

HANDBOOK FOR NAI TEAMS

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1. NAI ORGANIZATION AND MEMBERSHIP

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1.1 NAI Concept, Mission, Goals

The NAI is a virtual organization that represents a partnership between NASA and competitively selected NAI Lead Teams. As stated in the most recent NAI Cooperative Agreement Notice (CAN-3), the NAI and its member investigators work together to achieve the goals of the *NASA Astrobiology Roadmap* by (1) carrying out, supporting, and catalyzing interdisciplinary research, (2) training the next generation of astrobiology researchers, (3) providing scientific and technical leadership on astrobiology investigations for current and future space missions, (4) exploring new approaches using modern information technology to conduct interdisciplinary and collaborative research among widely-distributed investigators, and (5) supporting education and public outreach by providing scientific content for K-14 education programs, teaching undergraduate classes, and communicating directly with the public. While no two Lead Teams are alike, it is generally expected that each Team will make some contribution in each of these five areas.

NAI Lead Team selection is based on proposals that include both planned research programs and institutional commitments to astrobiology. Teams involve researchers from multiple disciplines, and they usually include team members from a variety of geographically distributed institutions. Members collaborate with one another, both in person and virtually, in part using communication and collaboration tools supplied by NAI. Lead Teams are supported by NASA through 5-year Cooperative Agreements with Ames Research Center. The funding vehicle of NASA Cooperative Agreements anticipates that the Lead Teams and their institutions will work together with NASA and with the other Teams to foster a climate of cooperation.

1.2 NAI Organizational Structure

The NAI Lead Teams are supported for five years through a cooperative agreement with NASA Ames Research Center. Each Lead Team is led by a Principal Investigator (PI) who organizes the activities within the Team and represents the Team to the NAI Director, NAI Executive Council, and NAI Central. PIs also generally designate a Deputy Team Leader to speak for the Team when the PI is not available.

The PIs are responsible for the accomplishment of their team's collaborative and interdisciplinary research and for the conduct of their Education and Public Outreach projects. They are accountable for the cohesion of their team, for the communication of NAI business to their team's members, for the productivity of exchanges between their team and other participating teams, and for the quality of interactions between their team and NAI Central. They are fiscally accountable for their Team's activities, including addressing any issues that may arise with recipients of subcontracts or grants issued through their home institution in the conduct of their NAI research.

During the period of performance of their award, the PIs comprise the Executive Council of the NAI, together with the NAI Director and Deputy Director.

The administrative management of the NAI is carried out through the offices called "NAI Central" located at NASA Ames. The NAI Director, Deputy Director, and other administrative staff are co-located at NAI Central. The Executive Council, made up of the Lead Team PIs, interacts with the NAI Director as described in the [Executive Council section of this handbook](#). International Associate and Affiliate Teams also participate with the NAI in a variety of ways and are invited to attend meetings of the Executive Council as well as participate in scientific meetings and Focus Groups; however, the international partners receive no NASA funds, and do not provide any formal reporting to the NAI (although they are invited to contribute to the NAI Annual Reports). These and additional organizations and functions are described in more detail in following sections of this Handbook.

1.3 NAI Membership

The NAI strives to have open boundaries, as the virtual institute concept is based on a collaborative research approach, encouraging open participation. The membership is defined by NAI Lead Teams and Focus Groups, through their annual reports to NAI Central. Each project and Focus Group report provides a list of the people involved in the research (whether or not they receive NAI funding).

There are constraints, imposed by budget, that limit the number of Lead Teams and projects that can be directly funded by the NAI. However, the NAI community is broadened beyond these constraints by encouraging participation based on scientific interaction.

1.3.1 How NAI membership is defined

NAI membership is defined in the following ways:

1) By the 15 NAI Lead Member Teams, in their Annual Reports to NAI Central

- Each person listed in a Project Report or Additional People Report is considered an NAI Member: Lead Team PI's have the ultimate responsibility for naming the members of their team.

This includes:

- Lead Team PI's - who receive NAI funding directly from NASA
- Co-I's, other collaborators, educators, engineers, admin or technical staff, - *who receive funding* from PI's or are employed by PI's

And *may* also include:

- Co-I's, other collaborators, educators, engineers, admin or technical staff *who do not receive funding* from NASA or from PI's. This is because some teams are providing significant "in kind" contributions of researchers and/or other staff as part of their institutional commitment to the NAI.

2) The Director and NAI Central staff are NAI members

There are outcomes and expectations that result from becoming a member of the NAI. NAI members are:

- Included in the NAI database and online directory
- Listed in the NAI Annual Report (within the team and project reports)
- On the mailing list for NAI newsletters and announcements
- Invited to attend and submit abstracts for NAI General Meetings
- Given access to NAI Collaborative Tools, such as the NAI online directory, E-mailer, Science Organizer, Videoconferencing equipment, WebEx, PageSeeder, and Knowledge management system
- Expected to acknowledge NAI in research publications funded by NAI
- Eligible for NAI funding opportunities, such as the Director's Research and Travel Scholarships, Postdoctoral Fellowships, funding support for travel to meetings, field trips, special projects

NAI members are expected to support the NAI mission, including:

- Multi-disciplinary astrobiology research
- NASA mission involvement
- Use of collaborative research tools and IT infrastructure
- Training of the next generation
- Education and Outreach

1.3.2 NAI Focus Group Membership

The NAI focus Groups are one of the ways that NAI provides an opportunity for the larger community to participate in NAI, whether they are named as a member by the methods outlined above, or not. Focus Group membership is defined by Focus Group chairs, in the annual reports submitted by the chair to NAI Central.

Focus Group members are:

- Listed individually in the NAI Annual Report
- On the mailing list for NAI newsletters and announcements
- Invited to attend and submit abstracts for NAI General Given access to NAI Collaborative Tools, such as the NAI Online Directory, Emailer, Science Organizer, WebEx

Focus Group members (who are not also NAI members) are *not*:

- Included in the NAI online Directory

1.3.3 International Associate and Affiliate members

The NAI Director and Deputy Director interact on a routine basis with the Director(s) of each International Associate and Affiliate group. In addition, the Director of each Associate/Affiliate Member group is

- On the mailing list for NAI newsletters and announcements *
- Invited to NAI Executive Council meetings
- Invited to use NAI Collaborative tools
- Invited to submit an Executive Summary for inclusion in NAI's Annual Report

* Note: A small number of others from each Associate and Affiliate group may also receive newsletters and announcements. Generally, these points of contact then forward the messages, if desired, to their groups. All International Associate and Affiliate group members are invited to attend and submit abstracts for NAI General meetings.

1.4 NAI Central

The management office for the NASA Astrobiology Institute (which is called "NAI Central") is located at Ames Research Center. The NAI Director and staff are responsible for leadership and administration of the NAI. A list of the NAI Central staff and their responsibilities is below.

NAI Central Management		
Bruce Runnegar 650-604-0022 Bruce.Runnegar@nasa.gov	Director	
Rosalind Grymes 650-604-3239 Rose.Grymes@nasa.gov	Deputy Director	
David Morrison 650-604-5094 David.Morrison@nasa.gov	Senior Scientist	<ul style="list-style-type: none"> ● Senior level consultation and advice to the NAI Director ● Science writing and overall cognizance of research programs ● EPO responsibility for college-level education, and answering science questions from the general public
Kristina Wilmoth 650-604-6137 Kristina.L.Wilmoth@nasa.gov	Assistant Director for Communications	<ul style="list-style-type: none"> ● Oversight of reports, brochures, webpages and other products

	and Technology	<p>communicating about the NAI</p> <ul style="list-style-type: none"> ● Education & Public Outreach Program & interdisciplinary courses/training ● Collaborative technologies
Ed Goolish 650-604-1961 egoolish@arc.nasa.gov	Assistant Director for Research	<ul style="list-style-type: none"> ● Preparation, review and management of Cooperative Agreement Notices ● Oversight of NAI/NRC Research Associateship Program ● NAI funding support to Focus Groups, conferences/workshops, students, and new initiatives
Karen Bradford 650-604-0809 Karen.C.Bradford@nasa.gov	Executive Assistant/Program Analyst	<ul style="list-style-type: none"> ● Executive assistant to Deputy Director ● NAI General Meeting and EC Meeting coordinator ● Manage all NAI property

NAI Central Staff

Shige Abe 650-604-1927 sabe@arc.nasa.gov	Science Project Specialist & Information Systems Lead	<ul style="list-style-type: none"> ● System administrator ● Develop, design and maintain NAI databases (NIMS) ● Assist with requests for funding of Focus Group activities, conferences/workshops, students, and new initiatives
Marco Boldt 650-604-3769 mboldt@arc.nasa.gov	Web Programmer & Technical Support Specialist	<ul style="list-style-type: none"> ● Development and maintenance of NAI website and assorted web applications ● Technical support for NAI activities
Estelle Dodson 650-604-4145 kdodson@arc.nasa.gov	Collaborative Research Manager	<ul style="list-style-type: none"> ● Evaluate, implement and provide support for collaborative tools used by the astrobiology community ● Produce NAI science seminar series and virtual meetings
Kaye Faria 650-604-3109 kfaria@arc.nasa.gov	Resource Analyst	<ul style="list-style-type: none"> ● NAI financial analysis and implementation ● Monitor all NAI expenditures including- Cooperative Agreements, EPO, IT, contracts, internal ARC expenditures, travel
Julie Fletcher 650-604-3798 jfletcher2@arc.nasa.gov	Project Lead & Sr. Graphic Designer	<ul style="list-style-type: none"> ● Manage NAI annual report ● NAI newsletter editor ● Design & production of NAI materials
Darlene Gadd 650-604-0252 dgadd@arc.nasa.gov	Administrative Assistant	<ul style="list-style-type: none"> ● Process information transmittals (IT) ● Shipping and inventory ● Support Assistant Directors and EPO activities
Patricia Gregory 650-604-2600 pgregory@arc.nasa.gov	Technical Planner	<ul style="list-style-type: none"> ● Executive technical assistant to the Director & Deputy Director ● Team visit & special science workshop planning ● International visit coordinator, export control technician

Jeni Joiner 650-604-2416 jjoiner@arc.nasa.gov	Administrative Assistant	<ul style="list-style-type: none"> ● Assistant to the Director, for scheduling appointments, travel and other administrative duties ● Administrative support for Karen Bradford and David Morrison
Janet Morrison 650-604-4657 jmorrison@arc.nasa.gov	Science Projects & Publications	<ul style="list-style-type: none"> ● NAI science publications lead ● Manage NAI library and related research materials ● Maintains NAI history timeline
Daniella Scalice 650-604-4024 dscalice@arc.nasa.gov	Outreach Coordinator	<ul style="list-style-type: none"> ● Manage distribution of Astrobiology Education Poster ● Facilitate collaboration of the NAI E/PO working group ● Managing development of the Astrobiology Field Guide

1.5 The Executive Council

The PI of each Lead Team, with the NAI Director and Deputy Director, constitutes the Executive Council (EC). The Director chairs the EC. The Directors or Leads of the NAI's international Affiliates and Associates are invited to attend Open EC meetings (see below).

The Executive Council:

- 1) initiates discussions and provides timely advice on issues such as research objectives, mission opportunities, and technology development priorities;
- 2) considers and recommends action on proposals to form Focus Groups and other similar bodies;
- 3) considers and recommends action on proposals for international partnerships;
- 4) evaluates and recommends action on unsolicited proposals to the Institute Strategic Fund; and
- 5) comments on the conduct of the Institute, considering and recommending metrics and evaluative approaches to assess the NAI's progress towards its objectives.

The EC meets monthly by videoconference. Videotapes of the meetings are archived and available.

In-person EC meetings are held periodically, normally at one of the NAI Lead Team sites. The schedule for these meetings will be set annually for the next calendar year at the last meeting of the year. It has been customary to hold a 60-minute private meeting of the PIs (the 'in camera' session) during the in-person meetings. There is no monthly videoconference for the month in which an attended meeting is held.

Open EC Meetings may include international Affiliate and Associate observers, representatives of NAI Central, and representatives of relevant NASA HQ Enterprise Offices, invited presenters (e.g. speakers, Focus Group proposers), and additional members of the Lead Teams (e.g. EPO, IT, and administrative staff).

1.6 Astrobiology Conferences and NAI General Meetings

Although astrobiology is a young discipline, it has already generated a number of professional meetings. These include sessions within professional societies (for example, the Biogeoscience Section of the American Geophysical Union), specialized workshops (such as the annual Gordon Conferences), and meetings primarily devoted to astrobiology-related research (such as ISSOL -- The Society for the Study of the Origin of Life -- and Bioastronomy, a Commission of the International Astronomical Union). The ISSOL and Bioastronomy meetings are normally held once every three years, and there is interest in possibly coordinating or combining them.

There are two major professional meetings in the United States that are devoted entirely to astrobiology -- the Astrobiology Science Conference (AbSciCon) and the NAI General Meeting. These are held in alternate years: AbSciCon in 2000, 2002, 2004; NAI General Meeting in 1999, 2001, 2003, etc. These two meetings are, unfortunately, often confused.

The AbSciCon is organized and sponsored by Ames Research Center, is open to the entire scientific community, and is held at Ames research Center. While the NAI Central staff has assisted in AbSciCon meetings and many NAI members attend, we do not take the lead or exercise control over these meetings.

The NAI General Meetings, in contrast, are organized and sponsored by NAI, are focused primarily on the NAI Community, and are hosted by various Lead Team organizations (e.g., Carnegie Institution of Washington in 2001, Arizona State University of 2003). In 2003 the NAI General Meeting dealt specifically with the development of the NAI community and of enhancing communications and collaboration among teams. Both AbSciCon and the NAI General Meeting are excellent, wide-ranging scientific conferences, however, and most NAI members try to attend both of them, in alternate years.

2. REPORTING and PUBLICATIONS

- ∴ [The NAI Annual Report](#)
- ∴ [Publications](#)

2.1 The NAI Annual Report

Progress reports are submitted annually to NAI Central by each of the NAI Lead Teams, Focus Groups, and Postdoctoral Fellows. These reports are used to generate the NAI Annual Report, the NAI database, and data products such as Email lists, online directory, and various informational summaries relating to NAI. The NAI Annual Report is published on the NAI website. For reference, the NAI Year 4 Annual Report is available online at: <http://nai.arc.nasa.gov/year4/>.

2.2 Publications

The papers published by NAI members are the primary record of the character, productivity and impact of NAI-sponsored research. For this reason, NAI investigators are strongly encouraged to include the "NASA Astrobiology Institute" as an author's affiliation when a significant portion of the research was the result of NAI support. In addition, all publications resulting from NAI-sponsored research are *required* to acknowledge funding support from the NAI.

In those cases where papers have been accepted at high-visibility journals (*e.g.*, *Nature*, *Science*, *PNAS*) or are expected to generate media attention, the authors are asked to send pre-publication copies to NAI Central so that it can participate in announcing the publication and prepare for question from the media. NAI Central should also always be notified in advance about a press release emanating from a member's home institution regarding their research.

Each Lead Team is responsible for providing a full list of publications as part of the input to the NAI Annual Science Report. This is to include hardcopies of the five most significant astrobiological papers published during that year, as judged by the Lead Team PI.

3. GRANTS, FUNDING OPPORTUNITIES, AND FINANCIAL PROCESSES

- :: [Cooperative Agreement Notices \(CAN\)](#)
- :: [Fellowships and Funding Opportunities](#)
- :: [Financial Processes](#)

The Sponsored Programs Office of the NAI is responsible for overseeing the preparation, announcement, review, and management of the Cooperative Agreement (CA) which the Institute develops with each of its Lead Team Institutions. The CA's are the primary funding instrument to support the research, training and E/PO activities of the NAI Lead Institutions, and all of their associated team institutions. The Sponsored Programs Office also manages the NAI Strategic Fund, the NAI Focus Groups, the NAI/NRC Postdoctoral Fellowship Program, the Conference and Workshop Fund, and the NAI Research Scholarship. Together, these additional funding options provide the NAI Membership with opportunities for, and flexibility in, developing collaborative relationships within a Lead Team, amongst Lead Teams, with the broader U.S. science community, and with the international astrobiology community. The Sponsored Programs Manager at NAI Central is Dr. Edward Goolish, who can be reached at 650/604-1961 (egoolish@arc.nasa.gov).

3.1 Cooperative Agreements Notices (CAN)

The structure of the NAI is based on the development of Cooperative Agreements between NASA and its Lead Team Institutions. NASA field centers that are selected in the open peer review competitions are treated identically to academic and non-profit Lead Teams, with the exception that their funds are provided to them via funds transfer from NASA Headquarters. A Cooperative Agreement implies that a substantial involvement is expected between NASA and the recipient during the performance of the proposed and selected activity. Lead Team Institutions are responsible that funds and information flow effectively to all members of their team, including those at other institutions. Details concerning the requirements and responsibilities pertaining to a NASA Cooperative Agreements can be found in the NASA Grant and Cooperative Agreement Handbook; which can be accessed online at: <http://ec.msfc.nasa.gov/hq/grcover.htm>. Lead Team PI's may also find it useful to refer back to the Cooperative Agreement Notice itself, which provides additional guidance on what is expected from NAI Lead Teams. The CAN Cycle-3 document can be viewed at the [NASA Office of Space Science website](#). Please contact NAI Central for a copy of the CAN Cycle-2 solicitation.

The normal supplements to Cooperative Agreements will be processed in June and December of each year. The June supplement provides funds for a six-month period (July-December), and the December supplement for the six-month period (January-June). An email notification of pending supplements will be sent to the PI of the respective Lead Team, the Grants/Finance Office of the Lead Team Institution, and to any administrative staff who have been identified. New PI's are asked to provide email addresses of those you would like to receive information on supplements. Please send this information to Kaye Faria <kfaria@arc.nasa.gov>.

As with any NASA research grant, an annual reporting of progress is required by the Ames Grants Office. This requirement is met by the submission of input to the NAI Annual Report, which is posted online in the [NAI library](#).

Please also remember that New Technology should be promptly reported to NASA. A reportable New Technology item is defined as technology or software which is conceived or first actually reduced to practice in the performance of work under a NASA cooperative agreement, grant or contract. More information about [New Technology](#) reporting is available online.

There is also a requirement that the Grants/Business Office of each Lead Team Institution provide (quarterly) a copy of the Federal Cash Transactions Report (Form 272). This report should be sent, as is standard procedure, to the Department of Health and Human Services (DHHS), with a cc to the NAI via:

Kaye Faria
Resources Analyst
NASA Astrobiology Institute
NASA Ames Research Center
MS 240-1

Moffett Field, CA 94035-1000
Email: kfaria@arc.nasa.gov
Phone 650-604-3109
FAX 650-604-4251

3.2 Fellowships and Funding Opportunities

3.2.1 NAI/NRC Research Associateship Program

The NASA Astrobiology Institute (NAI) has established a program to support a highly select group of Institute-wide Postdoctoral Fellows. These Fellows have a home research base at one of the NAI member institutions, but they are encouraged to interact across the entire Institute. They have an opportunity to help define the interdisciplinary field of astrobiology.

The NAI postdoctoral appointments are made on behalf of NASA by the National Research Council (NRC) Research Associateship Program, which is a division of the National Academy of Sciences and the National Academy of Engineering. The selected NAI/NRC Fellows represent all of the scientific disciplines that contribute to the astrobiology research program. Each applicant is required to indicate in their application one of the approved participating institutions as the primary research base and host institution, as well as the prospective Research Adviser (mentor). It is the responsibility of each new Lead Team PI to immediately identify a set of established, senior investigators on their Team who are capable and willing to serve as advisors in the NAI/NRC Fellowship Program. It is expected that applicants propose a significant and innovative research topic of their own choosing. However, consultation with the prospective advisor and host institution is required.

There are two review cycles per year, with application deadlines of February 1 and August 1. For additional program information see <http://www.national-academies.org/rap> or contact Dr. Edward Goolish at egoolish@arc.nasa.gov.

3.2.2 The Institute Strategic Fund

Previously, a Director's Discretionary Fund was used to support innovative research ideas or to acquire essential instrument facilities. These grants have generally been in the range of \$20,000-\$200,000. The Institute Strategic Fund (ISF) will replace the Director's Discretionary Fund. Unsolicited proposals received by NAI Central will be considered and advocated to the Executive Council by the Director or Deputy Director. In addition, any member of the Executive Council may initiate and/or advocate an unsolicited proposal. For guidance on the preparation of such a proposal, consult the NAI website or the Deputy Director. These guidelines are in the process of definition.

3.2.3 NAI Research Scholarship (DRS)

The NAI Research Scholarship Program offers stipends and research-related travel expenses to enable students (graduate or postdoctoral) to circulate among two or more of the Lead Teams, including all participating institutions of the NAI. The program also supports travel to field-sites when required for the progress of the student's research. Additional information and application process is online at: <http://nai.arc.nasa.gov/institute/fellowship/index.cfm - scholarship>

3.2.4 NAI Conference and Workshop Fund

The NAI coordinates and supports the NAI presence at astrobiology-related professional conferences and workshops and, with the assistance of the NAI Members, may sponsor special sessions at professional meetings such as the AAS, AGU, and GSA. Additional information and application process is online at: <http://nai.arc.nasa.gov/institute/fellowship/index.cfm - meetings>

3.2.5 NASA Astrobiology Institute Minority Research Sabbatical

The NAI Minority Institution Research Sabbatical provides opportunities for researchers from qualified Minority Institutions (MIs) to initiate joint undertakings with NAI investigators. We anticipate that these short-term exchanges, by introducing the MI participant and the host NAI Member, will generate new collegial interactions, enlist additional academic institutions in the NAI's participant base, and provide the participant's home institution and students with lasting connections. Additional information and how to apply is online at: <http://nai.arc.nasa.gov/institute/miSabbatical.cfm>

3.2.6 International Collaboration

In order to facilitate collaborations with international colleagues, a small fund has been identified to help support travel and accommodation costs. A member who wishes to invite a foreign scientist to your institution or travel to a foreign institution for collaborative research, may apply for this support. It is the Director's intent that these funds be used to encourage a visiting scholar to circulate among at least two of the NAI Lead or Co-Institutions during her/his time in the U.S., thereby increasing the degree of intellectual exchange both internationally and inter-Team. Please consult with the Deputy Director as you begin the process of inviting your colleague, to ensure the availability of funds. We base our planning estimates on support at the \$5-6,000 level for four to six such exchanges.

3.3 Financial Processes

Three primary methods are used for the transfer of funds once a request to an NAI program for additional funding is approved. These are: a Supplement to a Cooperative Agreement, the use of an external contractor, or (for NASA Centers) through the sub-authorization process.

3.3.1 Supplements to a Cooperative Agreement

In support of its mission the NAI provides opportunities to fund activities or needs not included in the original Cooperative Agreement proposals. The types of proposals received include support for workshops, conferences, travel, and new research. One mechanism available for funding these requests is a supplement to the existing Lead Team Cooperative Agreement. If the proposal has no particularly complex components, then a supplement to the existing Lead Team Cooperative Agreement is often the simplest method to transfer the funds.

[Additional information and application process.](#)

[Example letter and budget](#)

3.3.2 Transfer through a NASA Contractor

In the case of support for travel, or for general funding to organize a conference session or workshop, it is often more expeditious to transfer funds or reimburse personal travel through an outside service contractor. If this method is selected you will be contacted directly from the contractor regarding the process and submission of any necessary forms.

3.3.3 Funding to NASA Centers

NASA Centers will receive their funds via a 506A directly from NASA HQ, with NAI directing HQ as to the amount of PY funds to send to that particular Lead Team Institution. This transaction will occur annually, following the approval of the NASA budget in the December/January time frame.

4. PARTNERSHIPS

- :: [NAI Focus Groups](#)
- :: [NAI International Partners](#)

4.1 NAI Focus Groups

The purpose of the NAI Focus Group initiative is to mobilize expertise from across the Institute and the wider scientific community towards the rapid advancement of a defined area of research, mission planning, or other activity of particular importance to astrobiology. Innovative, interdisciplinary efforts seeking synergy among various research fields are particularly encouraged. [List of current NAI Focus Groups, Focus Group Operating Principles, and how to propose a new Focus Group.](#)

4.2 NAI International Partners

The NASA Astrobiology Institute has initiated a program of partnerships with international astrobiology organizations to provide collaborative research opportunities for all of the members of the international science community. Through this program, non-U.S. astrobiology organizations can propose to become either Associate or Affiliate Members of the NAI. Associate Membership entails a formal commitment between NASA and a complementary agency of the host country. Affiliate Membership is a similar agreement of collaboration but without a formal commitment from the government agency of the host country.

Additional information on the international partners of the NAI can be obtained at http://nai.arc.nasa.gov/institute/intl_partners.cfm. Those interested initiating a new Associate or Affiliate Membership should contact Dr. Rose Grymes (NAI Deputy Director) at rgrymes@mail.arc.nasa.gov. A short written proposal is requested which describes both the nature of the proposing international organization and the types of collaboration with the NAI that are planned. The proposal is distributed to the NAI Executive Council (EC) for review, which is asked to make a recommendation to the NAI Director for approval.

The NAI, its International Partners, and other international astrobiology organizations have formed an informal consortium called the International Astrobiology Circle (IAC). The purpose of the IAC is to provide a forum for the exchange of information about the current and planned activities of its member organizations.

5. THE VIRTUAL INSTITUTE AND COLLABORATIVE TOOLS

- :: [Participating in the Virtual Institute](#)
- :: [Levels of Collaboration](#)
- :: [IT Working Group](#)
- :: [Collaborative Tools and Technologies](#)

5.1 Participation in the Virtual Institute

All members of NAI Lead Teams, as well as Focus Group participants and International Associates and Affiliates, are considered members of NAI's virtual institute. An important goal of the NAI is to encourage and support interdisciplinary collaborative research among those who are part of its widely distributed community. NAI Central actively fosters a "culture of collaboration" and works to provide "easy collaboration from anywhere, anytime, with anyone." NAI members, in turn, are expected to participate in NAI events, explore new approaches to pursuing their scientific collaborations using modern information technology, and provide periodic input on the further development of the virtual institute.

In order to support the development of astrobiology as a field and to benefit NASA missions, NAI was conceived as a "virtual institute" that aims not only to provide funding for astrobiological research but also to promote exchange and knowledge sharing among researchers within and across NAI teams, with members of the larger astrobiology community, and with interested members of the public.

NAI members are widely distributed geographically and, represent a wide range of disciplinary expertise. Communication and productive exchange among members of the virtual institute are facilitated through multiple opportunities for both face-to-face and virtual engagement and by access to collaboration tools and technologies provided by NAI.

The challenges of encouraging and supporting collaboration across disciplines and across distance are both sociocultural and technological. Collaboration is a potential outcome of productive exchange among scientists, but it does take time and effort to develop and maintain. Also, for some scientists, both virtual and interdisciplinary collaboration require new perspectives and new work practices.

5.2 Levels of Collaboration

Within NAI there are opportunities for collaboration at several different levels. The extent to which community members actually collaborate with one another depends on the style and approach of NAI Team leaders and project leaders, as well as the proactive steps taken by individual team members.

Within Teams: within each Lead Team, there is potential for enhanced collaboration among all the distributed members in the form of team meetings, workshops or retreats, utilizing NAI-deployed communication and collaboration tools where appropriate. Within a given team, collaboration may be planned or already exist among members of a project group or may develop unexpectedly among several team members as a result of emergent research interests.

Across Teams: Collaboration among Lead Team PIs is encouraged through attendance at monthly Executive Council videoconferences. Also, IT Points Of Contact (POC) collaborate with each other and with NAI Central staff through monthly IT Working Group Meetings. Additionally IT projects may develop involving more than one team. Likewise E/PO POCs meet monthly and also engage with one another at conferences, workshops and through projects.

Among Members of the NAI community as a whole (and beyond): Collaboration among researchers is also facilitated through NAI community-wide events, conferences, seminars, such as Focus Groups, the NAI General Meeting, the NAI Video seminar series, and other venues, both in person and virtual, that enable large groups of people from different geographical locations to meet together for presentations and exchanges of various kinds. These groups may also include the larger Astrobiology community beyond the NAI itself, and/or interested members of the public.

5.3 IT Points of Contact (POCs) and the IT Working Group

The PI of each NAI Lead Team is expected to appoint one or more IT POCs to work with

NAI Central staff as part of the IT Working Group in support of his or her team members' effective participation in the NAI and their use of NAI's information technology architecture.

It is important that each person who is identified as the IT POC for a specific team be in regular communication with his/her PI. It is also important that the IT POC have an understanding of the teams' scientific goals, the particular needs of the PI and other team members regarding collaborative research support, and have a genuine interest in collaborating on this aspect of the NAI. Expertise in computer or information science is very helpful, as well as sensitivity to the social and cultural dimensions of encouraging new ways of working among their team members. Depending on the distribution of a given team and the number of Co-Is not located at the Lead Team Institution, it may be useful to identify additional IT POCs from these other sites.

The IT Working Group is composed of one or more IT POCs from each Lead Team, several members of the NAI Central staff who are focused on collaborative research support for the NAI community, Ames Research Center technical support staff, and other invited participants as appropriate given the issues being addressed.

The overall purpose of the IT Working Group is: to share knowledge and expertise regarding both social and technical aspects of promoting virtual collaboration; to provide input into the design and evolution of NAI's information technology infrastructure; to pilot new collaboration tools and technologies and support their deployment to the larger NAI community, especially their own teams; and to serve as a venue for communication within and across teams and between teams and NAI Central regarding collaborative research support needs, concerns, issues and ideas.

The IT Working Group meets monthly using NAI deployed collaboration tools such the videoconferencing system and real-time meeting software, currently WebEx. The meetings are open, and any interested NAI member is welcome to attend. The group also interacts asynchronously, utilizing the common methods of telephone, email and listservs, as well as more recently developed tools such as instant messaging and the wide range of tools and functionalities contained in NAI's knowledge management system, currently NX.

Monthly IT Working Group meeting agendas are designed to:

- develop shared understanding of the steps involved in establishing and supporting a culture of collaboration
- exchange information and lessons learned
- share expertise
- train in the use of tools
- engage group members in collaborative planning and problem-solving
- showcase innovative collaborative tool projects that are being conducted at the team level.

Information on the IT Working Group meeting schedule and instructions on how to participate using NAI information technology are available from the Collaborative Research Support Coordinator, Estelle Dodson <kdodson@mail.arc.nasa.gov>.

The group also meets face to face about once a year, either at the NAI General Meeting or the Astrobiology Science Conference. IT Working Group members are encouraged to submit poster presentations on sociological and technical aspects of the NAI, and collaborate on special tool and technology demos and trainings for conference attendees. It is expected that funding for IT Working Group members to attend these annual face to face meetings will be provided by each Lead Team.

5.4 NAI Tools and Technologies for Interdisciplinary and Virtual Collaboration

The information technology architecture to support the NAI and the collaborative activities of its members continues to evolve over time. Member input is always welcomed by NAI Central and is actively sought through informal dialogue as well as periodic formal needs assessment research. The most recent NAI Communications /Collaborations Needs Assessment Report can be found at:

http://ps.pageseeder.com/ps/eval/futureu/Needs_Assessment_Final_Report/report_needs_assessment.html

This report is presented using an interactive tool that offers the reader an opportunity to make comments or raise questions regarding any portion of the document as it is read. This tool, PageSeeder, is available to NAI members who wish to engage others in active discussion on specific points within their own documents. For more information on using this tool contact Marco Boldt (mboldt@mail.arc.nasa.gov) , at NAI Central.

Based on the findings of the most recent assessment of member needs, significant attention is being placed on the enhancement of both interdisciplinary and virtual communication by the Collaborative Research Support Group and other members of the NAI Central Administration.

5.4.1 Interdisciplinary Collaboration

The challenges of interdisciplinary collaboration are being addressed through opportunities for sharing expertise face to face through NAI Insight Courses, Focus Groups, field expeditions and special sessions at the NAI General Meeting or other professional conferences. The NAI Video Seminar Series focuses on interdisciplinary knowledge exchange using the NAI videoconferencing system and webcasting.

Two seminar series are currently offered on a monthly basis. The Director's Seminar Series, generally on the 4th Monday of each month, features a presentation by a senior scientist working within the field of astrobiology. The Forum on Astrobiology Research (FAR), which usually occurs on the 2nd Monday of each month, is an opportunity for Post Doctoral Fellows and graduate students to share the results of their work. Information on the NAI Seminar Series can be found at: <http://nai.arc.nasa.gov/seminars/index.cfm> or by contacting Estelle Dodson <kdodson@arc.nasa.gov>, the Seminar Series Project lead.

5.4.2 Virtual Collaboration

To meet both the synchronous and asynchronous virtual collaboration needs identified by NAI members, several tools are currently available, while research continues to identify other leading-edge virtual collaboration solutions.

Synchronous Meetings

Any NAI member can host a real-time (synchronous) meeting using the designated NAI WebEx. meeting site at <https://naimeetings.webex.com>.

These real-time meetings can either be scheduled in advance or called spontaneously, using a desktop or laptop computer with an internet connection, and a telephone conferencing system. No specialized hardware or software is required, as the NAI meeting site is reached using the Internet Explorer browser. Meeting participants can share desktops, applications, data or documents, view still or movie images, collaboratively work on a whiteboard, and chat with individual members or the group as a whole. The "presenter" role can be rotated among participants by the host, and those with computer cameras can be seen by one another. For instructions on the use of WebEx for NAI collaborations contact Estelle Dodson <kdodson@arc.nasa.gov>.

Videoconferences

For videoconferencing with other NAI members, each Lead Team site is equipped with a Polycom camera and either a SmartBoard or a projector and screen for data and document sharing. A MultiControl Unit located at Ames is available to connect multiple sites wishing to videoconference. IT POCs are trained in the use of the NAI-deployed videoconferencing equipment, and are expected to provide training and support to their own team members. To schedule a videoconference involving multiple NAI sites contact Diane Hawks dhawks@arc.nasa.gov.

NAI team members not located at the Lead Institutions who are PC users may be eligible for a desktop software solution that is compatible with the Polycom conferencing system. Contact your team's IT POC for more information, or contact JC Wright jcwright@arc.nasa.gov.

Asynchronous Collaboration Discussion Forums

NAI members can initiate and/or participate in discussions on various topics relevant to NAI's missions. These forums are accessed via the Member's Services page of the NAI Website. To review current forums please visit

http://nai.arc.nasa.gov/institute/member_services/index.cfm.

Any member wishing to initiate a new forum discussion should contact Marco Boldt mboldt@mail.arc.nasa.gov.

PageSeeder

PageSeeder enables asynchronous discussion about a document, or any section, paragraph or specific point within the document. The document is “seeded” so that comments may be added as people read it through. Other readers then can see those comments and add their own. The host of the discussion receives email notification each time a comment is added. For further information about using PageSeeder, contact Marco Boldt mboldt@mail.arc.nasa.gov.

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6. EDUCATION AND OUTREACH

- :: [Involvement in NAI's Education and Outreach Program](#)
- :: [Meetings](#)
- :: [Reporting](#)
- :: [Collaborations](#)

6.1 Involvement in NAI's Education and Public Outreach Program

All NAI Lead Teams participate in the Education and Public Outreach (E/PO) program. It is expected that each Lead Team has identified a member(s) to serve as the Lead for E/PO, to develop and carry out an outreach plan for the team's participation, to participate in the overall NAI & astrobiology E/PO community, and to report all E/PO activities.

E/PO is a major component of the NAI's mission, communicating the science and the benefits of the science to students, teachers, and the general public. As is consistent with NASA's *2003 Strategic Plan*, a major focus of NAI's E/PO efforts includes recruiting students into science, technology, engineering, and math careers. As astrobiology is a relatively new field, recruitment of the next generation of researchers is especially significant. In addition to the education initiatives for the agency, NAI works within guidelines for E/PO established by the Office of Space Science (OSS) and participates in the OSS Education Support Network.

Structure of NAI E/PO

E/PO for NAI involves NAI Central, all of the Lead Teams, and the OSS E/PO Network (Forums, Brokers)

NAI Central

- Provides an E/PO Manager, Kristina Wilmoth Kristina.L.Wilmoth@NASA.gov and E/PO Coordinator, Daniella Scalice dscalice@arc.nasa.gov
- Builds partnerships with external organizations to benefit all of NAI and/or the astrobiology community;
- Coordinates cross-team collaborations;
- Represents all NAI teams to NASA's Office of Space Sciences E/PO network and NASA's Office of Education;
- Provides materials, support, and resources to all Lead Teams;
- Collects Lead Team reports for submission to NASA HQ
- Supports a webpage for forums, discussions threads, archived files, monthly meeting minutes etc., at <http://nai.arc.nasa.gov/epo>, which all NAI members are invited to use

Team E/PO Lead

- Represents the entire Lead Team to the NAI & astrobiology E/PO community;
- Coordinates and carries out the Team's E/PO activities;
- Integrates Team members in E/PO activities;
- Builds partnerships appropriate to the E/PO plan
- Collaborates with other Lead Teams and NAI Central on E/PO activities whenever possible;
- Communicates E/PO activities to the PI and entire Lead Team;
- Reports all E/PO activities in the annual report

The NASA Office of Space Science (OSS) Education Network

- Sets & communicates NASA policy & guidelines for E/PO standards, reporting,

accountability, and funding for all OSS missions and grants including NAI

- Connects OSS missions with relevant scientific content to collaborate on E/PO projects, materials, and activities whenever possible
 - Offers four thematic forums -- two of which involve astrobiology:
 - Origins Education Forum led at the Space Telescope Science Institute
 - Solar System Education Forum led at the Jet Propulsion Laboratory
- Provides a regional network of Broker/Facilitators to build bridges between scientists, educators, & E/PO opportunities in their regions
- Completes information regarding the OSS E/PO Network including a map of the regions and contact information:
 - <http://spacescience.nasa.gov/education/resources/ecosystem/index.htm>

6.2 E/PO Meetings

NAI Central hosts monthly telecons and/or videocons of the entire NAI E/PO team. These meetings allow for cross-team communication of on-going and upcoming E/PO activities, opportunities for partnerships and funding, and requirements for reporting, etc. These meetings are open to all members of NAI Lead Teams and often include external partners as well. Schedule and connection information is available from the NAI Central E/PO Coordinator, [Daniella Scalice](#) and on the NAI EPO webpage.

Because E/PO is an integral part of NAI activities, it is essential for the E/PO Leads to attend essential educational, scientific, and NAI meetings. Travel for the E/PO Leads should be included in all Lead Team plans. Some of these meetings include the NAI General Meetings, the [National Science Teacher Association](#) meetings or other appropriate professional education meetings, the NAI Outreach Retreats and other meetings specific to the team's E/PO plan.

From time to time, E/PO is a topic of discussion at the NAI Executive Council. In these instances, PI's may wish to include their team's E/PO Lead in the Executive Council meetings, to invite them to present to the Executive Council, or to ask for a briefing of team activities in advance of an executive council discussion.

In order to facilitate NAI E/PO meetings and collaborations, E/PO Leads must have access to all NAI collaborative tools and facilities including the Polycom videoconferencing facilities, Webex, and NX.

6.3 Reporting

NAI E/PO collects information on all E/PO activities on an annual basis. This information is compiled into the NAI Annual Report, used throughout the year for various reporting requirements, and made available to the public and potential E/PO partners.

All NASA education programs are required to report their activities to NASA Headquarters on at least an annual basis. NAI Central meets this requirement for all of NAI by entering the information for the entire NAI. The information for this report is compiled from the Lead Teams' E/PO reports.

NAI Lead Team E/PO Reports

- Data are collected via an online database
- Due dates for project entries are announced at least two months prior to the deadline
- Each Lead Team is provided a unique user name and password to access the database

6.4 Collaborations

As with the science of astrobiology, the NAI's E/PO efforts are highly collaborative. All projects and activities benefit from these collaborations. Collaborative E/PO projects get

more advertising, often secure larger audiences, and benefit from the expertise of additional partners. These partners include both other NAI Lead Teams and other astrobiology E/PO professionals as well as schools, teachers, museums, minority institutions, etc. Each Lead Team and NAI Central have built partnerships, which when shared, extend and leverage all E/PO efforts maximizing the reach and impact of all projects.

One way in which information is shared about potential collaborations is through the E/PO working group which meets monthly. In this group, team-to-team, and multi-team collaborations are planned and organized. In the March 2003, for example, five teams plus NAI Central collaborated to present a five-hour short course on astrobiology to teachers at the National Science Teacher's Association annual meeting. Two scientists participated from two different teams, and education experts participated from each of the five teams. Each of those teams also had individual activities going on which highlighted their particular work, but this group project presented a larger view of astrobiology science and education materials.

One way in which collaboration is fostered in a virtual institute is through the use of various collaborative tools. NAI provides such tools for its members and the E/PO Working Group uses them as appropriate. It is essential that the needs of the E/PO Leads are considered when Lead Teams are deciding which of the tools will be used by that team. The current collaborative tools include Polycom, WebEx, NX, and the forums provided by NAI Central. More information on these tools can be found [here](#).

APPENDICES

Appendix A

Supplements to Existing NAI Cooperative Agreements

GENERAL INFORMATION

This process applies to requests for supplemental funds to the existing 13 NAI Cooperative Agreements funded by the NASA Ames Grants Office. The NASA centers will typically receive supplements through the sub-authorization process.

The process is the same regardless of the NAI Funding Program supporting the activity (e.g., the DDF, Focus Groups, or DRS).

It applies to requests both from the Lead Team Institutions and all institutions which are sub-contracts to the Lead Team Institutions, although the funds must go through the Lead Team Institution.

Note that NAI funding can also occur through other mechanisms, such as through a contractor or, very rarely, a new grant.

KEY POINTS TO REMEMBER

Contact NAI Central first, before preparing anything and before contacting the Ames Grants Office, to discuss what mechanism will be used for funding; and therefore what you need to prepare and submit.

If it is decided that the funds will be provided as a supplement to an existing Cooperative Agreement, then the following process is applicable.

The process may require only the following, or may it may need additional material; e.g., a proposal for research requesting substantial support will likely require a more detailed proposal application.

The final request letter and budget MUST come from the Grants/Business Office of one of the 13 Lead Team Institutions. Requests originating from Team Member located at other than the Lead Institution must be channeled through the Lead Team grants office.

WHAT NEEDS TO BE PREPARED

A short cover letter (typically less than one page) describing the purpose of the proposed activity or need. Conclude the text with the following statement, "This request was not included in the original proposal but is within the scope of the original agreement".

A budget sheet listing costs, including overhead, if applicable. If overhead is waived by your institution that must be stated.

[See following example request letter and budget.](#)

NOTE: NASA will not provide funds for the following: food and beverages, entertainment, research funding directly to Non-U.S. institutions, contingency, a large "Miscellaneous" category, travel or services for NASA civil servants. Please do not include any of these in your text or budget.

SUBMISSION OF REQUESTS

Your proposal (i.e., request letter and budget) is to be submitted to Dr. Rose Grymes, NAI Deputy Director, for initial review and consideration by the NAI. E-mail is fine (rgrymes@mail.arc.nasa.gov).

If approved by the NAI, the same proposal in the same simple format (letter and budget) is to be submitted to the NASA Ames Grants Office by the Grants of Finance Office of the Lead Team associated with this research.

An e-mail submission is acceptable by the NASA Ames Grants Office.

Attention: Beatrice Morales (bmorales@mail.arc.nasa.gov), c.c. to Barrie Caldwell (bacaldwell@mail.arc.nasa.gov), Rose Grymes (rgrymes@mail.arc.nasa.gov), Ed Goolish (egoolish@mail.arc.nasa.gov), Kaye Faria (kfaria@mail.arc.nasa.gov).

Appendix B

*** Example Request Letter ***

Ms. Beatrice Morales
Grant Officer
NASA Ames Research Center
Mail Stop: N-241-1
Room: 218
Moffett Field, CA 94035-1000

Dear Ms. Morales

The University of Blaine asks that you consider a funding supplement of \$9,600, to our existing Cooperative Agreement (include number; e.g., NCC2-RRRR), to provide travel assistance to the 4th Annual Conference on Extreme Environments, which will take place from March 14, to March 18, 2003 in Huntington, Nevada. This activity is being supported through the NAI Director's Research Scholarship Program.

Our goal is to encourage graduate students to attend the conference, present posters, and meet other scientists in the field of astrobiology. Our intent is to provide a travel and registration subsidy for students.

The request is for \$400 per student to defray conference attendance costs and encourage this learning experience for future astrobiologists.

This request was not included in the original proposal but is within the scope of the original agreement.

Sincerely,

John Crane
University of Blaine
Office of Sponsored Programs
(to originate from and be signed by the Grants/Finance Office of the appropriate Lead Team Institution)

Budget

Travel and registration subsidy

20 students @\$400 per student	\$8,000
Overhead (20% off site)	\$1,600
Total Request	\$9,600