Data Infrastructure Building Blocks (DIBBs)

PROGRAM SOLICITATION
NSF 14-530

REPLACES DOCUMENT(S):
NSF 07-565, NSF 07-601, NSF 12-557

National Science Foundation

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Education & Human Resources

Directorate for Engineering

Directorate for Geosciences

Office of International and Integrative Activities

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

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

April 09, 2014

IMPORTANT INFORMATION AND REVISION NOTES

This solicitation updates Data Infrastructure Building Blocks solicitation NSF 12-557, issued 27 April 2012. As a cross-Directorate program focused upon data challenges confronting NSF's scientific communities, the solicitation summarizes data challenges and programmatic areas of interest for each of the participating directorates. The DIBBs program continues to support the three CIF21 goals identified at the start of the Program Description section below (Section II). However, most directorates have already convened workshops and other mechanisms to organize their communities, or have solicitation vehicles in place to develop this information; thus, proposals that were previously solicited in the "Conceptualization" track are not requested in this version. The current solicitation also reflects updates gained through experience with the prior call. Interoperability is an important characteristic in both requested tracks; for clarity, the names of the solicited tracks have been modified, to "Pilot Demonstrations" and "Early Implementations."

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Data Infrastructure Building Blocks (DIBBs)

Synopsis of Program:

NSF's vision for a Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) considers an integrated, scalable, and sustainable cyberinfrastructure as crucial for innovation in science and engineering (see www.nsf.gov/cif21). The Data Infrastructure Building Blocks (DIBBs) program is an integral part of CIF21. The DIBBs program encourages development of robust and shared data-centric cyberinfrastructure capabilities to accelerate interdisciplinary and collaborative research in areas of inquiry stimulated by data.

Effective solutions will bring together cyberinfrastructure expertise and domain researchers, to ensure that the resulting cyberinfrastructure components address the researchers' data needs. The activities should address the data challenges arising in a disciplinary or cross-disciplinary context. (Throughout this solicitation, 'community' refers to a group of researchers interested in solving one or more linked scientific questions, while 'domains' and 'disciplines' refer to areas of expertise or application).

This solicitation includes two classes of awards:

- Pilot Demonstration Awards, and
- Early Implementation Awards.

The Pilot Demonstration projects should address broad community needs of interest either to a large number of researchers within a research domain, or extending beyond that to encompass other disciplines. Early Implementation projects are expected to be of interest to multiple research communities in multiple scientific and

engineering domains; these projects will develop frameworks that provide consistency or commonality of design across communities, ensuring that existing conventions and practices are appropriately recognized and integrated, and, most importantly, that the real needs of the community are identified and met.

Prospective PIs should be aware that DIBBS is a multi-directorate activity, and are encouraged to submit proposals with broad, interdisciplinary interest. PIs are encouraged to refer to NSF core program descriptions, Dear Colleague Letters, and recently posted initiatives on directorate and divisional home pages to gain insight as to the priorities for the relevant area(s) of science and engineering in which their proposal may be responsive. **It is strongly recommended that prospective PIs contact a program officer from the list of Cognizant Program Officers in the organization(s) closest to the major disciplinary impact of the proposed work to ascertain that the scientific focus and budget of the proposed work are appropriate for this solicitation.**

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Amy Walton, Program Director, CISE/ACI, and DIBBS Solicitation Manager, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Robert Chadduck, Program Director, CISE/ACI, telephone: 703-292-8970, email: DIBBsQueries@nsf.gov
- Anita Nikolich, Program Director, CISE/ACI, telephone: (703)292-8970, email: DIBBsQueries@nsf.gov
- Peter H. McCartney, Program Director, BIO/DBI, telephone: (703) 292-8470, email: DIBBsQueries@nsf.gov
- Sylvia Spengler, Program Director, CISE/IIS, telephone: (703) 292-8930, email: DIBBsQueries@nsf.gov
- John C. Cherniavsky, Senior Advisor, EHR, telephone: (703) 292-5136, email: DIBBsQueries@nsf.gov
- Maria K. Burka, Program Director, ENG/CBET, telephone: (703) 292-7030, email: DIBBsQueries@nsf.gov
- Eva Zanzerkia, Program Director, GEO/EAR, telephone: (703) 292-8556, email: DIBBsQueries@nsf.gov
- Thomas F. Russell, Deputy Division Director, MPS/DMS, telephone: (703) 292-4863, email: DIBBsQueries@nsf.gov
- Cheryl L. Eavey, Program Director, SBE/SES, telephone: (703) 292-7269, email: DIBBsQueries@nsf.gov

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.079 --- International and Integrative Activities (IIA)

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 9

- Pilot Demonstration Awards: up to 7 awards, pending availability of funds;
- Early Implementation Awards: up to 2 awards, pending availability of funds;

Anticipated Funding Amount: $20,000,000

pending availability of funds.

- The award size for Pilot Demonstration Awards is anticipated to be up to $500,000 per year for up to three years;
- The award size for Early Implementation Awards is anticipated to be up to $1,000,000 per year for up to five years.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Organizations eligible to serve as lead are U.S. academic institutions or U.S. non-profit research organizations directly associated with educational and/or research activities. Organizations eligible to serve as subawardees are all those organizations eligible under the provisions of the NSF Grant Proposal Guide (GPG). In the interest of project management, there must be a single centralized award with subawardees as needed.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI: 1

An individual may propose as a PI or Co-PI on only one proposal in one track; however, the individual may be included among the listed senior personnel on more than one proposal in more than one track.

After the proposal submission deadline, if a person appears as a PI or Co-PI on more than one full proposal, submitters have up to two weeks after the deadline to withdraw excess proposals to reduce that person's participation to one proposal. After that time, the first submitted proposal (in FastLane time-stamp chronological order) in which that individual is participating will be accepted for review, and the remainder will be returned without review.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

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

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

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

  April 09, 2014

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

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

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

NSF's Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) (http://www.nsf.gov/pubs/2010/nsf10015/nsf10015.jsp) focuses investment on the interconnected cyberinfrastructure components necessary to realize the research potential of theoretical, experimental, observational, and simulation-based efforts in science and engineering.

The Data Infrastructure Building Blocks (DIBBs) program is an integral part of CIF21, supporting interdisciplinary and collaborative research in areas of inquiry stimulated by data through the development of robust, shared resources and the means for enabling partnerships across diverse communities. DIBBS investments are expected to develop the robust, scalable, well-designed infrastructure (the 'building blocks') contributing to future discovery and innovation across the various disciplines.

The DIBBS program will be guided by the research needs and priorities of the science and engineering communities. Submissions to the DIBBs solicitation are expected to be grounded in well-vetted, community-based plans. Alternative funding venues should be used for concepts still in exploratory development: for example, EArly-concept Grants for Exploratory Research (EAGER) are available for untested, but potentially transformative, concepts. **Before submitting a DIBBS proposal, PIs should consult with the DIBBS solicitation manager as well as program directors in the relevant research area(s), to ensure that a DIBBS submission is the most appropriate proposal venue.**

Successful proposals are expected to be of interest to multiple directorates/offices participating in the DIBBS program, and are expected to be responsive to programmatic areas of interest to the participating directorates/offices. A section containing additional information on the programmatic areas of interest for each organization is included in the Program Description section below.

II. PROGRAM DESCRIPTION

Program Goals

The Data Infrastructure Building Blocks (DIBBs) program supports CIF21 goals by providing:

- Opportunities for scientific disciplines to collectively define data requirements and develop prototypes and evaluative implementations to meet those needs;
- Cyberinfrastructure components meeting the needs of multiple disciplines, expanding the data resources available to scientific communities; and
- Connections among existing data cyberinfrastructure capabilities, to maximize effective sharing of resources and support a broader range of scientific disciplines.

Specific goals of the current DIBBS solicitation are to:

- Address data sharing issues and capabilities across scientific and engineering domains, by fostering collaborations between researchers in scientific domains and cyberinfrastructure experts;
- Extend those data capabilities to other research communities and domains, through development or expansion of data focused cyberinfrastructure, building upon the capabilities of existing research communities, community recognized data collections, and disciplinary research interests.

Consistent with CIF21, the DIBBS program encourages partnerships between academia, government laboratories and industry for the development and stewardship of a data infrastructure that can sustain and accelerate innovation and productivity, nationally and internationally. NSF recognizes the importance of enabling U.S. researchers and educators to advance their work through international partnerships, where the proposed collaboration can provide unique advantages of scope, scale, flexibility, or facilities, enabling advances that would not readily occur otherwise. In view of this, U.S. investigators may include international components in DIBBS proposals. Furthermore, strong, well-defined international collaborations may incorporate opportunities for U.S. students and early career researchers to participate in substantive international research experiences abroad.

The DIBBS program will accomplish its goals by making awards in two different categories, accommodating the scalar breadth and life cycle of scientific data infrastructure:

- **Pilot Demonstration Awards** build upon the advanced cyberinfrastructure capabilities of existing research communities, community recognized data collections, and disciplinary research interests, to address specific challenges in science and engineering research; and extend those data capabilities to broad community needs, of interest either to a large number of researchers within a research domain, or extending beyond that to encompass other disciplines. These awards may last up to three years in duration.
- **Early Implementation Awards** are large "at scale" evaluations, building upon cyberinfrastructure capabilities of existing research communities or community recognized data collections, and extending those data focused cyberinfrastructure capabilities to additional research communities and domains with broad community engagement. These awards will develop frameworks that provide consistency or commonality of design across communities and implementation for data acquisition, management, preservation, sharing, dissemination, etc. This includes data and metadata format and content conventions, standardized constructs or protocols, taxonomies, or ontologies. The development of interoperability frameworks through community-based mechanisms provides a means for ensuring that existing conventions and practices are appropriately recognized and integrated, that implementation is made realistic and feasible, and, most importantly, that the real needs of the community are identified and met. These awards may last up to five years in duration.

A **competitive** DIBBs proposal must describe the vision and rationale for the data service and infrastructure, clearly articulating the value the approach provides to science and engineering researchers. The proposal must demonstrate a strong and credible connection to the communities it serves, as well as address potential usage by other communities. The proposal must make a compelling case for its likely impact on the target communities, through direct engagement with the affected community, and should specify how adoption and usage will be monitored and how effectiveness of the new capabilities will be measured. The composition of collaborative teams should also include the skills and expertise to implement, test and evaluate the data technologies and

approaches being proposed.

DIBBs awards will support development and implementation of technologies related to the data preservation and access lifecycle, including acquisition; documentation; security and integrity; storage; access, analysis and dissemination; migration; and de-accession. Proposals focused on cybersecurity challenges and solutions in data acquisition, access, analysis, and sharing are also responsive to this solicitation, in areas such as data privacy, confidentiality, and protection from loss or corruption.

Awards are expected to result in tangible outputs - pilot systems evaluated by relevant communities, or early demonstrations of new or expanded capabilities. The awards also support creation of governance structures that respond to community input on data infrastructure needs, promote solutions to domain cyberinfrastructure problems, and avoid unnecessary duplication of resources.

All proposals must describe plans for data management and sharing of the products of research. Data accessibility, across a broad community, is an important attribute of cross-cutting research. Data Management Plans should explicitly state how the data generated by the project will be managed, stored, and made accessible, including efforts to ensure security. The Plan should also clearly define rights, obligations, roles and responsibilities of all parties, and any anticipated intellectual property (IP) issues associated with expanded access. Data management requirements and plans specific to each Directorate, Office, Division, Program, or other NSF unit, relevant to a proposal are available at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp.

Proposals must address the following areas:

- the need within and across the scientific, engineering and education community for the proposed data cyberinfrastructure;
- data elements and frameworks relevant to the specified community and the sustainability challenges to be addressed;
- data storage architectures and lifecycle processes, development, testing and deployment methodologies, validation and verification of proposed data management techniques, and any additional measures addressing trustworthiness and data security;
- usability and interface considerations, data curation and required infrastructure and technologies;
- the required organizational, personnel and management structures, project plans and operational processes; and
- a plan for governance and long-term sustainability of the data infrastructure as well as the data themselves.

The inclusion of new researchers, post-docs, graduate students, and undergraduates in relevant activities, as well as participation by underrepresented groups (women, persons with disabilities, and underrepresented minorities), is also encouraged.

Programmatic Areas of Interest

Successful proposals are expected to be of interest to multiple directorates/offices participating in the DIBBS program, and are expected to be responsive to programmatic areas of interest for these participating directorates/offices. In particular:

Biological Sciences (BIO) has identified a number of grand-challenge problems, including, but not limited to:

- environmental research at macro scales;
- predicting phenotypes from genotypes;
- characterizing and understanding dimensions of biodiversity on the planet;
- understanding complexity in biological systems; and
- research in science, engineering, and education for sustainability.

When considering such emerging topics, it is possible to identify cyberinfrastructure challenges which, if addressed, could enable one or more areas to make significant advances. These include overcoming limits to data storage and transport, achieving high-throughput performance in critical analytic workflows, and extracting complex data from multi-media sources, multi-scale modeling and analysis.

BIO has a number of programs through which it supports research and development of data cyberinfrastructure to meet these challenges and advance biological discovery (Advances in Biological Informatics, Advances in Digitization of Biological Collections, Protein Data Bank, National Environmental Observatory Network, and others). What is expected to come from the DIBBS program is the development of robust, fundamental infrastructure (or building blocks) that could contribute to ongoing efforts to develop data solutions sought by current, and future, BIO funded efforts.

The Directorate for **Computer and Information Science and Engineering** (CISE) is interested in Pilot Demonstrations and Early Implementation projects to support investigator initiated research in all areas of computer and information science and engineering. Programmatic areas of interest include the acceleration of discovery and innovation in computing foundations, communication and network systems, and information and intelligent systems. Data building blocks for energy sustainability, smart and connected health care, cyber-physical systems, cooperative robotic systems and secure cyberspace are of interest. Data from target areas could include systems of security and monitoring devices, annotated corpora, spectrum and protocol analyzers, system testbeds, suites of robots, networks of wireless and mobile devices, data clusters, integrated systems of sensors, and data repositories for CISE programs.

The Data Infrastructure Building Blocks (DIBBS) solicitation emphasizes interoperable, deployable cyberinfrastructure pilots that would support a broader research community. Pilot Demonstrations and Early Implementation projects may also focus on solutions to cybersecurity challenges in data privacy, integrity, and confidentiality across the data lifecycle components, including acquisition, storage, preservation, access, and analysis. However, applicants interested in fundamentally new techniques and technologies should instead consider the list of related solicitations available at: http://www.cise.nsf.gov/bigdata.

The Directorate for **Education and Human Resources** (EHR) encourages EHR proposals to utilize DIBBS to follow up on activities begun by other CIF21 initiatives such as Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences and in Education and Human Resources (BCC-SBE/EHR) (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504747&org=SBE) and Data-Intensive Research to Improve Teaching and Learning (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504925&org=EHR). In particular, EHR is interested in fostering novel, transformative, multidisciplinary approaches that address the use of large data sets to create actionable knowledge for improving STEM teaching and learning environments (formal and informal) in the medium term, and to revolutionize learning in the longer term.

Areas of interest to the Directorate for **Engineering** (ENG) include:

- Advanced Manufacturing;
- Biotechnology and Health Care;
- Energy, Sustainability, and Infrastructure;
- Microelectronics, Sensing, and Information Technology;
- Nanoscale Science and Engineering; and
- Process Design and Control.

Across NSF organizations, initiatives of interest to ENG include Cyber-Enabled Materials, Manufacturing, and Smart Systems (CEMMS) (e.g., building blocks supporting the Materials Genome Initiative).

The **Geosciences** (GEO) Directorate is interested in DIBBs Pilot Demonstrations and Early Implementation projects to support the work of the academic geosciences community. GEO is interested in the following research fields: atmospheric and geospace science, earth science, ocean science and polar sciences. Specific areas of interest for Pilot Demonstrations are:

- the development of tools and services in close collaboration with geosciences communities to improve access and discovery of geosciences data, extend a resource's user base and prove robustness of the technology for potential integration with existing geosciences infrastructure; and
- the development of new resources that are compatible and interoperable with existing geoscience cyberinfrastructure and that serve communities without existing community-wide data resources.

Interests for Early Implementation are projects to integrate proven technologies and interfaces into the existing, robust geosciences cyberinfrastructure-such as national data centers-to significantly improve discovery and access for geoscientists. PIs must demonstrate the proven effectiveness of the approach and the plan for sustainability of the effort following the end of the project. For all types of projects, GEO is interested in those that:

- demonstrate strong connections to academic geoscientists through existing resources, community organizations, and documented needs in EarthCube workshop and other community reports;
- show awareness of existing cyberinfrastructure and describe the relationship and connection to established geosciences infrastructure; and
- demonstrate and commit to involvement in community activities, including EarthCube forums, websites and meetings.

The **Mathematical and Physical Sciences** (MPS) Directorate recognizes a common need across MPS to manage data in ways that ensure longevity and access in order to increase scientific productivity and enable new insights within or even across scientific domains. The MPS priorities can be ascribed to three basic areas:

- ***Data Analysis*:** Algorithms, software, and computational and network infrastructure for extracting information from complex and heterogeneous data, especially where the analysis is too large for researchers to perform locally.
- ***Data Curation*:** Archiving and data management to ensure long-term data preservation and reuse. This includes managing large data sets, collecting data from distributed sources, accessing and integrating multi-source data. Active data management will require standards, data certification and new models for balancing data distribution and intellectual property rights. Data in MPS include observational information, results of calculations and simulations, and software.
- ***Data Access/"Knowledge Portals"*:** Ensure access to data at the appropriate stages and in organized forms. Support a multilevel system that enables central processing of large data sets, with or without remote processing from smaller sites, when downloading a data set is prohibitive. Support middleware to make data accessible with user interfaces that provide visualization and context for the data requested.

MPS is interested in DIBBS proposals that address one or more of these priority areas.

The Directorate for **Social, Behavioral and Economic Sciences** (SBE) is interested in proposals that support the Directorate's research priorities, such as those outlined in SBE 2020 (http://www.nsf.gov/sbe/sbe_2020/). In particular, SBE is interested in using DIBBS to support follow-up activities begun by other CIF21 initiatives such as META-SSS (www.nsf.gov/pubs/2011/nsf11583/nsf11583.htm) and Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences and in Education and Human Resources (BCC-SBE/EHR) (www.nsf.gov/funding/pgm_summ.jsp?pims_id=504747&org=OCI).

Important Note: PIs should consult with the DIBBS program director(s) as well as program directors in the relevant research area(s) prior to submitting a proposal.

III. AWARD INFORMATION

Anticipated Funding Amount: up to $20,000,000, pending availability of funds.

- The award size for Pilot Demonstration Awards is anticipated to be up to $500,000 per year for three years;
- The award size for Early Implementation Awards is anticipated to be up to $1,000,000 per year for five years.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Organizations eligible to serve as lead are U.S. academic institutions or U.S. non-profit research organizations directly associated with educational and/or research activities. Organizations eligible to serve as subawardees are all those organizations eligible under the provisions of the NSF Grant Proposal Guide (GPG). In the interest of project management, there must be a single centralized award with subawardees as needed.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI: 1

An individual may propose as a PI or Co-PI on only one proposal in one track; however, the individual may be included among the listed senior personnel on more than one proposal in more than one track.

After the proposal submission deadline, if a person appears as a PI or Co-PI on more than one full proposal, submitters have up to two weeks after the deadline to withdraw excess proposals to reduce that person's participation to one proposal. After that time, the first submitted proposal (in FastLane time-stamp chronological order) in which that individual is participating will be accepted for review, and the remainder will be returned without review.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

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

Proposals must be received as a single submission with one organization serving as the lead and all others as subawardees. Linked proposals submitted using the collaborative mechanism of Fastlane will be returned without review. While the lead institution submitting the proposal must be a U.S. academic institution or U.S. non-profit, non-academic organization, subawardees may be any entity eligible under the provisions of the NSF GPG.

Important Proposal Preparation Information: FastLane will check for required sections of the full proposal, in accordance with *Grant Proposal Guide* (GPG) instructions described in Chapter II.C.2. The GPG requires submission of: Project Summary; Project Description; References Cited; Biographical Sketch(es); Budget; Budget Justification; Current and Pending Support; Facilities, Equipment & Other Resources; Data Management Plan; and Postdoctoral Mentoring Plan, if applicable. If a required section is missing, **FastLane will not accept the proposal.**

Please note that the proposal preparation instructions provided in this program solicitation may deviate from the GPG instructions. If the solicitation instructions do not require a GPG-required section to be included in the proposal, insert text or upload a document in that section of the proposal that states, "Not Applicable for this Program Solicitation." Doing so will enable FastLane to accept your proposal.

Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Unless otherwise specified in this solicitation, you can decide where to include this section within the Project Description.

The following supplements guidance contained in the GPG or NSF Grants.gov Application Guide.

Title - Title begins with "CIF21 DIBBs:".

Cover Sheet: Provide a short informative title for the proposed project. The system allows one PI and at most four Co-PIs to be designated for each proposal. If your project involves international partners, check the international activities box and list the countries involved. If needed, additional lead personnel should be designated as non co-PI, Senior Personnel on the Budget form.

Project Summary (1-page limit) - Provide an overview of the DIBBs project, including its transformative research and education goals, the innovative data infrastructure being proposed, and the community (communities) that will be impacted. In separate statements, provide succinct summaries of the intellectual merit and broader impacts of the proposed project.

Project Description - The project description is limited to 15 pages, and must address the following:

- **Vision and Rationale** - Describe the scientific advance(s) motivating the data infrastructure building block, what new opportunities will be enabled, anticipated interoperability with other cyberinfrastructure components, innovative cyberinfrastructure aspects, and impact on discovery and learning across disciplines. Provide the rationale for the choice of science and engineering research and education communities to be served. Describe the nature of the anticipated user base. Explain how the vision and rationale contribute to an effective business model for achieving long term economic and technological sustainability.
- **Activities -** Describe the research, education and training plans as well as their integrative components. Describe plans for obtaining active user input. Provide plans for developing and, appropriate to the track, implementing a vigorous and comprehensive assessment and evaluation program.
- **Management -** Describe the organizational structure of the proposed team and a management plan with a diagram of reporting relationships and an outline of how the various project components interact and are brought together into a functional whole. List the types of expertise to be provided by project personnel and partners; proposals must demonstrate the inclusion of the appropriate expertise to address the problems being posed. Describe the various sectors (e.g. academic, government, non-profit, commercial, international, etc.) to be involved and how each contributes to and benefits

from the project. Provide plans for increasing the participation of women, persons with disabilities, and individuals from underrepresented groups.
- **Results from Prior Research** - Describe only prior research of the PI or Co-PIs funded by NSF that is directly and immediately relevant to this proposal.

References Cited - Indicate with an asterisk any cited publications resulting from prior research funded by NSF for the PI or Co-PIs when following the guidelines for all references cited.

Biographical Sketches - Provide biographical sketches for the PI, Co-PIs, and other Senior Personnel listed on the Project Summary page.

Current and Pending Support - Provide this information for the PI, Co-PIs and other senior personnel listed on the Project Summary page.

Budget - Participation in the DIBBs annual meeting will be a requirement of an award. Funds for travel by up to two project personnel to this annual meeting at NSF in the Washington, DC area must be included in the budget. Proposal budgets should also include travel funds for the PI to attend an annual reverse site visit at NSF in the Washington, DC area. Follow the instructions in the GPG or NSF Grants.gov Application Guide for preparing the budget. Multi-institutional proposals must be submitted through the lead organization with a single budget including all other participating organizations as subawardees (see GPG guidelines, Chapter II.D.3). Provide a detailed budget justification separately for the lead organization (up to 3 pages) and for each subawardee budget (up to 3 pages each). Funds for facility construction or renovation may NOT be requested.

Special Information and Supplementary Documentation - In addition to the *Data Management Plan* (please follow the CISE Data Management Guidance - http://www.nsf.gov/cise/cise_dmp.jsp) and the *Postdoctoral Research Mentoring Plan* (if required), the following items are the only items permitted as supplementary documentation:

Project Management:

Proposals may include in supplementary documents a 1-page system design diagram specifying all critical components, including hardware and/or software and any necessary dependencies affecting system use by the scientific community. The diagram should be referenced in the Project Description.

Single Copy Documents: The following information is required in addition to that included within the provisions of the GPG or NSF Grants.gov Application Guide:

Integrated Conflicts of Interests List for Applicants:

Upload a file in one of the formats accepted by FastLane (see https://www.fastlane.nsf.gov/NSFHelp/flashhelp/fastlane/FastLane_Help/acceptable_formats_for_fastlane.htm), which lists the full names and institutional affiliations of all people having potential conflicts of interest (COI) with any PIs, Co-PIs, and other senior personnel (SP). Potential conflicts of interest, as specified in the NSF's Grant Proposal Guide, include coauthors/editors and collaborators (within the past 48 months), all graduate advisors and advisees, and any other individuals or institutions with which the investigator has financial ties. The columns of the spreadsheet should be "PI/SP Last Name", "PI/SP First Name", "PI/SP Institution", "COI Last Name", "COI First Name", "COI Institution". Each project participant should be listed (repeatedly) in all rows that name his/her conflicted individuals. This list will be used by NSF to check for conflicts of interest in assembling the review community.

In addition to the Conflict of Interest List, other correspondence to the program not intended to be sent to reviewers, such as a list of potential reviewers, can be sent through the Single Copy Document section of FastLane or Grants.gov. Please note that key project personnel may be required, prior to an award decision, to submit copies of any intellectual property agreements or material transfer agreements they have signed, or are planning to sign, that would have an impact on the unrestricted and timely distribution of the outcomes of the NSF funded research. Submission of a Single Copy Document will allow these materials to be reviewed by the NSF officials only, and they will remain confidential.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

C. Due Dates

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

  April 09, 2014

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions 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.

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. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: http://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical 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.

Proposers that submitted via FastLane are strongly encouraged to use FastLane to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF 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 either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years (FY) 2011-2016*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the core strategies in support of NSF's mission 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 variety of learning perspectives.

Another core strategy in support of NSF's mission is broadening opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which 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.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (GPG Chapter II.C.2.d.i. contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including GPG Chapter II.C.2.d.i., prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

In addition to the standard NSF review criteria for Intellectual Merit and Broader Impacts, DIBBs proposals will also be reviewed using the following program-specific criteria:

- Rationale for the proposed capability: its responsiveness to community needs, and the anticipated impact on advancing science, engineering, and education;
- Ability to address data sharing issues and capabilities across scientific and engineering domains, by fostering collaborations between researchers in scientific domains and cyberinfrastructure experts;
- Potential for extending proposed data capabilities to other research communities and domains, through development or expansion of data focused cyberinfrastructure, building upon the capabilities of existing research communities, community recognized data collections, and disciplinary research interests;
- Appropriateness of the approach, ability to address cybersecurity challenges in data privacy, integrity and confidentiality, and specific steps that will be taken to implement the conceptual design of the proposed capability;
- Significance of milestones, and relevance of community/usage metrics, for each year of the award. These should be simple, but essential, milestones and metrics that show expected annual accomplishments and the impact of the capability on furthering science and the breadth of the user community;
- Potential success of mechanisms used to reach out to engage users, particularly for other communities in adopting the capability; and
- Effectiveness of the management plan: the potential for effective leadership with clear lines of authority, responsibility, accountability, community and user responsiveness, and the ability to adapt to new opportunities and technologies.

B. Review and Selection Process

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

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will be completed and submitted by each reviewer. 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 strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

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. After an administrative review has occurred, Grants and Agreements Officers perform 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.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, 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.

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 notice, 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 notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)*; or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

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

Special Award Conditions:

- Awardees are expected to participate in annual PI meetings with travel costs supported by the award.
- PIs also participate in annual reverse site visits to NSF.

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 prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. 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 Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the NSF *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Amy Walton, Program Director, CISE/ACI, and DIBBS Solicitation Manager, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Robert Chadduck, Program Director, CISE/ACI, telephone: 703-292-8970, email: DIBBsQueries@nsf.gov
- Anita Nikolich, Program Director, CISE/ACI, telephone: (703)292-8970, email: DIBBsQueries@nsf.gov

- Peter H. McCartney, Program Director, BIO/DBI, telephone: (703) 292-8470, email: DIBBsQueries@nsf.gov
- Sylvia Spengler, Program Director, CISE/IIS, telephone: (703) 292-8930, email: DIBBsQueries@nsf.gov
- John C. Cherniavsky, Senior Advisor, EHR, telephone: (703) 292-5136, email: DIBBsQueries@nsf.gov
- Maria K. Burka, Program Director, ENG/CBET, telephone: (703) 292-7030, email: DIBBsQueries@nsf.gov
- Eva Zanzerkia, Program Director, GEO/EAR, telephone: (703) 292-8556, email: DIBBsQueries@nsf.gov
- Thomas F. Russell, Deputy Division Director, MPS/DMS, telephone: (703) 292-4863, email: DIBBsQueries@nsf.gov
- Cheryl L. Eavey, Program Director, SBE/SES, telephone: (703) 292-7269, email: DIBBsQueries@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, "NSF Update" 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 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. "NSF Update" also is available on NSF's website at https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_179.

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.

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 55,000 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 Arctic 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:**

Send an e-mail to:	nsfpubs@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; 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
Office of the General Counsel
National Science Foundation
Arlington, VA 22230

The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749