives)
3. A plan that describes how the staff, facilities, and other resources identified in the proposal will be managed to achieve the research objectives (Management Plan)
4. The relevance of the proposed research to the research goals in Section 1.4 and specific areas in which the Team's activities will contribute to strategic goals for exploration and science (Relevance)
5. The budget and institutional commitments (Cost)

It is expected that individual Teams will often be comprised of members of more than one institution, and in many cases an interdisciplinary approach is also appropriate. Proposals should thoughtfully address the approach to Team management, discussing how Team members and their individual contributions will be integrated into a productive whole. This should include the use of information technology (IT) to promote participation and cohesion both within and between Teams. Proposals should clearly articulate how the proposed work will contribute to the overall goals of the Institute, as well as the specific topics in Section 1.4.

4.2.2 Specific Objectives

Successful proposals must address and be highly responsive to all five of the evaluation criteria (Scientific and Technical merit, Plan to support other Institute and NASA objectives, Management, Relevance, Cost; see Section 5.1).

Proposals should include broadly based investigations of the highest quality that address the science and exploration objectives in this CAN. Proposals should bring integrated, interdisciplinary expertise and methodology to bear on the questions being investigated. Proposals consisting of projects addressing multifaceted questions must demonstrate credible connections amongst the projects. It is expected that the Teams will bring together broadly based expertise from more than a single institution. The merit of the proposed investigation will be evaluated per the requirements found in Section 5.1.1.

Proposals must describe specific plans of how the proposed Team will integrate with, and contribute to, the overall Institute (its members, programs, and objectives). The merit of the proposed plans will be evaluated per the requirements found in Section 5.1.2.

Proposals must include separate plans that describe the management of science activities to achieve research objectives, as well as the management plan for resultant data products and samples, per the requirements of Section 5.1.3.

The research, training, and other activities described in each proposal must demonstrate how they relate strategically to NASA's science and exploration goals. The relevance of the proposed activities will be evaluated per the requirements found in Section 5.1.4.

The Cost of the proposed activities will be evaluated per the requirements found in Section 5.1.5.

4.2.3 Teaming with Underrepresented and Minority Institutions

NASA recognizes that critical steps must be taken to broaden the participation of underrepresented groups and Minority Institutions in NASA missions, research, and education programs (e.g., see NASA Science Plan 2007-2016 at http://science.nasa.gov/about-us/science-strategy). The Institute is committed to increasing the participation of underrepresented groups in its activities and strongly encourages Minority Institutions to participate in proposals. In the event of selecting between otherwise equally-rated proposals, the Selection Official may take teaming with underrepresented and Minority Institutions into account.

NASA's Office of Equal Opportunity Programs recognizes the definition of a Minority Institution as identified by the Office of Civil Rights, U.S. Department of Education. Additional information regarding the criteria for designation as a Minority Institution and the current list of qualifying institutions can be found at the following websites:

- For Tribal Colleges and Universities see: http://www.ed.gov/about/inits/list/whtc/edlite-tclist.html

- For Historically Black Colleges and Universities http://www.ed.gov/edblogs/whhbcu/one-hundred-and-five-historically-black-colleges-and-universities/

- For Hispanic Serving Institutions see: http://www.hacu.net/assnfe/CompanyDirectory.asp?STYLE=2&COMPANY_TYPE=1,5

4.3 Proposal Budget and Funding Restrictions

(1) Regardless of whether functioning as a Team lead or as a Team member, personnel from NASA Centers must propose budgets based on NASA's current accounting guidelines. Costs (direct or indirect) that will not be paid out of the resulting award, but are paid from a separate NASA budget, and are not based on the success of this specific proposal, should not be included in the proposed budget.

(2) Non-NASA U.S. Government organizations should propose based on the Managerial Cost Accounting Standards for the Federal Government, as recommended by the Federal Accounting Standards Advisory Board (see http://www.hq.nasa.gov/fullcost/ for further information). Proposal budget totals must include all costs that will be paid out of the resulting award. Include figures for all years (up to 5 years for this CAN) of the proposed project in the cover pages, describing the complete budget, including any subawards. All labor costs, including civil servant labor, shall be provided in this part of the cover page and

should be included in your overall budget totals. However, labor figures will automatically be redacted from the cover page budgets by NSPIRES for presentation to the peer reviewers. It is incumbent upon the civil servant PI/Co-I to provide their center's total burdened amounts to the proposing PI/institution.

(3) NASA or non-NASA flight team members of U.S. or non-U.S. missions may not request or use funds procured under this solicitation to support Flight Mission Operations. Additional guidelines for flight team members proposing to use flight data in their proposals can be found in Section 8.1.

(4) Partnering between NASA scientists and scientists from other Federal laboratories can take a number of forms, both formal and informal. Any and all valid mechanisms are open for consideration by NASA. Examples include: Intergovernmental Personnel Act (IPA) appointments, an interagency agreement, leaves of absence or sabbaticals to participate on-site at any of the institutions, Memoranda of Understanding (MOUs) for shared facility usage, and/or arrangements for joint appointments at accredited universities.

(5) Travel, including foreign travel, is allowed as may be necessary for the completion of the proposed investigation and representing the Team at various Institute meetings. Travel for the purpose of presenting research results at appropriate professional meetings is also allowed under this CAN.

(6) Costs for the purchase and/or usage of specific hardware or software, or associated with the use of high performance networks essential for the proposed research, must be included in the budget. If an adequate system does not already exist, Teams should also budget for the purchase and installation of a room-based videoconferencing system to be installed in a designated conference room at the Lead Institution. NASA may cover costs associated with certain additional communication and collaboration tools, as needed, to be negotiated prior to the start of the award. Proposed purchases of hardware, software, and telecommunications devices should be clearly indicated as dedicated to the proposed efforts in response to this CAN.

(7) U.S. research award recipients may directly purchase supplies and/or services from non-U.S. sources that do not constitute research, but award funds may not be used to fund research carried out by non-U.S. organizations. However, subject to export control restrictions, a foreign national may receive remuneration through a NASA award for the conduct of research while employed either full- or part-time by a U.S. organization or while making an official visit to a U.S. organization.

(8) The construction of facilities (buildings) is not an allowed activity for any of the programs solicited in this CAN. For further information on the allowable costs, refer to 2 CFR 200 Subpart E and 2 CFR 1800 (http://prod.nais.nasa.gov/pub/pub_library/srba/index.html).

(9) Profit for commercial firms is not allowable under grant or cooperative agreement awards. Recovery of costs only (no profit) for commercial organizations is allowed. Costs for

managing the project may be allowed. These costs, whether direct charges or part of the indirect cost agreement, must be consistent with 2 CFR 200 Subpart E.

5.0 PROPOSAL EVALUATION AND SELECTION

5.1 Evaluation Criteria

The five criteria for evaluation of proposals in response to this CAN are:
1. Scientific and Technical merit
2. Plan to support other Institute and NASA objectives
3. Management Plan
4. Relevance
5. Cost

Selection is expected to be highly competitive, and deficiencies in any of the five evaluation criteria may result in the nonselection of a proposal. NASA may accept proposals without prior discussion with the proposing entities; therefore, proposals should be as complete as possible and submitted on the offeror's most favorable terms.

5.1.1 Scientific and Technical Merit

This criterion will be the most heavily weighted and addresses the scientific and technical merit of the proposed research program with respect to the topics described in Section 1.4. Particular emphasis will be placed upon innovative and interdisciplinary approaches to fulfill the research objectives and the formulation of a research plan that addresses multiple Target Bodies. This criterion also includes appropriate breadth of the research and quality of the Team. In addition, this criterion includes the probability of success (i.e., bringing the proposed tasks to successful closure) based on the period of performance and available resources. Prior relevant accomplishments can be used as one form of positive evidence that the proposed research plan can be carried out successfully.

5.1.1.1 Institutional Commitment

The term 'institutional commitment' is intended to include those aspects of existing or proposed infrastructure that will contribute in a substantial way to the success of the proposed research. Contributions by both the lead institution and other Team members or institutions can be considered. Examples include:
- Training of undergraduate, graduate, and postgraduate students
- Academic degree or certification programs in Target Body studies
- Permanent or tenure-track positions
- Offices, laboratories (or other experimental facilities), and computational facilities
- Communications technology equipment and/or staff time
- Associated research groups (proposal must demonstrate that these will be of direct and substantive benefit to the Institute and its scientific community)
- Engineering and technology planning and development capabilities that allow substantive contributions to existing or planned NASA space or lunar/planetary exploration missions

In general, the cooperative offer of these and other critical resources will be considered *prima facie* evidence of institutional commitment. If provided at no-cost, these contributions will be considered cost-sharing and will only factor into decisions made between proposals of otherwise equal merit (Section 3.4 and 5.1.5). See the *NASA Guidebook for Proposers* for further details.

5.1.2 Plan to Support Other Institute and NASA Objectives

This criterion addresses the merits of the proposed activities (in addition to and distinct from the technical quality of the research plan) that will contribute to the objectives of the Institute as a multidisciplinary collaborative consortium (also see Section 1.4). Although Teams are generally expected to be multi-institutional, every Team and individual member of the Institute is expected to be an active participant in the Institute's cooperative endeavors (e.g., video seminars, workshops, focus groups, mentoring of students, and public engagement). Included in the evaluation of the elements specifically advanced to address this section will be an assessment of the degree to which the proposers understand the demands of participation in the Institute and how well they are prepared to meet those demands.

The following categories are presented as nonexclusive examples of activities that contribute to the objectives of the Institute. The potential activities below exemplify the Institute's commitment to: expansion of the professional community, training of young career scientists and engineers, and support of the NASA mission. Discussion of efforts in relation to these activities can represent evidence of institutional commitment from the proposing organizations. A proposal is not required to show strength in all of these areas. Evidence of these efforts, presented via statements of support, letters of commitment, or other means is encouraged.

- Training: development of undergraduate and/or graduate courses, degree programs, or other formalized curricula in science and engineering.
- Professional Community Development: staffing or activities that strengthen and support the development of the profession of Target Body(s) science and exploration, such as publications programs, workshops, seminar series, and/or focus groups.
- Information Technology: creative and innovative ways to use modern communication and other information technologies to enable scientific research, training, collaboration, and other interactions among Institute members.
- Teaming with Minority Institutions: efforts to include underrepresented groups in a broad cross-section of Team activities, including scientific research, training, engagement, and other collaborative activities. See section 4.2.4 for further information.
- Staff: institutional commitment in the form of faculty or staff time supporting Institute goals, including personnel for support of engagement efforts.
- Facilities: major laboratory or other scientific research facilities, especially facilities that can be made available to researchers from other institutions.
- Synergistic collaboration: collaborations with other funding agencies, or other NASA programs, particularly between science and exploration.
- Commercial Space Development: activities that support the development of, and strengthen ties with, commercial space enterprises.

- International Partnerships: activities that support the development and strengthening of relationships with current and potential future Institute international partnerships are highly encouraged. See also section 3.3. (Links to current partnerships are available at http://sservi.nasa.gov/internationals/.)
- Other: any additional evidence of commitment to building a strong interdisciplinary science community, enhancement of the effectiveness of the Institute, or demonstration of the proposing Team's commitment to the virtual institute concept.

5.1.3 Management Plan

The management plan is composed of two sections: the Science Management Plan and the Data and Sample Management Plan.

5.1.3.1 Merit of the Science Management Plan

Each proposal must include a separate plan that describes how the staff, facilities, and other resources identified in the proposal will be managed to achieve the research objectives. This plan should include:

- A structure for administering personnel, with particular emphasis on how the activities of researchers from different science disciplines will be integrated in implementing the proposed research program
- A definition of the roles and responsibilities of each participant, noting the proportion of each individual's time to be devoted to the proposed research activity
- A specific plan, when multiple institutions are involved in the proposal, for bringing separate elements together into a well-functioning unit. (If a consortium of institutions is proposed, letters verifying cooperation, coordination, and commitments of resources from administrative officials of the consortium members must be included as an appendix to the proposal.),
- An outline of the general plan of work, including anticipated key milestones for accomplishments,
- A plan for maintaining communication among team members (e.g., weekly tag-ups, videoconferencing, annual meetings), and
- An assessment of cost – whether it is realistic and reasonable, both in the context of the proposed scope of work and compared to funds available through this CAN.

5.1.3.2. Merit of the Data and Sample Management Plan

Consistent with the NASA Plan for increasing access to results of Federally funded research (http://science.nasa.gov/media/medialibrary/2015/07/08/NASA_Plan_for_increasing_access_to_results_of_federally_funded_research1.pdf), these proposals must include a data management plan to ensure that data fit for use are available for discovery and reuse. Management plans must include:

- Types of data, samples, and other materials to be produced in the course of the project.
- Standards to be used for data and metadata format and content.
- Policies for providing access and enabling sharing.
- Plans for archiving and preserving access to data and materials.

The Science Mission Directorate requires that the data needed to reproduce figures, tables and other representations in publications be made available at the time of publication (e.g., via supplementary material). Full data sets should be made openly available as soon as practicable, but no later than two (2) years after the data were collected. Data from figures and tables in publications must be available at the time of publication (e.g., supplementary material). This period may be extended under exceptional circumstances, but only by agreement between the PI and NASA.

Additional information can be found in http://science.nasa.gov/researchers/sara/faqs/dmp-faq-roses/.

5.1.4 Relevance

This criterion addresses the relevance of the overall, integrated proposal to the science and exploration goals of NASA as expressed through this CAN. Proposals must demonstrate, in a one-page summary, the potential contribution of the effort to the Institute's guiding premise that science and exploration are fundamentally entwined: science enables exploration and exploration enables science. Relevant proposals must also demonstrate an understanding of, and articulate how, the proposed research relates to and influences understanding of the Target Body(s). Strategic relevance can be demonstrated by (but is not limited to) the items listed in Section 1.4. Relevance for Astrophysics should refer to the Decadal Survey, New Worlds, New Horizons in Astronomy and Astrophysics. Relevance to Heliophysics must be rationalized based on the Heliophysics research areas document that may be found on the NSPIRES home page for this SSERVI CAN under "Other Documents". In any case, proposed work must be related to and/or enabled by research or exploration of the Target Body(s).

5.1.5 Cost

Cost data for U.S. proposals will be evaluated both by peer review (for cost realism and cost reasonableness) and by NASA program personnel (for total cost and comparison to available funds). Proposers must follow the budget requirements in Section 2.3.10 of the *NASA Guidebook for Proposers*. In evaluating the cost reasonableness of the proposals, reviewers will assess three components of cost: 1) Work Effort, 2) Other direct costs, 3) Support of other institute and NASA objectives.

1) Work Effort will determine whether the proposed level of effort (i.e., labor Full Time Employees or FTEs) is sufficient to complete proposed scientific objectives. Salary levels, fringe benefit rates, and overhead rates are not part of that evaluation.
2) The proposed other direct costs (i.e., supplies, equipment, travel) will be assessed by peer reviewers to determine if they are adequate to accomplish the goals of the investigation.
3) Proposers are required to participate in all listed institute meetings per section 5.1.2 and the evaluation of budget will include an assessment on whether adequate support of other institute and NASA objectives has been included.

Each proposal shall include a budget justification for each year of the proposed effort and shall be supported by appropriate narrative material and budget details in compliance with the instructions given in Section A.2.3 pgs 47-49..

Failure to adequately provide detailed cost data will require NASA Procurement Personnel to contact the proposing organization for the required information. This will result in a delay of the award. All Proposers are required to submit a thoroughly detailed cost breakdown. NASA Procurement Personnel must be able to determine that all proposed costs are allowable and reasonable. A detailed budget will facilitate this cost analysis. Reference Exhibit G of the Grant and Cooperative Agreement Manual located at the following URL: http://prod.nais.nasa.gov/pub/pub_library/srba/index.html.

Although cost sharing is not part of the peer-review evaluation criteria, the Selection Official may take cost sharing into account in decisions between proposals of otherwise equal merit. See Section 3.4. for further information.

Proposers are urged to make sure that adequate funds are included for partners commensurate with their level of involvement in proposed activities.

5.2 Evaluation Process

Proposals submitted under this CAN will be evaluated by peers of the proposing personnel who have been screened for conflicts of interest. In addition, one or more external reviews, solicited by the SMD or HEOMD Program Officers and made available to the review panel, may augment the panel review. As a general rule, a peer review panel may wholly or partially accept or reject external reviews. The final panel evaluation is reviewed and approved for completeness and clarity by the chairperson of the panel, the Institute Director, and the SMD and HEOMD Program Officers.

The number and significance of strengths and weaknesses for each of the five criteria (science and technical merit, merit of the plan to support other institute and NASA objectives, management plan, relevance, and cost) will be used to evaluate the proposal.

Review panels will base proposal evaluations on the criteria and objectives stated in this CAN. To help ensure uniformity of the reviews, NASA asks its reviewers to document their findings using clear, cogent language that is understandable to the nonspecialist. NASA asks reviewers to organize their comments into major and minor strengths and weaknesses, where it is understood that a minor weakness is correctable if addressed early in the period of performance, but that a major weakness is considered a serious flaw that could: a) effectively prevent, in whole or in part, the proposed objectives from being accomplished, and/or, b) may render the proposal unsuitable for consideration for funding (e.g., the proposal fails to address the CAN's objectives, does not show promise of making a significant advance in its field, or is too costly compared to the available resources).

To aid in the review process, proposals should clearly delineate the sections that deal with technical merit, support for other institute and NASA objectives, management plan, relevance, and cost. These will be scored separately, and each section should stand on its own merits.

Cost sharing is not part of the peer-review evaluation criteria. However, the Selecting Official may take cost sharing into account in deciding between proposals of otherwise equal merit.

The number and significance of strengths and weaknesses for a proposal determines its final summary evaluation based upon the following adjectival scale:

Evaluation	Basis for Summary Evaluation	Potential for Selection
Excellent	A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the CAN as documented by numerous and/or significant strengths and having no major weaknesses.	Top priority for funding subject to the availability of funds and programmatic balance in the context of the objectives of the CAN and/or the existing program as a whole.
Very Good	A highly competent proposal of very high merit that fully responds to the objectives of the CAN, whose strengths fully out balance any weaknesses.	Second priority for selection subject to: (i) the availability of funds, (ii) considerations of programmatic balance, and (iii) the constraint that no Excellent proposal having substantially the same objective(s) be displaced.
Good	A competent proposal that represents a credible response to the CAN whose strengths and weaknesses essentially balance.	May be selected as funds permit for purposes of programmatic balance once dissimilar programmatic areas represented by Excellent and Very Good proposals have been funded.
Fair	A proposal that provides a nominal response to the CAN but whose weaknesses outweigh any perceived strengths.	Not selectable regardless of the availability of funds.
Poor	A seriously flawed proposal having one or more major weaknesses (e.g., an inadequate or flawed plan of research, or lack of focus on the objectives of the CAN).	Not selectable regardless of the availability of funds.

5.3 Review of Applicants in the Federal Awardee Performance and Integrity Information System (FAPIIS)

Prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold (currently $150,000), NASA is required to review and consider any information about the applicant that is in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System—FAPIIS)

accessible through the System for Award Management (SAM, https://www.sam.gov) (see 41 U.S.C. 2313). An applicant, at its option, may review information in FAPIIS and comment on any information about itself that NASA previously entered and is currently in FAPIIS. NASA will consider any comments by the applicant, in addition to the other information in FAPIIS, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in 2 CFR 200.205 Federal awarding agency review of risk posed by applicants.

5.4 Selection Process

At the conclusion of the review process, draft selection recommendations are developed by the Institute Director and submitted for concurrence to the SMD and HEOMD Program Officers. The Program Officers submit final recommendations to the Selecting Officials, together with the evaluation report and materials. The Selecting Officials for the CAN are the Director of the Planetary Science Division of SMD and the Manager of the Human Research Program from HEOMD.

Note that NASA reserves the right to offer selection of only a portion of a proposed investigation; in such a case, the proposer will be given the opportunity to accept or decline NASA's offer. For this program, it is expected that a cooperative agreement will be sought for all selected institutions other than Government agencies, for which an interagency transfer of funds will be used, or NASA Centers, for which internal funding procedures will be used (see Section 2.1).

Proposers should note that issues of programmatic balance can be a major discriminator in proposal final selections. Programmatic balance can be defined as balancing proposal selection based upon considerations with respect to the objectives of the program. For example, the potential need to represent multiple scientific topics or Target Body(s) research in the final selected Institute Team portfolio may be a major factor in Team selection. All selections are final and may not be appealed.

6.0 AWARD ADMINISTRATION INFORMATION

6.1 Notice of Award

As soon as possible after the selection is concluded, NASA will inform each proposer of the selection or nonselection of his/her proposal by postal letter or electronic mail and will offer a debriefing. For selected proposals, a NASA Grants Officer, who is the only official authorized to obligate the Government, will contact the offeror's business office. Per 2 CFR 1800.209, NASA allows preaward costs of up to 90 days prior to the award date to be reimbursed. Awards are made to the proposing institution, not directly to the proposal PI.

6.2 Administrative and National Policy Requirements

All administrative and national policy requirements may be found at 2 CFR 200, 2 CFR 1800, 14 CFR 1274 (commercial firms when cost share is required) and the NASA Grant and Cooperative Agreement Manual (all available at http://prod.nais.nasa.gov/pub/pub_library/srba/index.html).

If research involving human subjects is funded, requirements found in NASA Policy Directive 7100.8E and NASA Procedural Requirement 7100.1 will apply.

- NASA Policy Directive 7100.8E Protection of Human Research Subjects http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal_ID=N_PD_7100_008E_&page_name=main&search_term=7100
- NASA Procedural Requirement 7100.1 Protection of Human Research Subjects http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal_ID=N_PR_7100_0001_&page_name=Preface

6.3 Award Reporting Requirements

Annual funding allotments after the first award year will be provided only after the submission of an acceptable progress report. The requirement for annual reporting is met by satisfactory input to the Institute's Annual Science Report.

All information disseminated as a result of this cooperative agreement shall contain a statement that acknowledges the Institute's support and identifies the award by number (e.g., These results are based upon work supported by the Institute under award No(s) GRNASM99G000001, etc.).

Award recipients may also be subject to reporting requirements under the NASA Plan for Increasing Access to the Results of Scientific Research. Any such requirements will be identified in the Notice of Award.

If the Federal share of any award issued under this CAN is more than $500,000 over the period of performance, additional reporting requirements will apply. See 2 CFR 200 Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters (http://www.ecfr.gov/cgi-bin/text-idx?SID=4b63b1740bdb186d3bf5d346f5ddf42c&mc=true&node=ap2.1.200_1521.xii&rgn=div9

7.0 POINTS OF CONTACT FOR FURTHER INFORMATION

Yvonne Pendleton, Director
Solar System Exploration Research Virtual Institute
NASA Ames Research Center, N17-1
Moffett Field CA 94035-1000
Phone: 650-604-1850
Email: yvonne.pendleton@nasa.gov

Greg Schmidt, Deputy Director,
Solar System Exploration Research Virtual Institute
NASA Ames Research Center, N17-1
Moffett Field CA 94035-1000
Phone: 650-604-2611
E-mail: gregory.schmidt@nasa.gov

8.0 ANCILLARY INFORMATION

8.1 Sources of Information and Data

The Institute supports research investigations relevant to the scientific interpretation of data from past missions/telescope observations that are now in the public domain and to the science and exploration objectives of future missions. It supports investigations that use only publicly available and released data.

Data to be used in proposed investigations must be available in the Planetary Data System (PDS) (http://pds.nasa.gov) or other publicly accessible archive(s) no later than 30 days prior to the submission due date for proposals. Spacecraft data that have not been placed in the public domain or that have not yet been acquired may not be proposed for use in these investigations. Data in peer-reviewed publications are considered available. Once a proposal has been awarded, investigators are free to augment the proposed dataset under analysis with data deposited in the PDS (or other publically available archive) subsequent to 30 days prior to the submission due date for proposals.

Members of current mission flight teams proposing to this CAN must clearly demonstrate that their proposed investigation will use only released and publicly available data. Additionally, current flight team members, who have proposed to this CAN in either the PI, Deputy PI, Co-I or Collaborator status, must clearly demonstrate how the proposed research does not overlap – and is nonredundant with – data analysis duties/responsibilities already funded within their respective mission.

In all cases, it is the responsibility of the investigator to acquire any necessary flight data. Proposers who wish to use photographic and cartographic materials may access such data through the nearest Regional Planetary Image Facility (RPIF). RPIF locations are listed on the RPIF home page at http://www.lpi.usra.edu/library/RPIF.

Proposers who will be taking new data (other than NASA flight data) are not subject to the 30 day prior to submission rule as outlined above. Examples of such "new data" include – but are not limited to – experimental, laboratory, or telescope data. Proposers are free to propose a telescopic data acquisition campaign but must accurately reflect the cost involved in such a campaign in their budgets. Proposers are encouraged to explore methods to minimize such costs, such as remote telescopic operations.

8.2 Public Access to Data

As a matter of NASA policy, all data taken or products created in the performance of a NASA research award are considered to be public domain. In addition, NASA may judge that new data or products (including items produced in the pursuit of Citizen Science/Public Engagement efforts) obtained through an investigation selected through this CAN may be of value to the science and/or education communities at large. If so, NASA reserves the right to direct that such items be deposited in an approved publicly accessible site and will negotiate appropriate funding to enable such activities (e.g., the reduction and calibration of the data into a format amenable for use by peer scientists).

In addition, NASA anticipates that starting in 2016, award recipients will be required to archive all as-accepted manuscript versions of publications that result from NASA awards in the National Institutes of Health PubMed Central full-text archive. This requirement will not go into effect until it is included in the terms and conditions of the awards. Details and instructions for archiving manuscripts will be fully described in future grant information circulars, Frequently Asked Questions (FAQs) and other official Agency announcements and training materials.

8.3 Accessibility and Usability Guidelines

NASA shall ensure that employees with disabilities have access to and use of information and data that are comparable to information and data available for other employees or members of the public without disabilities. The proposal shall address how electronic and information technology accessibility will be met. For additional information regarding the Architectural and Transportation Barriers Compliance Board (Access Board) policies, see:

- Accessibility Guidelines http://www.hq.nasa.gov/webmaster/accessibility/
- Usability Guidelines http://www.usability.gov.

8.4 NASA-Provided High-end Computing Resources

SMD provides a specialized computational infrastructure to support its research community, managed on its behalf by NASA's High-End Computing (HEC) program (see the HEC website at http://www.hec.nasa.gov/). Two major computing facilities are offered, namely, the NASA Center for Climate Simulation (NCCS) at the Goddard Space Flight Center (GSFC), and the NASA Advanced Supercomputing (NAS) facility at the Ames Research Center (ARC).

The HEC program facilities maintain a range of computing systems with significant data storage resources. These offerings are summarized at http://www.hec.nasa.gov/about/overview.html. Augmentation and refreshment of these central systems occur on a periodic basis. The HEC program also provides assistance in code porting, performance tuning, scientific data visualization, and data transfer.

Any need for computing time and other HEC program resources for the proposed research must be explicitly justified, using the template described below, in no more than one page, which will not be counted toward the maximum page limit for a proposal. At a minimum, this justification

must include how the computational resources would support the investigation and a multi-year resource-phasing plan, in annual increments, identifying the computing time and data storage requirements and the preferred location (facility) where the computational project will be accomplished for the duration of the proposed award period.

A template for populating the multi-year phasing plan is available on the HEC Website at http://www.hec.nasa.gov/request/science_call.html. The completed template should be converted to PDF and uploaded via NSPIRES using the "Appendix" document type but otherwise in a manner similar to that by which the proposal document and the "Total Budget" file are uploaded. For proposals submitted via Grants.gov it should be attached as an appendix to any appropriate form location. Note, computing time must be described in the plan using Standard Billing Units (SBUs), a common unit of measurement employed by the HEC program for allocating and tracking computing usage across its various architectures. SBU Conversion Factors are available at http://www.hec.nasa.gov/user/policies/sbus.html. Proposers may also contact HEC support staff for further assistance calculating SBUs; contact information can be found at http://www.nas.nasa.gov/hecc/support/user_support.html for NAS User Support, and https://www.nccs.nasa.gov/index.html for NCCS User Services Group.

In addition, proposers must indicate on the NSPIRES Cover Page that a request for computing resources is included in the proposal. As they review the intrinsic merit of the proposed investigation, science peer review panels will be asked to consider the realism and reasonableness of the computing time request and whether it is an appropriate utilization of the highly constrained resources. Negotiations may be necessary to allow adjustments to computing time requests given resource constraints.

Allocation of HEC resources will be awarded based on the multi-year phasing plan confirmed during the selection process. Principal Investigators (PIs) have the opportunity to submit requests for minor modifications to their plan (e.g., allocation of additional HEC resources) on a semi-annual basis. The HEC website provides the mechanism for PIs to formally request modifications to computing time allocations as identified in their funded proposals. Visit http://www.hec.nasa.gov/request/science_call.html for process details. Requests for modifications cannot be guaranteed, but SMD will make every attempt to satisfy the needs in the context of the overall set of requirements, resource constraints, and science priorities.

To expedite initiation of new projects where PI and/or users are foreign nationals (whose accounts will require additional documentation and longer processing), the HEC program will consider providing a minimal allocation to such projects which have been notified of pending funding soon after the PI submits an allocation request in e-Books (accessed through the HEC website). PIs should identify this foreign national status in their request abstract.

For further information about NASA provided High-End Computing resources contact:

Tsengdar J. Lee
Earth Science Division
Science Mission Directorate
NASA Headquarters
Washington, DC 20546-0001

E-mail: Tsengdar.J.Lee@nasa.gov
Telephone: 202-358-0860

8.5 Electronic Notification of NASA Research Solicitations

NASA Headquarters maintains an electronic notification system to alert interested researchers of its research program announcements. Subscription to this service is free to all registered users of the NASA proposal data base system at http://nspires.nasaprs.com/. To add or change a subscription to the electronic notification system, users should login to the data base system and select "Account Management" then "Email Subscriptions." This E-mail service will notify all subscribers of:

(i) All NASA Headquarters research program solicitations (within a given Directorate), regardless of their type or science objectives;
(ii) Amendments to those solicitations, including this CAN; and
(iii) Special information that NASA Headquarters wishes to communicate to those interested in proposing to its sponsored research programs.

Regardless of whether or not this service is used, all NASA Headquarters research announcements and amendments may be accessed at http://nspires.nasaprs.com/ (select "Solicitations" then "Open Solicitations") as soon as they are posted (typically by ~9:00 a.m. Eastern Time on their release date).

9.0 CONCLUDING STATEMENT

Through this solicitation, NASA seeks to strengthen and enrich the planetary research community and the U.S. capability to support human exploration of Solar System destinations. It is hoped that the science Teams selected under this CAN and the research and discoveries stemming from their work, will inspire future scientists and explorers. We enthusiastically invite the submission of proposals to this announcement in order to help NASA achieve these goals.

APPENDIX A

DETAILED PROPOSAL CONTENT AND SUBMISSION REQUIREMENTS FOR

NNH16ZDA009C

SOLAR SYSTEM EXPLORATION RESEARCH VIRTUAL INSTITUTE

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A.1 Presubmission Activities

The Step-1 proposal, which takes the place of the Notice of Intent (NOI) to propose must be submitted electronically by the date given in Section 4.1.1 of this CAN. Step-1 proposals may be submitted via either NSPIRES or Grants.gov.

Registration of team members in NSPIRES: In order to be able to electronically submit a Step-1 proposal, all investigators proposing to this CAN must be preregistered in the NASA NSPIRES proposal database system and receive a User ID and password. This includes the PI, his or her organization, as well as all team members. Registration into this proposal data system can be done at http://nspires.nasaprs.com/. Early registration is advised. A Help Desk is available at: (202)
479-9376, or by E-mail at nspires-help@nasaprs.com. See also Section A.3.

A.2 Detailed Proposal Format and Content

Proposers may opt to submit Step-2 proposals in response to this CAN via either of two different electronic proposal submission systems: either via the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES, http://nspires.nasaprs.com/), see Section A.3 below, or via Grants.gov (http://www.grants.gov/; see *NASA Guidebook for Proposers*, Section 2.3.2(b)).

It is required that each technical proposal be prepared as a single PDF document prior to upload of the proposal. The NSPIRES system will generat the Proposal Cover Pages on submission. This main technical proposal does not include the separately uploaded "Total Budget" file, see Budget Summary and Details in Section A.2.3 pgs 47-49. The file size limit for this single main technical proposal PDF file is 15MB. Proposers must comply with all format requirements identified in this CAN and in the *NASA Guidebook for Proposers*. Please refer to Sections 2 and 3 of the *NASA Guidebook for Proposers* for more information on proposal submission procedures. Section 2.2 of the *NASA Guidebook for Proposers* provides complete guidelines for style formats.

A.2.1 Standard Proposal Style Formats

The standard formats for proposals submitted in response to this CAN are as follows:

- Single-spaced, typewritten, English-language text using an easily read font having no more than ~15 characters per inch including spaces, (e.g., 12-point, Times New Roman Western font). While text within figures and tables may contain more than ~15 characters per inch including spaces, in the judgment of reviewers, it must be legible without magnification. In addition, the text must have no more than 5.5 lines per inch of text. Offerors should not use a smaller font or squeeze lines of text in order to gain more text per page as it makes the evaluation process difficult. Pages should have at least 1-inch (2.5 cm) margins on all sides.
- For electronically submitted proposals, text must be in a single column format. Multiple-column text is difficult to review electronically. Fonts must be embedded.
- Units must be only metric and standard discipline-unique unless referring to existing hardware fabricated in English units or where the fabrication of proposed hardware using metric units

would be cost prohibitive (Note: If English units are used, approximate metric units shall also be provided as reference).

- Headers and footers are allowed as long as they do not contain proposal material. Only nonproposal material, e.g., page numbers, section titles, disclaimers, etc., is permitted in headers and footers.
- Strict adherence to the fixed page limits given in Section A.2.2.

A.2.2 Checklist and Page Guidelines For Proposal Preparation

All proposals are to include the following materials in the order and using the titles as given. Details for each item are given in the same order in Section A.2.3.

PAGE GUIDELINES
(In order shown)

SECTION	PAGE LIMITS
Proposal *Cover Page*/*Proposal Summary*	As per NSPIRES Proposal
Title Page (optional)	1
Table of Contents	1
Executive Summary	3
Summary Table of Personnel and Work Effort	As needed
Research Plan	35*
Science Management Plan	5
Data and Sample Management Plan	3
References	As required
Plan to Support Other Institute and NASA Objectives	5*
Relevance	1
Facilities and Equipment (as appropriate)	5
Curriculum Vitae	
For the PI:	3
For each Deputy PI/Co-I:	1
Current and Pending Support	As required
Statement(s) of Commitment from Co-Is and Collaborators	Via NSPIRES
Letters of Support from Consortium Institutions	As required
Letter of Commitment for Citizen Science/Public Engagement plans	As required
Budget Summary and Details	As required

*including illustrations, tables, and figures.

A.2.3 Details of Proposal Contents

All proposals in response to this CAN should include the following parts in the order listed (note that some are optional). Proposals that omit any of their required parts will be returned without review.

- *NSPIRES Proposal Cover Page/Proposal Summary*

NASA will not fund institutions that do not appear on the Proposal Cover Page. The NSPIRES Proposal Cover Page (see Section 2.3.2(a) of the *NASA Guidebook for Proposers*) contains the following:

Proposal Information: PI information, proposal title, proposed start and end dates, submitting institution information, certification and authorization

Certifications Regarding Lobbying, Disbarment, Suspension and Other Responsibility Matters: The Authorized Organizational Representative's (AOR) signature on the Proposal Cover Page automatically certifies that the proposing organization has read and is in compliance with these certifications. No additional form is necessary. See Appendix E of the *NASA Guidebook for Proposers* for the text of the certifications.

Team Members: Names, institution, and contact information (Notes: each team member must register themselves in NSPIRES and complete all required data. Each team member must establish an organizational relationship; i.e., identify the organization or other auspices through which the person is participating in the proposal. A proposal cannot be submitted if an organizational relationship within NSPIRES is missing from any team member.)

Project Summary: (maximum 4000 characters, Section 2.3.3 of the *NASA Guidebook for Proposers*): Provide a brief description of the project, including objectives, targeted audience, partners, method of approach, relevance to NASA themes, use of NASA content, and outcomes. (NSPIRES will initially populate this with the NOI summary, which can be edited to reflect your actual proposal concept.)

Budget Figures: Include figures for all years (five years for this CAN) of the proposed project in the spaces provided. This is the complete budget, including any subawards and all salaries.

Note: To improve proposal reviewability, only one PDF file (plus exceptions as described for required Total Budget file and optional HEC file) can be submitted through NSPIRES that begins with the Proposal Title Page (the Table of Contents if no Title Page is used) and includes all of the contents described below. An advantage of submitting the proposal as one PDF document is that it is easier for the offeror to create a table of contents that will be correct.

- *Proposal Title Page*

The *Proposal Title Page* is optional, and its design is at the discretion of the proposer. If one is included, at a minimum it must include the full title of the proposal, the name of the Principal Investigator, the name and address of the proposing institution, and a list of any other institutions participating in the proposed investigation. In addition, as required, this page shall contain the Export Control statement (see Section 3.3.4) and may contain a "Notice of Restriction on Use and Disclosure of Proposal Information" in accordance with the following policy:

- *Restriction on Use and Disclosure of Proposal Material*

It is NASA policy to use information contained in proposals for evaluation purposes only. While this policy does not require that the proposal bear a restrictive notice, offerors or quoters should, in order to maximize protection of trade secrets or other information that is commercial or financial and confidential or privileged, place the following Notice on the Title Page of the proposal and specify the information subject to the Notice by inserting appropriate identification, such as page numbers, in the Notice. In any event, information (data) contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the Notice.

> Example: Notice of Restriction on Use and Disclosure of Proposal Information
>
> The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal, the Government shall have the right to use and disclose this information (data) to the extent provided in the cooperative agreement (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

- *Table of Contents*

A *Table of Contents* shall identify each of the key parts of the proposal, including the subsections of the proposal's central Research and Management section. To facilitate developing and assembling the proposal, each of its principal sections may be individually numbered.

- *Executive Summary*

The *Executive Summary* should clearly describe the proposed program: its rationale, innovations, distinguishing features, unifying intellectual focus, proposed research, and training plans; and its approach to management of its participating personnel and institutions. In addition, this *Summar*y should briefly address the proposed institutional commitment(s), as well as the commitment to implementing the collaborative and networking concepts of the Institute.

- *Summary Table of Personnel and Work Effort*

The proposal must contain a one-page summary table, in simple tabular form of the proposer's own choosing, that gives the names and intended work commitment for the PI and every Co-I of the proposed investigation in FTEs/WYEs (rounded to the nearest 0.01 of a Work Year) for each

year of the proposed period of performance. Provide the names and roles of investigators if known, or the role for each individual if unknown (e.g., unnamed postdoctoral).

- *Research Plan*

The proposal should contain sufficient detail to fully describe the proposed effort in order to enable a reviewer to make informed judgments about the overall merit of the proposed research and about the probability that the investigators will be able to accomplish their stated objectives with the resources requested and with their own resources during the time allotted. In addition, the proposal should clearly indicate the interdisciplinary nature of the research, innovative approaches, and how the individual researchers (and their institutions, if a consortium of institutions is proposed) will be integrated in order to carry out the plan.

This section is the main body of a proposal and should cover the following topics in the order given, all within the specified limit of 35 pages:

- The objectives and expected significance of the proposed research, including a complete description of any instruments or hardware proposed to be built in order to carry out the research (Note: see also the Facilities and Equipment section below for the description of critical equipment needed for carrying out the proposed research).
- How the proposed work is expected to build on and otherwise extend the state of knowledge in the field.
- The technical approach and methodology to be employed in conducting the proposed research, including any special facilities of the proposing institution(s) and/or capabilities of the proposer(s) for carrying out the work.
- An outline of the general plan of work, including anticipated key milestones for accomplishments and the management structure for the personnel involved.
- A statement of the expected contribution by the PI and each Co-I identified on the proposal, even if they do not derive support from the proposed budget (Note: Inclusion of Co-Is who have either insignificant or unjustified roles will be considered a weakness for purposes of the proposal evaluation).

This section may contain illustrations that amplify and demonstrate key points in the main text of the proposal (including milestone schedules, if appropriate). Any illustrations and figures must be of publication quality, of an easily viewed size, and have self-contained captions that do not contain critical information not provided elsewhere in the proposal.

- *Science Management Plan (see Section 5.1.3.1)*

Each proposal must indicate how the activities of the researchers from different science disciplines will be integrated in implementing the proposed research program. This part should define the roles and responsibilities of each participant and note the proportion of each individual's time to be devoted to the proposed research activity.

The proposal should state clearly and unambiguously whether these key personnel have reviewed the proposal and endorsed their participation. If multiple institutions are involved in the proposal,

this part should provide a specific plan for bringing the separate elements together into a well-functioning unit. If a consortium of institutions is proposed, letters verifying cooperation, coordination, and commitments of resources from administrative officials of the consortium members must be included as an appendix to the proposal.

Each proposal must include a separate plan that describes how the staff, facilities, and other resources identified in the proposal will be managed to achieve the research objectives. This plan should include:

- A structure for administering personnel, with particular emphasis on how the activities of researchers from different science disciplines will be integrated in implementing the proposed research program
- A definition of the roles and responsibilities of each participant, noting the proportion of each individual's time to be devoted to the proposed research activity
- A specific plan, when multiple institutions are involved in the proposal, for bringing separate elements together into a well-functioning unit. (If a consortium of institutions is proposed, letters verifying cooperation, coordination, and commitments of resources from administrative officials of the consortium members must be included as an appendix to the proposal.),
- An outline of the general plan of work, including anticipated key milestones for accomplishments,
- A plan for maintaining communication among team members (e.g., weekly tag-ups, videoconferencing, annual meetings), and
- An assessment of cost – whether it is realistic and reasonable, both in the context of the proposed scope of work and compared to funds available through this CAN.

- *Data and Sample Management Plan (see Section 5.1.3.2)*

The data management plan should ensure that results are fit for contemporary use and available for discovery and reuse. Management plans should include:

- Types of data, samples, and other materials to be produced in the course of the project.
- Standards to be used for data and metadata format and content.
- Policies for providing access and enabling sharing.
- Provisions for reuse, redistribution, and the production of derivatives.
- Plans for archiving and preserving access to data and materials.

Data should be made openly available as soon as possible, but no later than two (2) years after the data were collected. Data from figures and tables in publications must be available at the time of publication (e.g. supplementary material). This period may be extended under exceptional circumstances, but only by agreement between the Principal Investigator and NASA.

Additional information can be found in http://science.nasa.gov/researchers/sara/faqs/dmp-faq-roses/.

- *References*

All citations given in the *Research and Management Plan* must be included, in full, in a list of references, without page limits. It is highly desirable that references use the full title of the paper or article being referenced. In all cases, standard and easily understood abbreviations for journals must be used.

- *Plan to Support Other Institute and NASA Objectives*

Refer to Section 5.1.2 in the main body of this CAN for the criterion regarding proposed efforts to address the objectives of the Institute in addition to research. The proposed commitments and activities in this section should be organized according to the categories indicated in Section 5.1.2. Successful proposals are also expected to include some combination of the other elements indicated in Section 5.1.2, as appropriate, to describe their areas of strength in supporting other Institute and NASA objectives.

Statements regarding institutional commitment should provide, in detail, the specific resources that the proposing institution(s) will make available to this effort at reduced and/or no cost to NASA's SSERVI Program, together with an estimate of the value of those resources to this program. The basis for this estimate should be clearly articulated so that the Government can accurately assess the proposed institutional commitment (see Section 4.2.2 in the main body of this CAN for examples of institutional commitment). This part should clearly show how these resources would benefit the implementation of the proposed research effort, the proposed training, and/or the development of the networked institute concept.

- *Relevance*

In this section, proposers are asked to explicitly address the relevance of their proposed program to the factors described in the Relevance Criterion (see Section 5.1). Proposals must demonstrate specific relevance. For example, relevance to missions should, when possible, describe specific missions and how they are advanced; relevance to other NASA science programs should describe the specific program and the resulting synergy which is expected; collaborations with other funding partners should describe the individual organizations and the nature of the partnership; major impact to the science of the Target Body(s) should describe the particular significance of the work and its impact on the field; and relevance to other Institute and NASA objectives (student training, IT/communication, etc.) should include expected results and a specific discussion of how they would improve the effectiveness of the Institute or the expansion of the planetary science community.

- *Facilities and Equipment*

As appropriate, this section should describe any facilities (including any U.S. Government owned facilities) and/or major equipment, critical for carrying out the proposed project, which are already available or would need to be purchased in order to carry out the proposed investigation.

In the latter case, these costs should be entered in the required proposal Budget Summary and described in accompanying budget details.

- *Curriculum Vitae*

The PI must submit a *Curriculum Vitae* (not to exceed three pages) that includes a history of his/her professional training and positions and a bibliography of publications relevant to the proposal. The proposal must also include a one page *Vitae* for each Deputy PI/Co-I. A Co-I who serves as the lead Co-I for a CS/PE effort, may submit a *Vitae* using the same page limit as for the PI.

- *Current and Pending Support*

Information must be provided for all ongoing and pending projects and proposals that involve the proposing PI and any Co-Is who are expected to perform a significant share of the proposed work (see Section 3.2), whether or not their contributions are specific costs in the proposal's budget. Information is required for each of two categories of support awards that exist at the time of the proposal submission deadline, namely:

(a) Current Support (for any of the periods that overlaps with the proposal being submitted to this CAN), and
(b) Pending Support (including the proposal to this CAN).

For each of these categories, provide the following information for each such key individual on the proposal team as noted above:

- Title of award or project
- Program name (if appropriate) and sponsoring agency or institution (including point of contact with telephone number)
- Role of the investigator on the project (e.g, PI, Co-I etc.)
- Proposed period of performance
- Commitment in fractions of a full time Work Year (WY = 2080 hours).

In addition, provide the name of any other institution/agency (Government or private), including an individual point of contact with their telephone number, to which the proposal submitted to this CAN, or any part thereof, has been or will be submitted for consideration of funding. For such pending research, the PI must notify NASA immediately of any successful proposals that are awarded anytime after the proposal submission date until the time of selections.

- *Statement(s) of Commitment from Co-Is and/or Collaborators*

Every PI, Co-I, and Collaborator identified as a participant on the proposal's cover page and/or in the proposal's *Research and Management Plan* must acknowledge his/her intended participation in the proposed effort and identify the organization through which

they are participating. The NSPIRES proposal management system allows for participants named on the Proposal Cover Page to acknowledge a statement of commitment electronically. For proposals submitted via Grants.gov, a letter that outlines the team member's role and organization, and commits to their participation, is required.

- *Letters of Support from Consortium Institutions*

Each member institution proposing as part of a consortium proposal must provide a letter signed by an appropriate member of its administration that certifies its commitment to the resources offered in the proposal (e.g.; office space, computer or laboratory facilities, in-kind services, etc.).

- *Letter of Commitment for Citizen Science and Public Engagement (CS/PE)*

Each proposal may contain a letter of commitment to develop and implement a CS/PE plan. If the proposal is selected, the team will be required to work closely with the Institute Central Office to develop a formal CS/PE plan in line with NASA SMD CS/PE policies, guidelines, and community best practices with the goal of leveraging existing assets and resources and avoiding duplication of effort. For additional information see Section 1.5.

- *Budget Summary and Details*

The budget requirements in this CAN differ from those in SSERVI CAN-1, so please read carefully. The presentation is a little unusual in an attempt to balance NASA's need to have all budget details, while having peer reviewers evaluate only work effort but not salary costs and indirect rates, which are beyond the scope of peer review.

The required NSPIRES *Proposal Cover Page* contains a section in tabular form for the submission of budget figures, including all labor, for each year of the proposed effort, as well as for the total period of performance. This section must be complete, including labor and indirect rates, which will not be included in the body of the proposal, and will be redacted from the version of the proposal evaluated by the peer review panel.

In addition to the budget summary information provided in the NSPIRES Cover Page forms, and the Summary Table of Personnel and Work Effort all proposals must include budgets divided into three parts: the "*Budget Justification: Narrative*" and the "*Budget Justification: Details*," both included in the proposal, as described in Section 2.3.10 of the *NASA Guidebook for Proposers*, and a separately uploaded "*Total Budget*" PDF file. Proposers to this CAN must provide the *Total Budget* in a file called "totalbudget.pdf", which is uploaded as an attachment in NSPIRES separate from the main proposal or Grants.gov (using the attachment place for Appendices on the NASA-Other Project Information form).

The first two parts the "*Budget Justification: Narrative*" and the "*Budget Justification: Details*" are within the proposal and available for peer review, so they may not include any salary or

overhead information. The *Budget Justification: Narrative* must describe facilities and equipment, as well as the rationale and basis of estimate for all components of cost (without revealing labor and overhead) including procurements, travel, publication costs, and all subawards/subcontracts. The *Budget Justification: Details* must include the detailed proposed budget of all of the Other Direct Costs and Other Applicable Costs as specified in the *NASA Guidebook for Proposers* (except labor and overhead). For this CAN, neither the *Budget Justification: Narrative* nor the *Budget Justification: Details* should specify the Total Estimated Cost, nor the cost of any Labor, or any Administrative Costs (e.g., fringe or overhead) for any personnel. Proposed Cost Sharing, if any, may be explained in the *Budget Justification: Narrative*, but cost sharing will not be taken into account in the peer review evaluation of cost, see Section 3.4.

The *Total Budget* file must specify the complete set of cost components including all costs discussed in the *Budget Narrative* and *Budget Details*, as well as the Total Estimated Cost, cost of Direct Labor (including civil servant labor), and Administrative Costs (overhead). The *Total Budget* document will not be provided to the peer review, but will used by NASA in the evaluation of total cost and comparison of the proposed cost to available funds.

Below are the items that should be in the separately uploaded "*total budget*" file, only a subset of which may be presented in the body of the proposal, as described above.

1) Provide a complete Budget Summary for the total, as well as each individual year of the proposed period of performance. The proposed costs are to be summarized according to the following general categories, which are consistent with the budget section of the *Proposal Cover Page*:

• Direct Labor (salaries, wages, and fringe benefits)
• Other Direct Costs:
- Subawards/Subcontracts
- Consultant Services
- Equipment
- Materials and Supplies
- Travel
- Other
• Indirect Costs (Facilities and Administrative Costs)
• Total Estimated Costs

2) Provide detailed computations of all estimates in each cost category with narratives as required to fully explain each proposed cost as follows.
• Direct Labor (salaries, wages, and fringe benefits): list the number and titles of personnel, amounts of time to be devoted to the grant, and rates of pay.
• Other Direct Costs:
a. Subawards/Subcontracts: describe the work to be subawarded/subcontracted, estimated amount, recipient (if known), and the reason for subawarding/subcontracting.

b. Consultants: identify consultants to be used, why they are necessary, the time they will spend on the project, and rates of pay (not to exceed the equivalent of the daily rate for Level IV of the Executive Schedule, exclusive of expenses and indirect costs).
c. Equipment: list separately. Explain the need for items costing more than $5,000. Describe basis for estimated cost. General purpose and special purpose equipment are not allowable as a direct cost unless specifically approved by the NASA Grant Officer. Any equipment purchase requested to be made as a direct charge under this award must include the equipment description, how it will be used in the conduct of the basic research proposed, and why it cannot be purchased with indirect funds.
d. Supplies: provide general categories of needed supplies, the method of acquisition, and the estimated cost.
e. Travel: describe the purpose of the proposed travel in relation to the grant and provide the basis of estimate, including information on destination and number of travelers, where known.
f. Other: enter the total of direct costs not covered by above. Include an itemized list explaining the need for each item and the basis for the estimate.
g. Proposed Cost Sharing (if any): Any proposed cost sharing may be reflected within the amounts entered in the separately uploaded "*total budget*" file and the nature of it may be described in the narrative. There is no ability to demonstrate cost sharing as a negative number within the *Budget Summary* forms.

• Indirect Costs/Facilities and Administrative (F&A) Costs: Identify indirect/F&A cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. Provide the name, address, and telephone number of the Federal agency official having cognizance. Unapproved indirect cost rates are not allowable. Applicants without an approved indirect cost rate may either charge costs directly or, if eligible, use the 10% de minimus rate described at 2 CFR 200.414(f).
• Subtotal-Estimated Costs: Enter the sum of all items listed above.
• Other Applicable Costs: Enter total explaining the need for each item.
• Total Estimated Costs: Note that this amount must match the amount presented on the *Proposal Cover Page.*
• Note also the following important considerations when completing the proposed budget*:*

(i) If a proposal is selected for award, failure to adequately address the provisions of these budget instructions may require that NASA contact the proposing institution for more information. Such activity may delay the award until the purchase is either justified as a direct charge for general-purpose equipment or budgeted as an indirect expense.

(ii) If a PI from a non-Government institution proposes to team with a Co-I from a U.S. Government institution (for this purpose, JPL is considered a NASA Center), then the full and complete budget for that Government Co-I institution must be included in the proposal's separately uploaded "*total budget*" file, and the cost for this Government Co-I is to be listed under Other Applicable Costs of the Budget Summary. However, no institutional indirect/F&A may be applied to these costs, since NASA will fund the Government organizations directly. Salary costs for NASA Civil servants should be phased by fiscal year. Conversely, if a Government PI institution teams with a private sector Co-I institution, that Government institution is expected to cover such Co-I costs through a subaward/subcontract that they execute.

Therefore, such private sector Co-I costs should be entered under Subawards/Subcontracts on the Budget Summary.

(iii) In general, the proposing (PI) institution should presume that it will subaward/subcontract the funding of all proposal Co-I's who reside at other institutions (except for a Government Co-I for a private sector PI as noted above); that is, proposers should assume that NASA will not separately make awards to Co-Is at distributed institutions even though this may result in a higher proposal cost because of subcontracting fees. However, exceptions may be considered on a case by case basis when requested in the proposal and found to be in the interest of the Government and consistent with appropriate law, regulation, policy, and practice.

(iv) Whether functioning as a team Institutional PI or as a team member, personnel from NASA Centers must propose budgets based on Full Cost Accounting (FCA). Non-NASA U.S. Government organizations should propose based on FCA unless no such standards are in effect; in that case such proposers should follow the Managerial Cost Accounting Standards for the Federal Government as recommended by the Federal Accounting Standards Advisory Board (for further information, see http://www.hq.nasa.gov/fullcost).

A.3 Electronic Submission through the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES)

Offerors must submit proposals in response to this CAN must be submitted in a fully electronic form. Hard copies of the proposal will not be accepted. Electronic proposals must be submitted by the Authorized Organization Representative (AOR) at the proposer's institution. Electronic submission by the AOR serves as the required original signature by an authorized official of the proposing institution. Offerors must submit proposals in response to this CAN via NSPIRES, located at http://nspires.nasaprs.com/ or Grants.gov, located at http://www.grants.gov. NASA plans to use the NSPIRES system to facilitate the review process.

Note carefully the following requirements for submission of an electronic proposal:

- Every organization that intends to submit a proposal to NASA electronically must be registered in NSPIRES (this requirement applies even for proposals submitted via Grants.gov).
- Organizations must obtain a Data Universal Numbering System (DUNS) number. Note that an organization must also be registered in the System for Award Management Assistance (SAM) where the approval process can take several days (at minimum). SAM registration should be performed by an organization's electronic business primary point- of-contact. Organizations new to NSPIRES or any offeror new to the NASA CAN process should visit and register in the SAM system (https://www.sam.gov) early in the proposal preparation process.
- Any partner institution requesting NASA funds through the proposed project must be listed on the Proposal Cover Page. NASA will not fund institutions that do not appear on the Proposal Cover Page.
- In addition, every individual named on the proposal's electronic Proposal Cover Page form (ref. *NASA Guidebook for Proposers,* Section 2.3.2) as a proposing team member in any role, including Co-Is and collaborators, must be registered in NSPIRES even if the proposal is

submitted via Grants.gov. Such individuals must perform this registration themselves; no one may register a second party, even the PI of a proposal in which that person is committed to participate. This data site is secure and all information entered is strictly for NASA's use only.

- Each individual team member named on the proposal's cover page must specify an institutional affiliation. The institutional affiliation specified must be the institution through which the team member is participating in the proposed project. A proposal cannot be submitted if an organizational relationship is missing for any team member. If the individual has multiple affiliations, then this institution may be different from the individual's primary employer or preferred mailing address.

Submission of electronic proposals (both Step-1 and Step-2) via NSPIRES requires several coordinated actions within the proposing institution. In particular, when the PI has completed entry of the data requested in the required electronic forms and attachment of the allowed PDF attachments, (including the project description section), an official at the PI's institution who is authorized to make such a submission (referred to as the AOR) must submit the electronic proposal (forms plus attachments). Coordination between the PI and his/her AOR on the final editing and submission of the proposal materials is facilitated through their respective accounts in NSPIRES. Note that if one individual is acting in both the PI and AOR roles, he/she must ensure that all steps in the process are taken, including submitting the proposal from the institution.

Only appendices/attachments that are specifically requested in either this CAN or in the *NASA Guidebook for Proposers* will be permitted. Proposals containing additional appendices/attachments may be declared noncompliant and returned without peer review. In the event the information in this CAN is different from or contradicts the information in the *NASA Guidebook for Proposers*, the information in this CAN takes precedence.

Important note on creating PDF files for upload: It is essential that all PDF files generated and submitted meet the NASA requirements below. This will ensure that the submitted files can be transferred into NSPIRES. At a minimum, it is the responsibility of the offeror to: (1) ensure that all PDF files are unlocked, searchable, and that edit permission is enabled – this is necessary to ensure that all submitted files can be ingested by NSPIRES; and (2) ensure that all fonts are embedded in the PDF file and that only Type 1 or TrueType fonts are used. In addition, any offeror who creates files using TeX or LaTeX is required to first create a DVI file and then convert the DVI file to Postscript and then to PDF. See http://nspires.nasaprs.com/tutorials/index.html for more information on submitting PDF documents into NSPIRES. PDF files that do not meet the NASA requirements cannot be transferred into the NSPIRES system; such files may be declared noncompliant and not submitted to peer review for evaluation.

NSPIRES will provide a list of all elements that make up an electronic proposal, and the system will conduct an element check to identify any item(s) that is (are) apparently missing or incomplete. The element check may produce warnings and/or identify errors. Uploading the proposal in one PDF file is likely to create "warnings" as part of the element check. These warnings should be ignored, as these warnings do not preclude proposal submission; however, an "error" in the element check will preclude submission.

Offerors are encouraged to begin their submission process early. Tutorials and other NSPIRES help topics may be accessed through the NSPIRES online help site at http://nspires.nasaprs.com/external/help.do. For any questions that cannot be resolved with the available on-line help menus, requests for assistance may be directed by E-mail to nspireshelp@nasaprs.com or by telephone to (202) 479-9376, Monday through Friday, 8:00 a.m. to 6:00 p.m. Eastern Time (excluding Federal holidays).

A.4 Certifications and Representations

See the Certifications and Assurances link on the NASA Grant and Cooperative Agreement page and Appendix E of the *NASA Guidebook for Proposers*. Both can be found at the following site: http://www.hq.nasa.gov/office/procurement/nraguidebook/.

Submission of the signed proposal including Section V of the Proposal Summary Information certifies compliance with these certifications.