



**National Science Foundation**

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## CYBERINFRASTRUCTURE EXPERIENCES FOR GRADUATE STUDENTS (CIEG): SUPPLEMENTS

Dear Colleague Letter

### **SYNOPSIS**

This Division of Design and Manufacturing Innovation (DMI) Dear Colleague Letter (DCL) seeks to provide supplemental funding to current awardees to support graduate students to gain experience with cyberinfrastructure tools at the San Diego Supercomputer Center.

This DCL concerns opportunities for graduate students. The National Science Foundation (NSF), through the DMI Division in the Directorate for Engineering (ENG), announces the Cyberinfrastructure Experiences for Graduate Students (CIEG) initiative. CIEG will support 10-week summer visits by graduate students to visit the San Diego Supercomputer Center. The visits must be related to the objectives of ongoing work in current projects. The experience should promote the on-going use of cyber tools within the Ph.D. dissertation topic of the students, and help foster a generation of researchers for whom such tools are incorporated naturally into advancing the research field.

### **PROPOSAL DEADLINE**

Supplement Request Deadline Date and Time: Due by December 1, 2006, 5 p.m. submitter's local time.

### **ELIGIBILITY REQUIREMENT**

Eligible proposers are limited to current awardees of the following programs within the Division of Design & Manufacturing Innovation in the Directorate for Engineering:

- Operations Research
- Service Enterprise Engineering
- Manufacturing Enterprise Systems

To be eligible, the expiration dates, including no-cost extension, of current awards must fall on or after September 1, 2007. The maximum duration for CIEG supplements is one year.

### **INTRODUCTION**

The Division of Design & Manufacturing Innovation (DMI) supports fundamental research in design, manufacturing, and service. In an ever more complex and inter-connected world, research in these areas requires significant cyberinfrastructure resources. In particular, the integration of vast amounts of data and computation is required to make real-time decisions in a global manufacturing and service enterprise. The computational and data demands are

particularly great if it is necessary to incorporate risk and uncertainty into the decision models. Current and future research in these areas will require the use of cyberinfrastructure. (For more information on the importance of cyberinfrastructure to science and engineering, see <http://www.nsf.gov/cise/sci/reports/atkins.pdf>.)

DMI would like to expand the community of researchers with the necessary skills and experience to conduct sophisticated research involving cyberinfrastructure. To this end, the division plans to fund extended visits by graduate students to the NSF San Diego Supercomputer Center (SDSC). As part of such a visit, the graduate student would receive training in the use of the facilities of SDSC, and would be supervised by a mentor who would provide customized guidance corresponding to the student's particular research questions. The goal of the visit is to have the student use cyberinfrastructure tools as part of the dissertation research, as well as to provide the supercomputing center with insight into the types of computational problems that arise from DMI research. The graduate student would be funded as a supplement to an existing research project, and it is hoped that the visit will lead to increased use of cyberinfrastructure tools in the research project.

The summer visits would be coordinated so there would be a cohort of students taking part. This offers the potential of building a community of researchers with the capacity to work on the complex research questions important to DMI. The students will live in student housing at the University of California, San Diego. The arrangements for housing will be made as part of the award process, with the funding provided through the grant supplement.

## **SUPPLEMENT AWARD INFORMATION AND ALLOWABLE COSTS**

NSF will accept requests for supplements to existing awardees to support graduate students whose dissertation topics would benefit from the use of cyberinfrastructure tools and resources. Each submission may only request funding for a single graduate student. The supplementary funding would support travel expenses for the graduate student, a local subsistence allowance, a preliminary training visit to the supercomputing center, and travel funds for a short visit by the student's advisor; funds would also support attendance at an NSF-sponsored workshop by the student and the advisor. The workshop will be held as part of the 2008 DMI Grantees' Conference, tentatively scheduled for January 7-10, 2008.

The proposed cyberinfrastructure activities should fall within the general scope of the existing NSF-funded project for which supplemental funding is requested. The funded time spent at the supercomputer center would be for a 10-week summer visit plus a preliminary week-long training visit in the preceding spring. The tentative dates for the summer visit are July 1 to September 8, 2007. It is anticipated that the preliminary training will occur between April 16 and April 27, 2007. These dates are subject to change.

It is expected that the major portion of the NSF funding will go toward the travel-related expenses and living expenses. It is expected that the student's stipend and tuition would already be paid for out of the existing NSF-funded project or from other sources.

General guidelines for allowable budget categories are:

- Transportation costs for each graduate student for the summer visit;
- Local subsistence allowance for each graduate student for the summer visit; housing and meals will be provided by the University of California, San Diego; the fee will be approximately \$3,000 for the 10-week visit;

- Travel funds for faculty advisor's short visit for purposes of supervision and coordination;
- Funds for the preliminary training visit by the graduate student; and
- Funding for the graduate student to attend the post-visit workshop at the 2008 DMI Grantees' conference; it is anticipated that funding for the student's advisor will come from the advisor's grant.

The total budget must not be more than \$15,000.

All supplement awards are subject to (a) the availability of funds, and (b) review of the quality of proposals.

Indirect costs are not allowed. The supplement request and the budget must be submitted through FastLane. See instructions below.

### **INSTRUCTIONS FOR PREPARING SUPPLEMENT REQUESTS**

Principal Investigators must contact the NSF program officer responsible for their grants to be supplemented in advance of submitting a request. The title of the request should begin with the acronym CIEG. The supplement request should focus on the cyberinfrastructure aspects of the project; extended discussion of the underlying research project is not required. In addition to these review criteria, NSF will take into consideration the value added by the extent to which the proposal integrates research and education and promotes diversity.

The request must include the following information:

- 1) **Limit: five pages:** A concise, substantive summary of the graduate student's dissertation topic, and an explanation of how the cyberinfrastructure experiences will enhance the dissertation research. The summary should make clear how the cyberinfrastructure experiences will be incorporated into the dissertation research. The summary should include:
  - a) A description of the cyberinfrastructure tools and resources that are likely to be required.
  - b) A summary of the student's experiences and accomplishments in relevant areas of computational science and engineering.
  - c) An explanation of the relevance of the dissertation research to the existing NSF-funded research project.
  - d) A list of measures that could be used to measure the success of the project.
- 2) A proposed budget submitted through Fastlane.
- 3) Biography of the student (maximum two pages, in the form specified by the NSF Grant Proposal Guide).

It is recommended that the PIs review the capabilities of SDSC (<http://www.sdsc.edu/>). It may also be helpful to review the guidelines for SDSC proposals for the use of their facilities: [http://www.sdsc.edu/user\\_services/allocations/write.html](http://www.sdsc.edu/user_services/allocations/write.html).

Disciplinary NSF program officers in the Division of Design & Manufacturing Innovation will manage the review of requests. Requests must be submitted through FastLane in accordance with Sec. II.D.2.b of NSF Grant Proposal Guide, NSF 04-23, accessible through [http://www.nsf.gov/pubs/gpg/nsf04\\_23/](http://www.nsf.gov/pubs/gpg/nsf04_23/).

In preparing the budget, refer to NSF Grant Policy Manual (nsf05131; [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpm](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm)), and put applicable budget items under Participants Support; see Sec. 618 for more information.

## PROPOSAL EVALUATION

All proposals received by the due date will be reviewed by NSF program officers using NSF merit review criteria; see Sec. III.A of [NSF 04-23](#). Proposals will also be reviewed by representatives of SDSC to ensure that (a) the Center has the appropriate resources to support the research proposed, and (b) an appropriate mentor is available to supervise the student during the summer visit.

It is anticipated that each program will make up to four awards.

Each principal investigator may submit only one request.

## EXPECTED DELIVERABLES

Within one year after completion of the trip, the faculty advisor and the graduate student are expected to prepare a paper or trip report to be submitted to NSF that details the experience of the trip and its impact on the dissertation and the NSF-funded research project.

Students and their faculty advisors are expected to attend and present their report at a one-day post-visit workshop held in conjunction with the 2008 DMI Grantees' Conference.

## CONTACTS

If you are interested in submitting a supplemental request, you must contact your NSF program officer. If you have questions concerning this dear-colleague letter, please contact one of the NSF staff listed below:

- Stephen Nash, Operations Research Program, Division of Design & Manufacturing Innovation, Directorate for Engineering, (703) 292-7902. E-mail: [snash@nsf.gov](mailto:snash@nsf.gov).
- Matthew Realff, Service Enterprise Engineering Program, Division of Design & Manufacturing Innovation, Directorate for Engineering, (703) 292-7081. E-mail: [mrealff@nsf.gov](mailto:mrealff@nsf.gov).
- Abhijit Deshmukh, Manufacturing Enterprise Systems Program, Division of Design & Manufacturing Innovation, Directorate for Engineering, (703) 292-7061. E-mail: [adeshmuk@nsf.gov](mailto:adeshmuk@nsf.gov).