CISE Computing Research Infrastructure (CRI)

Program Solicitation
NSF 06-597

Replaces Document(s):
NSF 04-588

National Science Foundation

Directorate for Computer & Information Science & Engineering
Division of Computer and Network Systems
Division of Computing and Communication Foundations
Division of Information & Intelligent Systems

Letter of Intent Due Date(s) ***(optional):***

October 02, 2006

First Monday in July, Annually Thereafter

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

November 15, 2006

First Tuesday in August, Annually Thereafter

REVISION NOTES

In furtherance of the President's Management Agenda, NSF has identified programs that will offer proposers the option to utilize Grants.gov to prepare and submit proposals, or will require that proposers utilize Grants.gov to prepare and submit proposals. Grants.gov provides a single Government-wide portal for finding and applying for Federal grants online.

In response to this program solicitation, proposers may opt to submit proposals via Grants.gov or via the NSF FastLane system. 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.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

CISE Computing Research Infrastructure (CRI)

Synopsis of Program:

The Computer and Information Science and Engineering (CISE) Computing Research Infrastructure (CRI) program supports the acquisition, development, enhancement, and operation of research infrastructure that enables discovery, learning, and innovation in all computing fields supported by CISE. Supported infrastructure includes instrumentation needed by research or research and education projects, major experimental facilities for an entire department or for multi-institutional projects, and testbeds or data archives for an entire subfield of CISE researchers.

The CRI program aims at providing infrastructure that enables high-quality computing research and education and extending the set of individuals and departments that are able to conduct such activities. The CRI program is committed to maintaining a broad portfolio that supports research and education across a diverse population and lessens the digital divide. The program encourages proposals that are from or that include minority-serving institutions.

The CRI program is designed to complement the funding available in CISE research programs: Infrastructure Acquisition/Development awards support infrastructure that is used for the proposing team's research; and, Community Resource Development awards support the development of resources that serve broad research communities.

The CRI program will support a variety of infrastructure needs, such as general or specialized research equipment, technical support, and/or software. CRI will also support the development of infrastructure that can be used by others, such as data archives or libraries of software tools. The infrastructure must facilitate high-quality research and related education, and cannot be acquired or developed without funding resources beyond those available from individual research and education grants and the host institution.

The CRI program will make three kinds of awards.

- **Infrastructure Acquisition/Development**. These awards have budgets from $50,000 and up to $2,000,000.
- **Community Resource Development**. These awards have budgets from $300,000 to $2,000,000. Community Resource Development projects create a resource for an entire CISE research community, such as a testbed for evaluating research results or a large data resource for use by a research community (e.g., annotated speech data).
- **Planning**. These awards facilitate the preparation of a proposal for a medium or large Infrastructure Acquisition/Development or Community Resource Development grant. They have budgets up to $50,000 for one institution or up to $100,000 if more than one institution is involved.

The program supports projects in four size categories: large projects have budget requests from $800,000 and up to $2,000,000; medium projects have budget requests from $300,000 and up to $799,999; small projects have budgets from $50,000 and up to $299,999; Planning proposals may request budgets up to $50,000 for one institution or $100,000 for two or more institutions. Project sizes affect page limits, review processes, and eligibility.

The CRI program replaces and expands upon three previous CISE programs: Minority Institutional Infrastructure (MII), Research Infrastructure (RI), and Research Resources (RR). The most significant changes from the former programs are that CRI will support Community Resource Development grants in addition to Infrastructure Acquisition/Development grants.

Cognizant Program Officer(s):

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- Stephen Mahaney, Senior Science Advisor, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115N, telephone: 703 292-8910, fax: 703 292-9059, email: smahaney@nsf.gov

- Tatiana Korelsky, Program Director, Directorate for Computer & Information Science & Engineering, Division of Information and Intelligent Systems, 1125, telephone: (703) 292-8930, fax: (703) 292-9073, email: tkorelsk@nsf.gov

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

- 47.070 --- Computer and Information Science and Engineering

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 45 to 55 awards: up to 35 Infrastructure Acquisition/Development awards, up to 20 Community Resource Development awards, and up to 10 Planning awards.

Anticipated Funding Amount: $18,000,000 in FY 07 subject to the availability of funds.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Proposals may be submitted by both U.S. graduate-degree-granting institutions and U.S. four-year institutions that have research and education programs in areas supported by CISE research programs.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An individual may appear as PI, Co-PI, or Senior Personnel on no more than two CRI proposals per year and no more than one large CRI proposal per year.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is optional. Please see the full text of this solicitation for further information.

- **Full Proposals:**

  - Full Proposals submitted via FastLane: 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/bfa/

dias/policy/docs/grantsgovguide.pdf/)

B. Budgetary Information

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

C. Due Dates

- **Letter of Intent Due Date(s) *(optional):***

  October 02, 2006

  First Monday in July, Annually Thereafter

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

  November 15, 2006

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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 Computer and Information Science and Engineering (CISE) Computing Research Infrastructure (CRI) program supports the acquisition, development, enhancement, and operation of research infrastructure that enables discovery, learning, and innovation in all computing fields supported by CISE.

One of the barriers to high-quality research and education is the lack of an adequate computing infrastructure. The CRI program therefore aims at providing infrastructure that enables high-quality computing research and education and extending the set of individuals and departments that are able to conduct such activities. The CRI program is committed to maintaining a broad portfolio that supports research and education across a diverse population and lessens the digital divide. The program encourages proposals that are from or that include minority-serving institutions.

The CRI program supports both the acquisition and development of infrastructure that will be used by *proposing researchers and research teams*, (the Infrastructure Acquisition/Development track) and the acquisition and development of infrastructure that enables research and education for *broad communities of researchers* in CISE supported areas (the Community Resource Development track). For example, state-of-the-art research and education projects often require computing equipment that is too expensive to be funded by individual grants. Large-scale facilities---such as networks, cluster computers, or massive storage repositories---are best utilized by being shared among research groups. Some projects require specialized equipment, such as hardware monitoring tools, spectrum analyzers, specialized robots, or cameras and display units. Some span multiple institutions, such as peer-to-peer distributed computing or networking research projects. Finally, in the Community Resource Development track, some projects create resources that could be useful to the broad research and education community, such as software libraries, data repositories of various sorts, programmable wireless radios, and sensors.

The program also supports Planning projects to enable institutions to develop full proposals for either the Infrastructure Acquisition/Development or Community Resource Development track.

II. PROGRAM DESCRIPTION

The CRI program provides support for the acquisition, creation, and dissemination of computing infrastructure that enhances research and education capabilities, that is not normally fundable under individual research and education grants, and that is beyond the infrastructure available at the host institution(s). The proposing team is expected to have an existing set of active research and education projects in the core CISE disciplines as described on the NSF Website; the projects may be supported by NSF or other resources. The CRI program also supports multidisciplinary proposals as long as they emphasize significant research and education opportunities in core CISE disciplines.

Proposals may request infrastructure ranging from single instruments to major experimental facilities, or develop infrastructure ranging from a single data repository to a major research testbed. Proposals may be submitted by PIs from the same department, PIs from different departments in the same institution, or PIs from multiple institutions. Successful projects will clearly indicate that the infrastructure provided or developed by the CRI grant will enable important scientific advances that would not otherwise be possible.

Prospective PIs should also be cognizant of the Major Research Instrumentation (MRI) program and the Course, Curriculum, and Laboratory Improvement (CCLI) program, and should select the most appropriate program for their project.

There are three proposal tracks: Infrastructure Acquisition/Development, Community Resource Development, and Planning.

Infrastructure Acquisition/Development Track

CRI proposals that request funding to acquire infrastructure are expected to:

- Describe the infrastructure that will be acquired or developed and the research and education activities it will enable.
- Explain how the proposed infrastructure will enable new achievements that would not otherwise be possible.
- Demonstrate synergy among activities and participants that would not otherwise be found.
- Produce leverage by, for example, enabling new sources of research support, increasing recognition of the research group in the host institution and national community, increasing industry participation, or developing linkages between institutions.
- Describe how the proposed infrastructure will expand the set of individuals and departments that are able to contribute to the CISE research base.
- Have sound plans for managing the development, implementation, and evaluation of the infrastructure and ensuring that research and education projects enabled by the infrastructure are successful.

Community Resource Development Track

CRI proposals that request funding for Community Resource Development are expected to:

- Describe the infrastructure that will be developed and the research and education activities it will enable.
- Explain how the proposed infrastructure will enable new achievements that would not otherwise be possible.
- Provide justification for why the infrastructure is needed and evidence such as workshop reports or letters of support indicating that a broad research and education community is prepared to use it.
- Describe how the project will continue to acquire community input for the duration of the award and be responsive to the community that the resource serves.
- Describe how the proposed infrastructure will expand the set of individuals and departments that are able to contribute to the CISE research base.
- Have sound plans for managing the development and distribution of the infrastructure. The distribution plan should address dissemination, technical support, maintenance, and updates, as appropriate.
- Explain how the infrastructure will continue to be supported after completion of the NSF award.

Planning Track

- The CRI program will also support a limited number of Planning awards. These are intended to facilitate the preparation of competitive proposals for medium or large Infrastructure Acquisition/Development awards and Community Resource Development awards. Groups that are considering applying for a Planning grant should first consult with a cognizant Program Officer identified in this solicitation.

A CRI award can support a variety of project sizes ranging from a small team, through medium size groups in a single department, to large groups in multiple departments or institutions. The CRI program allows PIs to craft the support they need to develop, acquire, and deploy the proposed infrastructure in terms of budget size, duration, personnel, and facilities. Each item must be justified in the proposal as vital to the support of CISE-related research and education.

CRI proposals may request support as follows:

Infrastructure Acquisition/Development Track

- Funds to purchase or develop equipment, instrumentation, software, and data repositories; and to pay for services, maintenance, or other infrastructure that enables CISE-related research and education.
- Technical support personnel for the design, development, deployment, operation, and maintenance of the requested resources.
- Travel expenses necessary for training technical support staff in the operation and maintenance of the infrastructure or for coordination in multi-institutional awards, assuming appropriate justification is presented.
- One month of the PI's salary and associated indirect cost for management of large projects if the infrastructure is sufficiently complex and appropriate justification is presented.
- Graduate or undergraduate student support for medium and large projects as long as the students are participating in the design, development, deployment, operation, assessment, or maintenance of the infrastructure.
- Minority institutions applying in the Infrastructure Acquisition/Development track may request up to 3 months per year of support for one or more PIs and may request support for undergraduate and graduate students performing research.

Community Resource Development Track

- Funds to design, build, and possibly disseminate new equipment, repositories, or databases that will facilitate new research and education activities and that are not available commercially.
- Technical support personnel for the design, development, deployment, operation, and maintenance of the requested resources.
- Personnel support for development and deployment of the community resource.
- Travel expenses necessary for training technical support staff in the operation and maintenance of the infrastructure or for coordination in multi-institutional awards, assuming appropriate justification is presented.
- One month of the PI's salary and associated indirect cost for management of large projects if the infrastructure is sufficiently complex and appropriate justification is presented. A large proposal from a four-year or minority-serving institution may request up to three months of PI salary, provided the request is well justified.
- Graduate or undergraduate student support for medium and large projects as long as the students are participating in the design, development, deployment, operation, assessment, or maintenance of the infrastructure.

Planning Track

- Costs such as workshops, travel, design, and feasibility studies needed to produce competitive CRI proposals.

CRI proposals may *not* request support for the following items:

- General resources such as workstations or upgrades of existing facilities unless the proposers can make a convincing case that the facilities are necessary to the success of the project and that they cannot be expected to be provided by the host institution(s) or regular grant programs.
- General-purpose office equipment, software, or databases.
- Salaries for faculty and students (except as allowed above), postdoctoral research associates, or secretarial or clerical personnel.

NSF encourages all proposers to address the full participation of women, minorities, and persons with disabilities in research and education activities. Examples of activities appropriate to CRI grants include a departmental effort to recruit students from underrepresented groups, collaboration with an institution that serves an underrepresented group, or development of infrastructure that provides access to persons with disabilities.

CISE is particularly interested in increasing computing research capacity and capability. Consequently, the CRI program encourages proposals from individuals, groups, departments, and institutions where additional infrastructure will have a substantial impact on the institution's research and educational activities. Women, minorities, persons with disabilities, minority-serving institutions, and PIs in EPSCoR jurisdictions are strongly encouraged to submit proposals. (See http://www.ehr.nsf.gov/epscor/ for information on EPSCoR, the Experimental Program to Stimulate Competitive Research.) Each year, no less than 20% of the CRI budget will be allocated to high-quality proposals that serve underrepresented communities.

III. AWARD INFORMATION

The CRI program will make three types of awards: Infrastructure Acquisition/Development grants, Community Resource Development grants, and Planning grants. These have differing characteristics and requirements as follows:

- **Infrastructure Acquisition/Development**. These awards have budgets from $50,000 and up to $2,000,000.
- **Community Resource Development**. These awards have budgets from $300,000 and up to $2,000,000. Community Resource Development projects create a resource for an entire CISE research community, such as a testbed for evaluating research results or a large data resource that contains problems a community is trying to solve (e.g., annotated speech data).
- **Planning**. These awards facilitate the preparation of a proposal for a medium or large Infrastructure Acquisition/Development or Community Resource Development award. They have budgets up to $50,000 for one institution or up to $100,000 if more than one institution is involved.

Award Size and Durations. Planning awards are typically for 1 year; small awards (from $50,000 and up to $299,999) typically have award durations of 2 to 3 years; medium awards (from $300,000 to $799,999) typically have award durations of 3 to 4 years; and large awards (from $800,000 up to $2,000,000) typically have award durations of 4 to 5 years.

The estimated program budget, number of awards, and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Proposals may be submitted by both U.S. graduate-degree-granting institutions and U.S. four-year institutions that have research and education programs in areas supported by CISE research programs.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 2

An individual may appear as PI, Co-PI, or Senior Personnel on no more than two CRI proposals per year and no more than one large CRI proposal per year.

Additional Eligibility Info:

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent *(optional):*

Letters of Intent are optional, but recommended for all proposals. Letters of intent enable NSF staff to plan for merit review. Letters of Intent must be submitted via the FastLane system.

A Letter of Intent must include:

- Proposal title, the name of the lead/submitting institution and department, and the names of any partner organization/ departments.
- A statement of whether the proposal will be in the Infrastructure Acquisition/Development or Community Resource Development track.
- Summary of the infrastructure that will be requested.
- Brief descriptions of the research projects that will use the infrastructure.
- For Infrastructure Acquisition/Development, a list of project team members who will use or develop the requested infrastructure, including their full names, e-mail addresses, departmental, and institutional affiliations. For Community Resource Development, a list of the faculty leadership that will develop the resource, and a description of the CISE research and education community that will utilize the resource.
- List of individuals, with organizational affiliations, who are not members of the project team and whose selection as reviewers might constitute a conflict of interest due to involvement in proposal development, thesis supervision, co-publication or authorship in the past 48 months, co-PI relations on other projects, and other conflict of interest relationships.
- Optional list of suggested reviewers, with organizational affiliations, who have the expertise to review the proposal and who have no affiliations that would cause conflicts.

Letter of Intent Management Conditions:

When submitting a Letter of Intent through FastLane in response to this Program Solicitation please note the conditions outlined below:

- SPO Submission is Not Required when submitting Letters of Intent
- A Minimum of 0 and Maximum of 4 Other Senior Project Personnel are allowed
- A Minimum of 0 and Maximum of 4 Other Participating Organizations are allowed
- Submission of multiple Letters of Intent are allowed

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 pubs@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/bfa/dias/policy/docs/grantsgovguide.pdf). 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 pubs@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.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

Each year, some proposals are returned without review. The most common reasons for this are non-compliance with font and spacing requirements, and proposals that are not focused on research and education subject areas supported by the CISE directorate. See https://www.cise.nsf.gov for information on the subject areas that CISE supports.

Certain exceptions and additions to the GPG or the NSF Grants.gov Application Guide apply to full proposals submitted to the CRI Program. The requirements for specific sections are specified below. For other sections, the standard guidelines apply.

Title

Project titles should begin with "CRI: IAD" for Infrastructure Acquisition/Development projects, "CRI:CRD" for Community Resource Development, or "CRI: Planning" for Planning projects. This will help NSF staff track proposals and awards.

Project Description

For medium and large proposals only, the normal limit of 15 pages for the Project Description is replaced by a limit of 20 pages. In addition, the Project Description in medium and large proposals should contain the following sections:

- **Overview**. Summarize the research and education activities to be enabled.
- **Infrastructure**. Describe the infrastructure that will be acquired or developed and how it will be managed.
- **Projects**. Describe the research and education projects that will use the infrastructure or be enabled by it, and how the infrastructure will enable progress that would not otherwise be possible.
- **Results from prior support**. Describe results from recent infrastructure and regular awards that are most closely related to the proposed work.

Biographical Sketches

Include biographical sketches for the PI, Co-PI(s), and senior personnel who will be directly involved in the development or use of the infrastructure.

Budget and Budget Justification

Include one budget page for each year of the project and a summary page for the entire project. In the budget justification section of the proposal include an explanation of each budget item in sufficient detail for reviewers to be able to understand the item; for equipment, include a representative manufacturer and model number if possible.

Proposers are advised to follow the budget guidelines in the "Eligible Costs" section carefully.

Current and Pending Support

Provide information for all the individuals for whom biographical sketches are provided.

Facilities, Equipment, and Other Resources

Describe the infrastructure that is currently available to the PIs and the projects described in the proposal.

Supplementary Documentation

To aid reviewers, please prepare (1) a table that summarizes the relationships between the projects and the infrastructure, and (2) a spreadsheet that shows the entire budget, for each year and all years. Upload these into the supplementary documents section of the proposal. Proposals that involve multi-institutional arrangements should submit supplementary documents that describe the relationship and that are signed by appropriate scientific and administrative officers of each institution.

B. Budgetary Information

Cost Sharing: Cost sharing is not required by NSF in proposals submitted to the National Science Foundation.

C. Due Dates

- **Letter of Intent Due Date(s) *(optional):***

  October 02, 2006

  First Monday in July, Annually Thereafter

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

  November 15, 2006

  First Tuesday in August, Annually Thereafter

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 and, if they meet NSF proposal preparation requirements, for review. 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 with the proposer.

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 and original 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?

NSF staff 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:

Additional considerations in evaluating all proposals are:

Whether the requested infrastructure will enable the proposers and/or a broader community to undertake important work that would not be possible without the infrastructure.

Whether there is strong synergy present in the proposal that would not be found in individual grants.

Potential impact on broadening participation of underrepresented groups in the CISE research and education enterprise.

Site visits may be used in addition to panel review to help select the large Infrastructure Acquisition/ Development and Community Resource Development projects.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Adhoc Review 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 date of receipt. 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 Federal Demonstration Partnership (FDP) 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/general_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

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

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:

- Rita Rodriguez, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computer and Network Systems, 1175 N, telephone: (703) 292-8950, fax: (703) 292-9010, email: rrodrigu@nsf.gov

- Stephen Mahaney, Senior Science Advisor, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115N, telephone: 703 292-8910, fax: 703 292-9059, email: smahaney@nsf.gov

- Tatiana Korelsky, Program Director, Directorate for Computer & Information Science & Engineering, Division of Information and Intelligent Systems, 1125, telephone: (703) 292-8930, fax: (703) 292-9073, email: tkorelsk@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, MyNSF (formerly the Custom News Service)is an information-delivery system 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 or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at http://www.nsf.gov/mynsf/.

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.

Related Programs:

Course, Curriculum, and Laboratory Improvement (CCLI) (NSF 05-559)

Major Research Instrumentation Program (NSF 05-515)

Also contact the Office of Cyberinfrastructure (OCI) 703 292-8970

For additional information on proposal submissions, see NSF's Guide to Programs at http://www.nsf.gov/od/lpa/news/publicat/nsf04009/toc.htm

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.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at http://www.nsf.gov

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

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PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records, " 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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Last Updated: 06/09/05
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