EXPERIMENTAL ACTIVITIES PROGRAM

Program Announcement

DIRECTORATE FOR COMPUTER AND INFORMATION SCIENCE AND ENGINEERING

Division of Experimental and Integrative Activities

Deadline Dates for Submission:
January 15   (CADRE)
November 1   (Experimental Partnerships)

NSF   NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT
EXPERIMENTAL ACTIVITIES PROGRAM

DEADLINES: January 15 (CADRE)
November 1 (Experimental Partnerships)

The Experimental Activities program encompasses experimental research and resources that span the Directorate for Computer and Information Science and Engineering (CISE). The program has two parts, CISE Advanced Distributed Resources for Experiments (CADRE) and Experimental Partnerships, which are described separately below.

- **CISE Advanced Distributed Resources for Experiments (CADRE)**

  To complement research and education activities, the program supports the establishment and maintenance of CISE Advanced Distributed Resources for Experiments (CADRE). These are unique resources that, once established, can be accessed remotely by researchers around the country. Resources can be diverse, including, for example, hardware such as prototyping testbeds; software such as code libraries for experimental compiler research; repositories such as collections of human discourse data; and services such as brokers to bring together creators and users of educational materials.

- **Experimental Partnerships**

  The program provides opportunities in support of multidisciplinary, group-oriented research in topics that are within the domain of CISE programs. Experimental partnerships focus on a single problem, the solution of which requires scientific advances both in experimental computer science and engineering and in one or more partner disciplines within CISE.

CISE Advanced Distributed Resources for Experiments (CADRE)
Deadline: January 15 each year

One of the barriers to experimental research and education, especially at smaller institutions, is the unavailability of expensive, specialized resources needed for the work. These may take the form of unique equipment, software libraries, organizations, or data repositories that must be established and maintained. Some of this infrastructure can be shared nationally, using the Internet for distributed access to experimental resources. Distributed resources can lower the barriers to experimental research, permitting greater participation in research and allowing more students to be educated in experimental computer science.

To address this barrier, the Experimental Activities program supports the establishment and maintenance of CISE Advanced Distributed Resources for Experiments (CADRE). These are multi-year awards that complement the research and education activities supported by the CISE directorate. Depending upon availability of funds, each year we anticipate making approximately five awards whose duration is four years and whose average size is $400,000 per year.

CADRE activities are primarily resources in support of research and education, rather than self-contained research projects. The intent is not to support research into the technical problems of establishing such facilities, such as how to store and index massive amounts of data or how to provide high-bandwidth national connections. Rather, projects will use the results of current and prior research to provide resources that support experimental research projects and education.

Awards will support the initial establishment or updating of resources, and will typically continue for up to four years. Expenses for operations and maintenance, including equipment and staff, will also be supported. Awardees will be expected to show evidence of distributed resource use by the end of the second year of the award, and have in place a transition plan for continuing the resource after the end of NSF support. Only in rare cases will NSF support for a resource be renewed after the initial four years.

Proposals should describe the resource to be established, and make clear the extent of the national need for such a resource in support of experimental research and education in computer and information science and engineering. Plans for continuing activities of the resource after cessation of NSF support should also be included in the proposal. Commitments of support from sources other than the Federal government and the grantee institution are strong evidence of a need for the proposed resource. The proposal should include plans:

- for making the resource available to users outside of the grantee institution,
- for technical support of external users,
- for responding to evolving user needs, and
- for demonstrating evidence of distributed use within two years of the award date.

Proposals to CADRE will be reviewed according to the NSF general review criteria described in the NSF Grant Proposal Guide, NSF 98-2 (see the Proposal Preparation and Evaluation section below). Reviewers will be asked to give the most weight to the criterion concerning broader aspects of the proposed activity. Panel and mail review will be used as appropriate to individual proposals.

Experimental Partnerships
Deadline: November 1 each year

Research in all areas of computer and information science and engineering may benefit from both experimental and non-experimental approaches. The experimental approach, involving computational artifacts, is often an essential step in understanding complex systems. Other approaches, such as theory, analysis, or simulation both motivate experimental work and aid in understanding the resulting computational artifacts.

Experimental research may advance a broad range of computer and information science and engineering topics. Some characteristics that set experimental research apart from other approaches include the need for collaborative or team effort, substantial infrastructure, a close coupling to technology, and a need to evaluate the artifacts that are the subject or vehicle for the research. Because these common characteristics apply across a range of topic areas, separate evaluation and support of topic-specific aspects of a project and experimental aspects of the same project may be beneficial.

Experimental Partnerships projects are intended: (1) to provide an opportunity for experimental, small group research in a topic area that is within the domain of one or more NSF programs; and (2) to encourage refocusing of effort toward experimental research in topic areas where such is appropriate. Experimental research in pursuit of these goals may require larger levels of support and longer durations than some other kinds of projects. To permit small group research involving experimentation, NSF plans to provide support at a level averaging $500,000 per year for each award in Experimental Partnerships, with durations of up to five years. Depending upon available funding, approximately 14 awards are expected each year.

To advance its goals, Experimental Partnerships provides support for large-scale experimentation by individuals or small groups that have previously conducted research in other modes, such as analysis, simulation, or pilot experimentation. This **precursor research** should indicate the types of artifacts

and measurements that will best illuminate the scientific questions that motivate the proposed experimentation. Precursor research will typically be supported under **precursor awards** from one or more **partner programs** within CISE. The partner programs for a research project are the programs within CISE whose research areas include the scientific or engineering advances that will result from successful experimentation.

Experimental Partnerships proposals will be reviewed by a combination of mail and panel reviewers, as appropriate, according to the NSF general review criteria described in the NSF Grant Proposal Guide, NSF 98-2 (see the Proposal Preparation and Evaluation section below). The review will concentrate on the benefits of experimental, small-group research in the project under review.

Eligibility and Requirements: A proposal for support from Experimental Partnerships must identify precursor research from at least one partner program within CISE. The proposal must report on goals and progress of the precursor research, for example by including the abstract of any precursor award and a report on progress of the precursor award as part of the description of results from prior NSF support. The project description of the Experimental Partnerships proposal should document the need for experimentation to advance the scientific and engineering goals of the precursor research. Failure to meet these requirements will render a proposal nonresponsive to Experimental Partnerships; nonresponsive proposals will be returned to the proposer without further consideration.

Information Concerning both CADRE and Experimental Partnerships

Inquiries

Inquiries about this program may be directed to the program director, Dr. Michael Foster, (703) 306-1980, mfoster@nsf.gov. The mailing address is CISE Directorate, National Science Foundation, 4201 Wilson Boulevard, Arlington, Va. 22230. Potential applicants are strongly encouraged to discuss their ideas with the program director, either in person, by letter, by email, or by telephone.

Proposal Preparation and Evaluation

All proposals must be prepared in accordance with the instructions contained in the NSF Grant Proposal Guide (NSF 98-2, http://www.nsf.gov/bfa/cpo/gpg/start.htm). Single copies of this brochure are available at no cost from the NSF Clearinghouse, (301) 947-2722, or via email (pubs@nsf.gov). Brochures are also available through NSF's site on the World Wide Web (http://www.nsf.gov).

Proposals may be submitted through FastLane, or may be submitted to the National Science Foundation PPU, 4201 Wilson Boulevard, Room P60, Arlington, Va, 22230. Fifteen copies are required, one of which must be signed by the Principal Investigator(s) and an official authorized to commit the proposing institution. For information regarding electronic proposal submission via FastLane, visit our site on the World Wide Web (https://www.fastlane.nsf.gov/).

Proposals submitted in response to this program announcement will be subject to the merit review criteria approved by the National Science Board on March 28, 1997 and reflected in the Grant Proposal Guide (NSF 98-2). The merit review criteria are:

Criterion 1. 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 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?

Criterion 2. 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?

Award Administration and Conditions

Any grants resulting from this announcement will be administered in accordance with the terms and conditions of the **Grant General Conditions** (NSF GC-1 12/97 or FDP-III 7/97)**.** Any cooperative agreements resulting from this announcement will be administered in accordance with the terms and conditions of **Cooperative Agreement General Conditions** (NSF CA-1 2/98) and NSF GC-1. Copies of these documents are available through NSF's site on the World Wide Web or from the NSF Publication Clearinghouse, P.O. Box 218, Jessup, MD 20794-0218, Phone: 301-947-2722. More comprehensive information is contained in the **NSF *Grant Policy Manual*** (7/95) (NSF 95-26), which is available through NSF's site on the World Wide Web and is for sale through the Superintendent of Documents, Government Printing Office, Washington, DC, 20402.

General Information

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities, which enable individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

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