Foundations of Computing Processes and Artifacts (CPA)

Program Solicitation
NSF 05-576
***Replaces Document* 04-519**

National Science Foundation
Directorate for Computer and Information Science and Engineering
Division of Computing & Communication Foundations

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

June 20, 2005

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Foundations of Computing Processes and Artifacts (CPA)

Synopsis of Program:

The Foundations of Computing Processes and Artifacts (CPA) cluster supports research and education projects to advance formalisms and methodologies pertaining to the artifacts and processes for building computing and communication systems. Computational artifacts range from formalisms, models, theories and languages to hardware/software architectures, technology components and a variety of physical manifestations of implementations. Proposals submitted in response to this solicitation will address the nature of such artifacts and the computational processes they perform, as well as the artifacts and processes involved in specifying, designing, building and using them.

Areas of interest include: topics in software engineering such as software design methodologies, tools for software testing, analysis, synthesis, and verification; semantics, design, and implementation of programming languages; software systems and tools for reliable and high performance computing; computer architectures including memory and I/O subsystems, micro-architectural techniques, and application-specific architectures; system-on-a-chip; performance metrics and evaluation tools; VLSI electronic design and pertinent analysis, synthesis and simulation algorithms; architecture and design for mixed media or future media (e.g., MEMs and nanotechnology); computer graphics and visualization techniques.

Cognizant Program Officer(s):

- Sankar Basu, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: sabasu@nsf.gov
- Sol Greenspan, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1108 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: sgreensp@nsf.gov
- Lawrence Rosenblum, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, email: lrosenbl@nsf.gov
- Peter Varman, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: pvarman@nsf.gov

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

- 47.070 --- Computer and Information Science and Engineering

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** There is no limit on the number of proposals an organization may submit. In response to this solicitation, an investigator may participate as PI, co-PI or Senior Personnel in at most ONE proposal.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 80 to 100 - with an average award size of $125,000/year for up to three years. Up to 5 awards of $500,000/year for well-integrated projects of larger scope are anticipated.
- **Anticipated Funding Amount:** $37,000,000 dependent on availability of funds

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** Standard GPG Guidelines apply.

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

- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
  June 20, 2005

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria apply.

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

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I. INTRODUCTION

The CPA cluster supports research and education projects to advance formalisms and methodologies pertaining to the artifacts and processes for building and utilizing computing and communication systems. Computational artifacts range from formalisms, models, theories and languages to hardware/software architectures, algorithms, technology components and a variety of physical manifestations of implementations. Proposals submitted in response to this solicitation will address the nature of such artifacts and the computational processes they perform, as well as the artifacts and processes involved in specifying, designing, building and using them.

Areas of interest include: topics in software engineering such as software design methodologies, tools for software testing, analysis, synthesis, and verification; semantics, design, and implementation of programming languages; software systems and tools for reliable and high performance computing; computer architectures including memory and I/O subsystems, micro-architectural techniques, and application-specific architectures; system-on-a-chip; performance metrics and evaluation tools; VLSI electronic design and pertinent analysis, synthesis and simulation algorithms; architecture and design for mixed media or future media (e.g., MEMs and nanotechnology); computer graphics and visualization algorithms, techniques, and hardware.

The cluster also solicits proposals to produce innovative curricula or educational materials to help advance the training of new experts in the areas covered by this solicitation.

II. PROGRAM DESCRIPTION

The CPA cluster solicits proposals that advance at a fundamental level the understanding, design, operation, utilization, and evaluation of software and hardware systems. These typically involve novel software and/or hardware, algorithms to create new or enhanced functionality, or methods and tools for the design and implementation of such systems. Novel component and system architectures, their design principles, and analytical or simulation-based evaluation are also addressed. The CPA cluster emphasizes integration of research and education in all areas of interest. Principal investigators can range from faculty members beginning their careers to teams of senior investigators working on novel directions within a multi-disciplinary mode. Collaborations between computer scientists, engineers, and other disciplinary scientists are welcomed because they have the potential to strengthen the foundations of computing processes and artifacts.

Proposals for larger projects should provide demonstrable evidence of the existence, quality and growth potential of precursor research.

This cluster also supports projects that develop innovative curricular materials and that have the potential to greatly improve higher education in the topics covered in this solicitation. Such projects may be proposed in stand-alone proposals or as one component in broader research and education proposals. Curriculum development activities must include strong justification of the need for the new materials and must include plans for disseminating them to the community and for evaluating their effectiveness.

While each area described below deals with a set of specific topics internal to the subfield of interest, research issues inevitably spill over artificially imposed programmatic boundaries. The CPA cluster encourages proposals that transcend the confines of each of the sub-areas elaborated.

Software Engineering and Programming Languages

This sub-area sponsors integrated research and education projects to advance scientific foundations, engineering practice and education in areas related to Software Engineering and Programming Languages. Relevant projects may concern any of the artifacts and processes involved in software engineering, including languages, theories, models, techniques, methods, tools and environments relating to requirements, design, specification, programming, verification, testing, maintenance, transformation, evolution and other activities of software development. Research in this subarea should contribute to new understandings of software and software development issues, with an eye toward increasing productivity of software development as well as the quality of software-based products and services. Proposals should emphasize lasting principles, robust theories, high-leverage tools and novel approaches. Proposals should include plans for validation through proofs of concept, empirical evaluation and/or other scientific methods.

Specific topics of interest include: constructive methods for software design and evolution; issues of software analysis, composition and architectures; enhancement of confidence and quality; tools and environments supporting automation of activities of software development, including model-driven development, software understanding, maintenance and evolution; notations, theories, models and techniques for constructing and reasoning about descriptions for all activities of software engineering; requirements engineering; the application of representation, reasoning and problem-solving approaches from other disciplines, such as artificial intelligence to software development activities and artifacts; contributions from human-computer interaction, cognitive science and social science to software development, evolution, management and use; advances in programming language design and implementation; general-purpose, domain-specific and special-purpose languages; integration of programming languages with other software engineering artifacts, processes and capabilities, such as specifications, formal methods, analysis tools, proofs, architectures, etc.

High-end architecture and low level design

This sub-area sponsors integrated research and education projects in systems necessary to achieve efficient, flexible, reliable, and robust high-performance computing in traditional and non-traditional high performance system environments. Progress will depend upon advances in electronics design and design tools, architectures for a broad spectrum of hardware systems, and software tools for using them effectively.

Virtually all fields of science and engineering depend on the computational power and efficiency that could potentially be enabled by breakthroughs in computer architecture and parallelization. Present parallel hardware, software, and algorithms do not scale to meet the demands of contemporary cutting-edge scientific research. With limited advances made over the last decade, there is a compelling need to stimulate research in promising new parallel architectures and associated algorithms and software for computation. Challenges in this area include architectures and software that address fundamental challenges in exploiting massive fine-grained parallelism in a scalable manner, hybrid architectures and software tools for integration of reconfigurable systems, and system-on-chip architectures encompassing multi-functional units and technologies.

Research in this area encompasses system architecture in addition to individual hardware or software components that will be included within these larger systems. Research is required for improving system reliability and maintainability in the presence of hardware or software induced emergencies or security attacks, and for increasing execution robustness by providing safety and performance guarantees. Additionally, computer architectures must provide enhanced functionality and performance necessary to meet the demands of diverse applications, while meeting stringent constraints on energy and power consumption, programmability, reliability, and complexity. Examples of such functionality may be architectural support for programmability, real-time computation, mobility, security, fault-detection and recovery, dynamic adaptation, and self-tuning, Fundamental advances based on novel scalable algorithms and implementation techniques are encouraged.

At an even more fundamental level, design methodologies for VLSI are challenged by the rapid advances in deep submicron, mechanical (MEMS), optical, nano, and quantum computing media. Therefore, the intent of this cluster is also to support basic research underlying the science and methodologies for designing integrated systems comprised of micro systems in traditional silicon VLSI technology, in MEMS technologies, and in computing media of the future. Molecular architectures exploiting inherent parallelism and the design of nano scale artifacts (e.g., in conjunction with NSF's Nanoscale Science and Engineering priority solicitation) are included in the challenges in this area as well.

Topics of interests include:

- Software systems and tools for dynamic and adaptive computation to provide run-time support for dynamic compilation and optimization; compilers and infrastructure for optimizing compilers for multiple platforms; software support for resource management and scheduling; performance isolation and service guarantees;issues of security and reliability of high performance computing in clusters and grids; management of large-scale distributed data for high performance applications.

- Architectures for high-end computing to achieve higher user productivity and sustained performance in complex science and engineering applications; system architectures including processor, memory and I/O subsystems and their interconnect; system reliability and maintainability; high-level synthesis techniques, design, and simulation of complex systems, including infrastructure and tools for simulation and evaluation of devices and architectures; benchmarks and performance evaluation methodologies; next-generation architectures (e.g., billion-transistor architectures), chip multiprocessors and networks-on-chip; multi-objective optimizations (e.g., power, reliability, complexity and security); reconfigurable computing including software tools and application-specific processors, novel applications of multithreading; exploiting parallelism at multiple levels (e.g., instruction, data, thread, stream and task levels); micro-architecture, memory systems, interconnection networks; I/O and storage architectures; clusters; technology issues.

- Exploration of fundamental questions of how to design in future computing media: stimulating crossover activities between electronic design automation researchers and micro/nano/molecular technology researchers; investigating design methods for technologies such as optical, MEMS and mixed signal; meeting challenges of design in VLSI silicon as geometries shrink; basic science for design for next generation VLSI chips using deep submicron technologies, including physical design (routing & layout, power optimization, logic synthesis, on chip communication, modeling & device simulation), system-level design (systems on chips, embedded systems, application specific processor design, hardware software co-design), and test and verification (testing of analog, digital mixed signal systems, built-in self test, design for testability, formal proof of correctness).

Computer graphics and visualization

This sub-area sponsors integrated research and education projects to advance the scientific foundations and engineering practices that underlie the ability to perform visual information transfer, address models of physical events, develop mechanisms for image production, and utilize images to represent and explore information such as computer system performance and security, large data sets, and data from specific application domains. This requires the ability to model, render, and display data and to understand the forms of imaging that can best transfer particular types of information. The sub-area seeks fundamental advances that will enhance the numerous activities that utilize computer graphics and visualization, including science, engineering, medicine, entertainment, education, business, and homeland security.

Topics of interest include: mathematical models for representing geometric and non-geometric data, algorithms for the photorealistic and non-photorealistic rendering of geometry and lighting, physical-based modeling and simulation, animation techniques, multi-resolution algorithms, visibility algorithms, scientific and information visualization algorithms and methods, algorithms for mobile visualization and the visualization aspects of location-aware computing, virtual and augmented reality, interaction techniques, novel hardware for graphics processing and three-dimensional display, computational photography and video, and image synthesis from sensor data. Innovative visualization applications to science, engineering, other domains, and, in particular, other cluster area topics such as software design are also welcome.

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the Grant Proposal Guide are eligible to submit proposals under this program announcement/solicitation.

In response to this solicitation, an investigator may participate as PI, co-PI or Senior Personnel in at most ONE proposal.

There is no limit on the number of proposals an organization may submit.

IV. AWARD INFORMATION

NSF expects to make the following type of award(s): Standard or Continuing Grant . The estimated number of awards will be 80 to 100. The average size of the majority of awards will be $125,000/year for up to three years. Up to 5 awards of $500,000/year for well-integrated projects of larger scope are anticipated. The anticipated award date is December 15, 2005. The anticipated funding amount is $37,000,000 dependent on availability of funds.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/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 the program announcement/solicitation number (05-576) in the program announcement/solicitation block on the NSF *Cover Sheet For Proposal to the National Science Foundation*. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required by NSF in proposals submitted under this Program Solicitation.

C. Due Dates

Proposals must be submitted by the following date(s):

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

June 20, 2005

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal 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 announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

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. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: http://www.fastlane.nsf.gov

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 (NSB 97-72). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued Important Notice 127, Implementation of new Grant Proposal Guide Requirements

Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the Grant Proposal Guide Chapter III.A for further information). 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 he/she is qualified to make judgments.

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.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc 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.

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 Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six

months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

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 Division 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.A. 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 (NSF-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 agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/. 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 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. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at http://www.gpo.gov.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. 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. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, 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.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Sankar Basu, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: sabasu@nsf.gov
- Sol Greenspan, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1108 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: sgreensp@nsf.gov
- Lawrence Rosenblum, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, email: lrosenbl@nsf.gov
- Peter Varman, Program Director, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: pvarman@nsf.gov

ADDITIONAL CONTACTS:

Laurin A. Battle, Office Automation Clerk, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: lbattle@nsf.gov

Madelyn A. Pauling, Management Operations Assistant, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: mpauling@nsf.gov

FASTLANE CONTACT:

Charmain Woods, Senior Program Assistant, Directorate for Computer & Information Science & Engineering, Division of Computing and Communication Foundations, 1115 N, telephone: (703) 292-8910, fax: (703) 292-9059, email: cwoods@nsf.gov

For questions related to the use of FastLane, contact:

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

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF E-Bulletin, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's MyNSF News Service (http://www.nsf.gov/mynsf/) to be notified of new funding opportunities that become available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. 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 subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

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-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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:**

  Send an e-mail to: pubs@nsf.gov

  or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

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; 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 applicant 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 needing information as part of the review process or in order to coordinate programs; 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," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). 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 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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

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