Virtual Organizations as Sociotechnical Systems (VOSS)

PROGRAM SOLICITATION
10-504

REPLACES DOCUMENT(S):
NSF 09-540

National Science Foundation

Office of Cyberinfrastructure

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

January 25, 2010

REVISION NOTES

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes revised guidelines to implement the mentoring provisions of the America COMPETES Act (ACA) (Pub. L. No. 110-69, Aug. 9, 2007.) As specified in the ACA, each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Proposals that do not comply with this requirement will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II for further information about the implementation of this new requirement).

As announced on May 21, 2009, proposers must prepare and submit proposals to the National Science Foundation (NSF) using the NSF FastLane system at http://www.fastlane.nsf.gov/. This approach is being taken to support efficient Grants.gov operations during this busy workload period and in response to OMB direction guidance issued March 9, 2009. NSF will continue to post information about available funding opportunities to Grants.gov FIND and will continue to collaborate with institutions who have invested in system-to-system submission functionality as their preferred proposal submission method. NSF remains committed to the long-standing goal of streamlined grants processing and plans to provide a web services interface for those institutions that want to use their existing grants management systems to directly submit proposals to NSF.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Virtual Organizations as Sociotechnical Systems (VOSS)

Synopsis of Program:

A virtual organization is a group of individuals whose members and resources may be dispersed geographically, but who function as a coherent unit through the use of cyberinfrastructure. Virtual organizations are increasingly central to the science and engineering projects funded by the National Science Foundation. Focused investments in sociotechnical analyses of virtual organizations are necessary to harness their full potential and the promise they offer for discovery and learning.

The Virtual Organizations as Sociotechnical Systems (VOSS) program supports fundamental scientific research, particularly advances in social, organizational and design science understanding, directed at advancing the understanding of how to develop virtual organizations and under what conditions virtual organizations can enable and enhance scientific, engineering, and education production and innovation. Levels of analysis may include (but are not limited to) individuals, groups, organizations, and institutional arrangements. Disciplinary perspectives may include (but are not limited to) anthropology, complexity sciences, computer and information sciences, decision and management sciences, economics, engineering, organization theory, organizational behavior, social and industrial psychology, public administration, political science and sociology. Research methods may span a broad variety of qualitative and quantitative methods, including (but not limited to): ethnographies, surveys, simulation studies, experiments, comparative case studies, and network analyses.

VOSS funded research must be grounded in theory and rooted in empirical methods. It must produce broadly applicable and transferable results that augment knowledge and practice of virtual organizations as a modality. VOSS does not support proposals that aim to implement or evaluate individual virtual organizations.

Cognizant Program Officer(s):

- Susan Winter, Lead Program Director, OD/OCI, NSF, telephone: (703) 292-8276, email: swinter@nsf.gov
- Pui yee Agnes Chan, Program Director, BIO/IOS, NSF, telephone: (703) 292-4400, email: pchan@nsf.gov
- Kelly Joyce, Program Director, SBE/SES, NSF, telephone: (703) 292-8543, email: kjoyce@nsf.gov
- Daniel Lubin, Cyberinfrastructure Program Manager, OD/OPP, NSF, telephone: (703) 292-8029, email: dlubin@nsf.gov
- Mimi McClure, Associate Program Director, OD/OCI, NSF, telephone: (703) 292-5197, email: mmcclure@nsf.gov
- David McDonald, Program Director, CISE/CNS, NSF, telephone: (703) 292-8074, email: dmcdonal@nsf.gov
- Jacqueline Meszaros, Program Director, SBE/SES, NSF, telephone: (703) 292-7261, email: jmeszaro@nsf.gov
- Joy M. Pauschke, Program Director, ENG/CMMI, NSF, telephone: (703) 292-7024, email: jpauschk@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.080 --- Office of Cyberinfrastructure

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 8 to 18 New Awards

Anticipated Funding Amount: $3,000,000 Pending the availability of funds and quality of proposals, award sizes are expected to range from $50,000 to $400,000 in total costs (including indirect costs) for the period of the grant with durations up to three years.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.
- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An investigator may participate as a PI, Co-PI, or other senior personnel in no more than two proposals submitted in FY 2010 in response to this program solicitation. This limitation includes proposals submitted by a lead organization, any sub-award submitted as part of a proposal, or any non-lead collaborative proposal. This restriction applies to this solicitation only and is not meant to inhibit submissions of proposals by investigators to other NSF activities or programs.

For the purposes of this VOSS solicitation, senior personnel include the PI, any co-PIs, and any other researchers actively involved in the scientific or technical management of the project, including sub-awardees. It does not include students, postdoctoral researchers, or consultants who provide specific expertise on a limited portion of the project.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

  January 25, 2010

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

The Virtual Organizations as Sociotechnical Systems (VOSS) program supports fundamental scientific research, particularly advances in social organizational and design science, directed at advancing the understanding of how to develop effective virtual organizations and under what conditions virtual organizations can enable and enhance scientific, engineering, and education production and innovation. VOSS funded research must be grounded in theory and rooted in empirical methods. It must produce broadly applicable and transferable results that augment knowledge and practice of virtual organizations as a modality. VOSS supported projects that use functioning organizations as data sources are encouraged, but should be designed such that the findings extend beyond that unit and sample. **VOSS does not support proposals that aim to implement or evaluate individual virtual organizations.**

Projects that develop or build on research perspectives that cross disciplinary lines are strongly encouraged. VOSS research might draw on theories and findings from anthropology, complexity sciences, computer and information sciences, decision and management sciences, economics, engineering, organization theory, organizational behavior, social and industrial psychology, public administration, political science and sociology. Research methods may span a broad variety of qualitative and quantitative methods, including (but not limited to): ethnographies, surveys, simulation studies, experiments, comparative case studies, and network analyses.

There is a large corpus of research on the anthropology, sociology, psychology, and economics of collaborative groups, teams and organizations, as well as on technologically mediated work in social informatics, human-computer interaction, computer-supported cooperative work, computer-mediated communication, social computing, and new media. Although decades of this research have begun to yield best practices for collaborative and distributed work, the complex social and technical processes underlying successful virtual organizations as applied to science and engineering have yet to be fully elucidated. The VOSS solicitation directly supports projects aimed at effectively promoting and leveraging the extension and integration of past research to improve our understanding of the sociotechnical conditions under which new forms of virtual organizations are effective in science, engineering, and learning.

II. PROGRAM DESCRIPTION

The intellectual challenges and institutional conditions of 21st century science and engineering necessitate collaboration. There has been a growing shift away from traditions of individual based science toward more collaborative models. In many fields, scholars are confronted with challenges of a scale and complexity that defy the boundaries of traditional fields as well as the limits of individual capacity, thus requiring more diversified and at the same time unified participation from researchers. Many scientists and engineers find themselves today working in collaborations, many of which cross disciplinary, institutional, and geographic borders via the support of cyberinfrastructure.

Computer networking was first developed as a communication tool for scientists and engineers. E-mail

and file transfers have long since supported distributed networks of scientific communication. However, more recent capabilities in high performance computing, remote instrumentation, federated databases, and advanced simulation and visualization environments are allowing these intellectually diverse, geographically dispersed, and electronically connected networks of researchers to collaborate around data, workflows, and resources across time and space in unprecedented ways. Indeed, while technology may allow the formation of these end-to-end collaborations, it is the common purpose and/or shared goals of the participating scientists and engineers that transform them from loosely-coupled technostructures into more coherent sociotechnical systems—*aka* virtual organizations.

A virtual organization is a group of individuals whose members and resources may be dispersed geographically, yet who function as a coherent unit pursuing shared goals through the use of cyberinfrastructure. Virtual organizations may be known by a range of names, including: collaboratories, distributed work groups, virtual teams, online communities, and science gateways. Common characteristics across different types and classes of virtual organizations include:

- *Distributed across space*, with participants spanning localities and institutions;
- *Distributed across time*, allowing synchronous as well asynchronous interactions;
- *Dynamic structures and processes*, at every stage of the organizational lifecycle;
- *Information and Communication Technology enabled*, via collaboration support systems including e-mail, teleconferencing, telepresence, awareness, social computing, and group information management tools; and,
- *Engaged*, with simulations, databases, instrumentation, analytic tools and services which require interaction among organizational members.

Virtual organizations can advance national priorities of scientific innovation, education, and economic competitiveness by more efficiently and effectively leveraging diverse information and knowledge, skills and resources from different locations. In several science and engineering domains, virtual organizations are increasingly indispensable but the potential and limitations of this new organizational form have not yet been empirically established.

While many virtual organizations are being designed with attention to the information technologies required to be effective, the social aspects of collaboration require equal consideration. Technological advances may make virtual organizations possible, but at the core of this revolution is a social transformation. Leveraging the potential of virtual organizations requires understanding the intertwined social and technical issues.

Proposals submitted under this program solicitation must explain explicitly how the proposed work fits within established streams of theory and research so that the potential contribution to one or more fields of research is clear. They must also indicate potential contributions to practice.

Critical challenges and prominent themes that scientific inquiries might address under VOSS may include (but are not limited to):

- Individual and collective motivation: What are the social and technological barriers to and/or enablers of participation in a virtual organization? What are the social and technological forces of coordination, competition, and/or collaboration? How do these forces vary across task, domain, population, and/or stage of organization lifecycle?
- Organizational structure, scope, and scaling: Are there levels of connectivity, diversity, and interactivity at which scientific production and innovation can be optimized in virtual organizations? How does optimization on these dimensions vary across task, domain, population, and/or stage of organization lifecycle?
- Organizational life cycles: What are the stages and causes of virtual organization evolution, including, for example, formation of new organizations, organizational change or transformation, and organizational crisis or decline? How do they vary across task, domain, population, and/or stage of organization lifecycle?
- Production and innovation: What technological, social, and legal arrangements support intellectual production and innovation in virtual organizations? How do these arrangements interact? How do they vary across task, domain, population, and/or stage of organization

lifecycle?
- Management, Governance, and Leadership: What are models of governance agreement, and what should they address? How do they interact with the cultures, structures and arrangements governing the participating individuals and institutions? How do virtual organizations and participants understand, negotiate, and prioritize multiple and what might be conflicting memberships?
- Measurement and assessment: What are the tests of efficiency, equity, and effectiveness that can be applied to different types of virtual organizations? How do these conditions vary across task, domain, population, and/or stage of organization lifecycle?
- Units and frameworks of analysis-both social and technical: Social units of analysis may be individuals, teams, scientific disciplines, individual or multiple organizations. Technical units of analysis may include specific tools or objects, virtual or immersive environments or "worlds," specialized niches, or collections of such virtual environments. What are the conceptual and comparative frameworks of analyzing virtual organizations? What theoretical, methodological, and empirical approaches can be applied, what need to be adapted, what need to be developed?
- Comparative performance: Under what conditions do virtual organizations outperform co-located organizations? What tasks or processes can be done or done better by virtual organizations that cannot be done or done as well in co-located organizations, and vice versa? What are the advantages and disadvantages of technological-mediation? Under what conditions (and how) might virtual organizations be instrumented to advance our understanding of certain phenomena better than co-located organizations?

III. AWARD INFORMATION

Pending availability of funds, NSF anticipates making approximately 8 to 18 VOSS awards in FY 2010. These awards will be made as either standard or continuing grants. Award sizes are expected to range from $50,000 to $400,000 in total costs (including indirect costs) for the period of the grant with durations up to three years. This maximum is the total for the duration of the project; it is not a yearly maximum.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.
- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An investigator may participate as a PI, Co-PI, or other senior personnel in no more than two proposals submitted in FY 2010 in response to this program solicitation. This limitation includes proposals submitted by a lead organization, any sub-award submitted as part of a proposal, or any non-lead collaborative proposal. This restriction applies to this solicitation only and is not meant to inhibit submissions of proposals by investigators to other NSF activities or programs.

For the purposes of this VOSS solicitation, senior personnel include the PI, any co-PIs, and any other researchers actively involved in the scientific or technical management of the project, including sub-awardees. It does not include students, postdoctoral researchers, or consultants who provide specific expertise on a limited portion of the project.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the guidelines specified in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-PUBS (7827) or by e-mail from nsfpubs@nsf.gov.

Proposal Cover Sheet. Begin your title with the VOSS acronym. Failure to submit this information may delay or prevent processing. If your project includes **international activities**, you must check the box for “International Cooperative Activities Country Name” that appears under Other Information when the "remainder of cover sheet" is clicked, then select the countries involved.

Project Summary. Provide a summary description of the VOSS project, including its research direction and key features, in a manner that will be informative to a general technical audience. If the project includes international activities, they should be included in the project summary also. Project Summaries must be written carefully to explicitly point to and detail the two NSF evaluation criteria -- intellectual merit and broader impacts -- in separate paragraphs. **If the project summary does not explicitly address both the intellectual merit and the broader impacts of the proposed activity, the proposal will be returned without review.**

Project Description. In addition to addressing Intellectual Merit and Broader Impact, **all VOSS project descriptions should address the following additional criteria. Reviewers will be asked to use these criteria to evaluate the proposals:**

Fit to Virtual Organizations as Sociotechnical Systems. The project description should address the expected project significance: how its intellectual merits and broader impacts will add to the fundamental understanding of virtual organizations as a

phenomenon and how it will enhance the capabilities of people who engage in research and/or education supported by virtual organizations.

Biographical Sketches. Each proposal must include biographical sketches for all senior investigators, and also include biographical sketches for principal foreign collaborators. All biographical sketches must adhere to the format given in the Grant Proposal Guide (Chapter II.C.2.f, http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg).

Project Budget. The budget justification (up to 3 pages) should explain and justify major cost items. For undergraduate and graduate student participants and postdoctoral associates, include a breakdown of costs by types of participants.

Proposals Involving Multiple Organizations Proposals involving multiple organizations may be submitted in one of two ways: (1) as a single proposal with one organization serving as the lead organization and with support to other organizations provided through subawards, or (2) as a collaborative proposal, where each submitting organization must meet the eligibility criteria outlined in section IV. Organizations eligible to submit proposals include U.S. universities and colleges, including two- and four-year colleges and community colleges, acting on behalf of their faculty members. In addition, non-profit organizations in the U.S. may submit proposals. Please note that all collaborative proposals submitted as separate submissions from multiple organizations must be submitted via FastLane. Chapter II, Section D.3 of the GPG provides additional information on collaborative proposals.

Proposals Involving Collaborators at Foreign Organizations Proposers are reminded that they must provide biographical sketches of all senior project personnel, including those at foreign organizations. In addition, as supplementary documentation, proposals involving foreign collaborators should provide documentation of a willingness to collaborate through letters of commitment from the international counterpart organizations. Please note that although eligibility for this competition is restricted to U.S. organizations, as described in section IV of this solicitation, collaborations with foreign organizations are also encouraged.

Human Subjects If the project involves human subjects, the Institutional Review Board (IRB) of the submitting organization must certify that the proposed project is in compliance with the Federal Government's "Common Rule" for the protection of human subjects. If IRB approval has been obtained and the date of approval is listed on the cover sheet, no other certification is required. If IRB approval is still pending, submit certification of IRB approval in electronic form as soon as approval is obtained to the cognizant program officer. (The name of this program officer will be listed in the Proposal Status module of FastLane.) Delays in obtaining IRB certification may result in NSF being unable to make an award. For more information regarding the protection of human subjects, consult http://www.nsf.gov/bfa/dias/policy/hsfaqs.jsp.

Proposers are reminded to identify the program solicitation number (NSF 10-504) in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

  January 25, 2010

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this program solicitation through use of the NSF FastLane system. Detailed instructions regarding the technical aspects of proposal preparation and submission via FastLane are available at: http://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: https://www.fastlane.nsf.gov/fastlane.jsp.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the

project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

Fit to Virtual Organizations as Sociotechnical Systems. How will the project's intellectual merits and broader impacts add to the fundamental understanding of virtual organizations as a phenomenon? How will it enhance the capabilities of people who engage in research and/or education supported by virtual organizations?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Susan Winter, Lead Program Director, OD/OCI, NSF, telephone: (703) 292-8276, email: swinter@nsf.gov
- Pui yee Agnes Chan, Program Director, BIO/IOS, NSF, telephone: (703) 292-4400, email: pchan@nsf.gov
- Kelly Joyce, Program Director, SBE/SES, NSF, telephone: (703) 292-8543, email: kjoyce@nsf.gov
- Daniel Lubin, Cyberinfrastructure Program Manager, OD/OPP, NSF, telephone: (703) 292-8029, email: dlubin@nsf.gov
- Mimi McClure, Associate Program Director, OD/OCI, NSF, telephone: (703) 292-5197, email: mmcclure@nsf.gov
- David McDonald, Program Director, CISE/CNS, NSF, telephone: (703) 292-8074, email: dmcdonal@nsf.gov
- Jacqueline Meszaros, Program Director, SBE/SES, NSF, telephone: (703) 292-7261, email: jmeszaro@nsf.gov
- Joy M. Pauschke, Program Director, ENG/CMMI, NSF, telephone: (703) 292-7024, email: jpauschk@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the NSF web site.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at http://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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