

Software Development for Cyberinfrastructure (SDCI)

PROGRAM SOLICITATION

NSF 11-504

REPLACES DOCUMENT(S):

NSF 10-508



National Science Foundation

Office of Cyberinfrastructure

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

January 30, 2011

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), NSF 11-1, was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in NSF 11-1 apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in NSF 11-1.

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Software Development for Cyberinfrastructure (SDCI)

Synopsis of Program:

NSF is committed to fostering the development of a scalable, comprehensive, secure and sustainable cyberinfrastructure that supports potentially transformative research in science and engineering. The development of a mature cyberinfrastructure relies on the development, deployment, and reliable use of new technologies to catalyze transformative research.

The purpose of the Software Development for Cyberinfrastructure (SDCI) program is to develop and deploy a set of reusable and expandable software components and systems that benefit a broad set of science and engineering applications. This program supports software development along two thrust areas: end-to-end high performance computer networking and cyber security. Supported activities include development, testing, experimental deployment, and trial use of software in relevant settings enabling research and education activities in any area of science and engineering supported by NSF. A strong emphasis is placed on moving from infrastructure research to infrastructure capability. SDCI funds software activities for enhancing scientific productivity and for facilitating

research and education collaborations through sharing of data, instruments, and computing and storage resources. The program requires open source software development. Collaborations with industry are encouraged.

Cognizant Program Officer(s):

- Kevin Thompson, telephone: (703) 292-4220, email: kthompso@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: 7 to 15

Anticipated Funding Amount: \$8,800,000 over two to three years for awards made via this solicitation, subject to availability of funds.

Eligibility Information

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An individual may be the PI, co-PI, or senior personnel in no more than two proposals that respond to this solicitation.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- Letters of Intent: Not Applicable
- Preliminary Proposal Submission: Not Applicable
- Full Proposals:
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. 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.
 - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- Cost Sharing Requirements: Inclusion of voluntary committed cost sharing is prohibited.
- 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 30, 2011

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: Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements: Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

Software permeates cyberinfrastructure. Fully functional and performing software is essential to realizing the promises of cyberinfrastructure to transform the ways in which scientific research and education are conducted. The goal of the NSF is committed to fostering the development of a scalable, comprehensive, secure and sustainable cyberinfrastructure that supports potentially transformative research in science and engineering. The development of a mature cyberinfrastructure relies on the development, deployment, and reliable use of new technologies to catalyze transformative research.

The purpose of the Software Development for Cyberinfrastructure (SDCI) program is to develop and deploy a set of reusable and expandable software components and systems that benefit a broad set of science and engineering applications. This program supports software development along two thrust areas: end-to-end high performance computer networking and cyber security. Supported activities include development, testing, experimental deployment, and trial use of software in relevant settings enabling research and education in any area of science and engineering supported by NSF. A strong emphasis is placed on moving from research to capability in cyberinfrastructure. SDCI funds software activities for enhancing scientific productivity and for facilitating research and education collaborations through sharing of data, instruments, and computing and storage resources. The program requires open source software development.

Each proposal should clearly identify and justify the software focus area to which it is being submitted, as described in the proposal preparation instructions.

II. PROGRAM DESCRIPTION

The FY2011 SDCI solicitation supports the development and deployment of software in two software focus areas - end-to-end high performance networking and cyber security.

1. End-to-end High Performance Networking

NSF solicits proposals in the SDCI end-to-end High Performance Data Networking area in the following topics:

- Data network measurement and monitoring tools and services supporting network researchers, network operations, or the owners and operators of cyberinfrastructure enabling scientific research. Proposals may also address capabilities supporting both off line analysis as well as near real time situational awareness. Together, these tools and services contribute to a deeper and more effective understanding of network behavior and conditions. Active and passive measurement projects are in scope.
- Network protocol development and deployment for increased performance and interoperability. An emphasis in this topic is the integration, limited deployment, and trial use of alternatives or modifications to the traditional TCP/IPv4 stack. This may include replacement of TCP as the transport protocol used by end systems across routed network paths. Porting applications and configuring environments to enable distributed applications to run natively on IPv6 end-to-end is also in

scope. Work may also address emerging faster transmission speeds in tailoring protocols to enable end-to-end data transfer speeds in the range of 10-100 gigabits per second. Proposals may also address the deployment and use of network services required for end-to-end interoperability for new and alternative protocol environments. Proposals must address solutions for improved network performance end-to-end and identify target end system platforms. These projects are expected to build on an existing base of software, with new development associated with improvement, adaptation, integration and environment porting challenges, as opposed to completely new protocol creation. Proposals in this focus area must define relevant topologies prepared to accept and integrate new network stack software on end hosts; and include a description of applications impacted.

- Sensor and wireless networks: networking and communications software for sensor and wireless networks.

Proposals in this area will have titles that begin with "SDCI Net:"

2. Cyber Security

NSF solicits proposals in the SDCI cyber security area in the following topics:

- Malware detection and prevention: while NSF and other US Government agencies have supported a wide range of successful and innovative research into malware detection and prevention, challenges remain, including the lack of effective technologies currently available and fielded. The "DHS Roadmap for Cybersecurity Research" (at <http://www.cyber.st.dhs.gov/docs/DHS-Cybersecurity-Roadmap.pdf>) describes a number of gaps in both major research and effective solutions, with new techniques struggling to keep pace with new malware development. Targets in this topic include, but are not limited to: techniques to counter malware polymorphism; techniques to counter malware packing and other obfuscation methods; and automatic detection of command and control structure and communications.
- Situational understanding: better tools for system administration in understanding the state and behavior of maintained platforms; tools to support awareness of events and behavior at multiple time scales from milliseconds to months; tools supporting attack attribution while maintaining appropriate privacy; tools promoting data sharing across organizational boundaries; and novel approaches to analyzing and presenting large scale network data.
- Assurance techniques in sharing data: tools and services for safely sharing data, which may include, but are not limited to: stronger anonymization of network traffic traces; protecting data at rest; and other defense mechanisms for the safe and reliable collection and transfer of data.
- Software assurance: tools and services supporting software testing and vulnerability analysis.
- New tools and services to improve access to and use of High Performance Computing (HPC) resources and distributed computing environments for cyber security research and development. Proposals may also target software development to improve the security of existing NSF HPC resources.
- Software supporting research infrastructure used for cyber security research and development.

Proposals in this area will have titles that begin with "SDCI Sec:"

Proposals submitted to SDCI that do not fall within one of these two focus areas as described will be deemed non-responsive and will be returned without review.

3. Requirements for All SDCI Proposals

Common requirements for all SDCI proposals include:

- Identification of the software focus area in the title of the proposal.
- Direct engagement with one or more scientific research projects. All proposed approaches and systems must partner with one or more research projects or communities that will allow for and assist the deployment of the proposed software to support their research applications
- Experimental deployment, trial use, or initial operational integration in a production environment supporting scientific research.
- A pre-existing software base or initial prototype capability, whose state of maturity may be at an early stage, or lacking needed functionality, limited or no use outside of a lab environment, or exposure to users and adopters.
- Use of the NSF-funded NMI Build and test services, or NSF designated alternative, to support software development and testing. Details of the NMI Build and Test facility can be found at <http://nmi.cs.wisc.edu/>.
- Identification of multiple application areas in science or engineering where the software is needed, a description of the value of the work in the context of a missing capability required by the domain fields, and specific examples of how the use of the tool will have an impact on science and engineering research.
- The project plan must include: milestones with release targets of software where appropriate; deployment goals; and an evaluation plan based on a list of tangible metrics to be used to measure the success of the software developed and deployed.
- A compelling discussion of the software's potential use by broader communities, preferably via use cases developed in concert with relevant domain scientists.
- Identification of the open source license to be used.
- Collaborations with industry are encouraged where appropriate.

Strong preference will be shown for efforts that provide near-term benefit to a broad user base in the NSF community.

See Section V, Proposal Preparation and Submission Instructions, for further guidance on preparing proposals.

III. AWARD INFORMATION

The SDCI program will fund software development and deployment projects at \$50,000 - \$800,000 per year for 1 - 3 years as standard or continuing grants, subject to award conditions described in the solicitation. Proposals requesting funding at more than \$700,000 per year must contain a subaward to the deployment partner for no less than the amount of funds requested over \$700,000 per year.

IV. ELIGIBILITY INFORMATION

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An individual may be the PI, co-PI, or senior personnel in no more than two proposals that respond to this solicitation.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained 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) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number 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.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

This information supplements guidance in the GPG.

Proposal Titles

Proposals must identify the focus area in the title. End-to-end networking software related proposal titles must start with "SDCI Net." The titles of cyber security related software proposals must start with "SDCI Sec:".

Budget

Follow the instructions in the GPG for preparing the budget. The budget must include costs for attendance by one or more project personnel at an annual PI meeting to be held at or near the NSF facility in Arlington, VA.

All proposals should include the following sections as Required Supplementary Documents:

- A Post-Doc Mentoring Plan if post-docs will be supported;
- A Data Management Plan, or an assertion of the absence of the need for such a plan;
- A list of all organizations involved in the project;
- A single, alphabetically ordered list of all people, in the academic or professional community, who have collaborated with (within the last 48 months), or have been a Ph.D. advisee or advisor of, any of the personnel involved in the proposed project. In this list, please include, next to the name of each conflicted individual, that individual's institution or company and the name of the project member with whom he or she has the conflict of interest. This should be a combined list from all the bio-sketches of all the PIs, co-PIs and senior personnel. For example:

Doe, John	Northern University	PI Anna Smith (co-author)
Fawn, Henry	Southern University	PI Joe Jones (PhD advisor)
Stag, Martha	Eastern University	PI Anna Smith (co-author)

- Letters of commitment from individuals who are from organizations (other than the proposing organization or proposed sub-awardees) who are described in the Project Description as involved in the project in a senior capacity, or from authorized representatives of institutions or organizations collaborating with the lead institution.
- The total number of letters (including letters of commitment) from third parties is limited to three.
- Inclusion of additional supplementary materials (appendixes, etc.) will be allowed only after discussion with a relevant program officer.

Refer to Section II, Program Description, for additional information about requirements for all SDCI proposals.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):
January 30, 2011

D. FastLane/Grants.gov Requirements

- For Proposals Submitted Via FastLane:

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://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>.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: <http://www.grants.gov/CustomerSupport>. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

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:

Projects will be evaluated with careful attention to the following:

- o The expected impact on the deployed environment described in the proposal.
- o The extent to which the value of the work is described in the context of a needed capability required by science and engineering, and potential impact across a broader segment of the NSF community.
- o The feasibility, utility, and interoperability of the software in its proposed operational role.
- o A project plan that addresses in its goals and milestones the demonstration of a working system in the target environment.
- o Tangible metrics described to measure the success of the software developed, and the steps necessary to take the software from prototype status to production use.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or 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.

Special Award Conditions:

All awards made in the SDCl solicitation will be subject to the following conditions:

- NSF requires an initial working system, which may be a component prototype or integrated system, to be successfully demonstrated before the 12 month mark of award activities, and the software's open source license to be listed by the Open Source Initiative (see www.opensource.org) as an approved open source license. Where applicable, these milestones must be documented in the Year 1 Annual report.
- For awards whose software deployment is targeted to more than one type of platform, awards are required to use NMI Build and Test services, or an NSF designated alternative, to support their software development and testing. Details of the NMI Build and Test facility can be found at <http://nmi.cs.wisc.edu/>.
- Awardees are expected to participate in an Annual PI meeting with travel costs supported by the award.

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, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report 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. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

The following additional reporting requirements apply to awards made in SDCl:

NSF requires an initial working system, which may be a component prototype or integrated system, to be successfully demonstrated before the 12 month mark of award activities, and the software's open source license to be listed by the Open Source Initiative (see www.opensource.org) as an approved open source license. Where applicable, these milestones must be documented in the Year 1 Annual report.

All awards are required to show end user interactions within the first 12 months of the award activities.

For awards whose software deployment is targeted to more than one type of platform, awards are required to use NMI Build and Test services, or an NSF designated alternative, to support their software development and testing within the first 12 months of award activities, and to document that process in the 1st year annual report. Details of the NMI Build and Test facility can be found at <http://nmi.cs.wisc.edu/>

Specifically, in each annual project report and the final report, the following information must be provided under the "Special Requirements" section of the report: identification of open source license used; working demonstration description and results; identification of end users engaged, trialing, and/or using the system; date of initial use of NMI Build and Test; and milestones reached against stated project goals.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Kevin Thompson, telephone: (703) 292-4220, email: kthompso@nsf.gov

For questions related to the use of FastLane, contact:

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

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.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>.

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