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CyberCorps(R): Scholarship for Service (SFS)

Defending America's Cyberspace

PROGRAM SOLICITATION
NSF 14-586

REPLACES DOCUMENT(S):
NSF 14-510

National Science Foundation

Directorate for Education & Human Resources
Division of Graduate Education

Submission Window Date(s) (due by 5 p.m. proposer's local time)**:**

October 09, 2014 - October 21, 2014

Scholarship Track

November 01, 2014 - November 14, 2014

Capacity Track

IMPORTANT INFORMATION AND REVISION NOTES

Graduate stipend has been increased to $32,000 for both master's and doctoral level students.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

CyberCorps(R): Scholarship for Service (SFS)

Synopsis of Program:

Cyberspace has transformed the daily lives of people. The rush to adopt cyberspace, however, has exposed its fragility and vulnerabilities: corporations, agencies, national infrastructure and individuals have been victims of cyber-attacks. In December 2011 the National Science and Technology Council with the cooperation of the NSF advanced a broad, coordinated federal strategic plan for cybersecurity research and education to "change the game," check the misuses of cyber technology, bolster education and training in cybersecurity, establish a science of cybersecurity, and transition promising cybersecurity research into practice. To achieve this strategic plan, the nation needs advanced research within and across disciplines, requiring expertise in human, statistical, mathematical, computational, and computer sciences to develop and transition new concepts and technologies to practice. It also requires an innovative and efficient cybersecurity education system that results in an unrivaled cybersecurity workforce and citizenry capable of advancing America's economic prosperity and national security in the 21st century.

The CyberCorps(R): Scholarship for Service (SFS) program seeks proposals that address cybersecurity education and workforce development. The *Scholarship Track* provides funding to award scholarships to students in cybersecurity. In return for their scholarships, recipients will work after graduation for a Federal, State, Local, or Tribal Government organization in a position related to cybersecurity for a period equal to the length of the scholarship. The *Capacity Track* seeks innovative proposals leading to an increase in the ability of the United States higher education enterprise to produce cybersecurity professionals. They contribute to the expansion of existing educational opportunities and resources in cybersecurity and focus on such efforts as research on the teaching and learning of cybersecurity, including research on materials, methods and small-scale interventions; curricula recommendations for new courses, degree programs, and educational pathways with plans for wide adoption nationally; teaching and learning effectiveness of cybersecurity curricular programs and courses; integration of cybersecurity topics into computer science, information technology, engineering and other existing degree programs with plans for pervasive adoption; partnerships between institutions of higher education, government, and relevant employment sectors leading to improved models for the integration of applied research experiences into cybersecurity degree programs.

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.

- Victor P. Piotrowski, Program Director, telephone: (703) 292-5141, email: vpiotrow@nsf.gov

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 20 to 30

consisting of 10-15 Scholarship Track awards and 10-15 Capacity Building Track awards

Anticipated Funding Amount: $25,000,000

pending the availability of funds, in FY 2015 for new awards under this program solicitation. Scholarship awards are usually funded as continuing grants over a five-year period.

Eligibility Information

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

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: 2

An individual may participate as PI, Co-PI, or Senior Personnel in at most one proposal per track in each annual SFS competition. These eligibility constraints will be strictly enforced and in the event that an individual exceeds this limit, proposals received within the limit will be accepted based on the earliest date and time of proposal submission (i.e., the first proposal received for the Scholarship and/or Capacity track will be accepted and the remainder will be returned without review).

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **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:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Submission Window Date(s)** (due by 5 p.m. proposer's local time)**:**

  October 09, 2014 - October 21, 2014

  Scholarship Track

  November 01, 2014 - November 14, 2014

  Capacity Track

Proposal Review Information Criteria

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

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Cyberspace - a global "virtual" village enabled by hyper-connected digital infrastructures - has transformed the daily lives of people. Families and friends regardless of distance and location can see and talk with one another as if in the same room. Cyber economies create new opportunities. Every sector of society, every discipline, has been transformed by cyberspace. Today it is no surprise that cyberspace is critical to our national priorities in commerce, education, energy, financial services, healthcare, manufacturing, and defense.

The rush to adopt cyberspace, however, has exposed its fragility. The risks of hyper-connectedness have become painfully obvious to all. The privacy of personally identifiable information is often violated on a massive scale by persons unknown. Our competitive advantage is eroded by the exfiltration of significant intellectual property. Law enforcement is hobbled by the difficulty of attribution, national boundaries, and uncertain legal and ethical frameworks. All these concerns now affect the public's trust of cyberspace and the ability of institutions to fulfill their missions.

The National Science and Technology Council with the cooperation of the NSF put forth a 2011 report, Trustworthy Cyberspace: Strategic Plan for the Federal Cybersecurity Research and Development Program. The plan identifies a broad, coordinated research agenda to make cyberspace secure and trustworthy. Research in cybersecurity must "change the game," check the misuses of cyber technology, bolster education and training in cybersecurity, establish a science of cybersecurity, and transition promising cybersecurity research into practice. Also, NSF contributes to multi-agency efforts for the White House's National Initiative for Cybersecurity Education (NICE) program. The goal of both initiatives is to make cyberspace worthy of the public's trust.

This solicitation is supportive of the Office of Science and Technology Policy strategic priorities in securing the cyberspace. It recognizes that cybersecurity education and workforce development form a critical element for a successful implementation and transition to practice of any advances in cybersecurity research and development.

II. PROGRAM DESCRIPTION

Cybersecurity is arguably the most important challenge confronting society in the information age. Neither governments nor individuals are exempt from the ravages of malicious cyber acts upon imperfect technologies. Posing cyber conflict solely in terms of classic attackers and defenders shortchanges the diversity and subtlety of the motivations, incentives, ethics, asymmetries, and strategies of the constituent actors and players in cyberspace. The intelligent adversary, whether human or software, learns and evolves to exploit, disrupt, and overpower. Addressing this challenge requires a coordinated multi-disciplinary approach, contributing to the body of knowledge on cybersecurity in multiple disciplines, and leading to practical, deployable technologies. These efforts require an innovative and efficient cybersecurity education system that will create the unrivaled cybersecurity workforce critical to US national security, continued economic growth and future technological innovation in secure cyberspace.

The SFS program welcomes proposals that address cybersecurity education and workforce development. The Scholarship Track provides funding to Institutions for awarding scholarships to students in cybersecurity. In return for their scholarships, recipients will work after graduation for a Federal, State, Local, or Tribal Government organization in a position related to cybersecurity for a period equal to the length of the scholarship. The Capacity Track seeks innovative proposals leading to an increase in the ability of the United States higher education enterprise to produce cybersecurity professionals.

Scholarship Track

The SFS program provides funds to colleges and universities for student scholarships in support of education in areas relevant to cybersecurity. In return for their scholarships, recipients must agree to work after graduation for the Federal Government or, subject to approval of the NSF program office, for a State, Local, or Tribal Government in a position related to cybersecurity for a period equal to the length of the scholarship.

During the scholarship period, the students will participate in meaningful summer internships. Doctoral students may be allowed to replace their summer internship with a research activity following a recommendation from their academic advisor and approval of the NSF program office.

The program's goal is 100% placement, which can only be reached through active cooperation among all parties involved. While SFS student participants are responsible for their own job searches, the SFS program office, through the U.S. Office of Personnel Management (OPM), provides several tools to aid in the job search and organizes an annual job fair. PIs and SFS scholarship students are expected to actively participate with OPM to secure both a summer internship and permanent placement in a Federal, State, Local or Tribal Government organization. A limited number of students may be placed in National Laboratories and Federally Funded Research and Development Centers (FFRDCs). This number is set by the NSF program office each year. (See http://www.firstgov.gov/Agencies.shtml for a list of Federal, State, Local and Tribal Governments; see http://science.energy.gov/sbir/about/national-laboratories-profiles-and-contacts/ for a list of National Laboratories; see http://www.nsf.gov/statistics/ffrdclist/ for a list of FFRDCs.) Materials to assist PIs and scholarship recipients with the placement process are available through the SFS support website: http://www.sfs.opm.gov/.

Students must also participate in other SFS activities such as conferences, workshops, and seminars. These activities are aimed at developing a community of practice that will enhance students' individual and collective skills in an area increasingly important to the security of the United States.

OPM partners with NSF in this program by providing internship and placement assistance to SFS scholarship students, by coordinating students' transition into government employment, by monitoring students' compliance with program requirements, and by assessing whether the program helps meet the personnel needs of the Federal government for information infrastructure protection.

Grantee institutions provide scholarship support to students who compete successfully in a selection process developed by the institution, who meet the SFS eligibility criteria, and who are confirmed as qualified for employment in the Federal Cyber Service by OPM. It is expected that scholarship participants will receive their degree (bachelor's, master's, or doctorate) within two years of the beginning of their scholarships. However, the funding period may be extended to three years for doctoral students, for students receiving both the bachelor's and the master's degree, or for students participating in combined bachelor's and master's degree ("five year") programs.

To be eligible for consideration for an SFS scholarship, a student must be a U.S. citizen. In addition, a student must be one of the following:

- a full-time student within two years of graduation with a bachelor's or master's degree in a coherent formal program that is focused on cybersecurity at an awardee institution, or
- a full-time student within three years of graduation with both the bachelor's and the master's degree, or a student participating in a combined bachelor's and master's degree ("five year") program, or
- a research-based doctoral student within three years of graduation.

Scholarship recipients must also meet selection criteria for Federal employment. Internship placements and final job placements in government organizations typically require high-level security clearances and scholarship recipients are required to undergo the background investigation necessary to obtain such clearances as part of the job and/or internship application process. Each proposing institution must provide a description of its selection criteria and process, and must submit their lists of candidates for SFS scholarships to OPM for final eligibility confirmation.

Applications from institutions which have not previously participated in the SFS program will be considered separately from proposals from renewing institutions. Institutions with existing SFS scholarship programs should clearly indicate that they are applying for a renewal in the title and/or project summary and should provide:

- specific evidence of their current SFS program achievements. Indicators of program success include, but are not limited to, placement statistics, faculty development activities, integration of research and education, mentoring of non-SFS institutions, partnerships with government and relevant employment sectors, and curricular innovations.
- specific plans and/or evidence of program sustainability and/or institutionalization efforts including information on students without SFS scholarships who were placed in government jobs and the retention of SFS scholarship recipients in the federal workforce beyond their initial obligation.

Proposing institutions, regardless of whether they submit new or renewal proposals, are also expected to have clearly articulated management and administrative plans for the following program elements:

- Verification of scholarship candidates' eligibility, including the recipients' academic merit, appropriate professional skills, and enrollment in a cybersecurity program.
- Budgeting for scholarships consisting of stipends, tuition, education-related fees, and other allowances described below. Scholarships are not based on student financial need.
- Provision of academic-year stipends of $20,000 per year for undergraduate students and $32,000 per year for graduate students. These charges shall be included in the budget under Participant Support costs.
- Provision of scholarship amounts to be used for expenses normally incurred by full-time students at the institution, including tuition and education related fees (does not include items such as meal plans, housing, or parking); a health insurance reimbursement allowance up to $2,000 per year; a professional development allowance of $3,000 for SFS Job Fair and other travel, professional certification etc. and a book allowance of $1,000 per academic year. These shall be included in the budget under Participant Support costs.
- Provision for coordination with OPM for summer internships and permanent job placements for each student. Students are expected to take government internship positions in the summer between their first and second year of scholarship study. Summer internships typically are paid by the hiring agency. Funding for summer internships should not be included in the proposed SFS budget. Doctoral students may be allowed to substitute research activity for their summer internship following

the recommendation of their academic advisor and approval of the NSF program office.
- Provisions for tracking the academic progress of students to determine their continued eligibility throughout the academic part of the program. Post-graduation tracking of students to verify that they meet the service obligation will be done by OPM.
- Clearly stated goals and an evaluation plan explaining how the goals will be measured. Evaluation plans should include both a strategy for monitoring the project as it evolves to provide feedback to guide these efforts (formative evaluation) and a strategy for evaluating the effectiveness of the project in achieving its goals and for identifying positive and constructive findings when the project is completed (summative evaluation). The awardees are expected to cooperate with the SFS program-level monitoring and evaluation system.

The above items must be clearly detailed in the Budget Justification section, or other appropriate sections of the proposal.

Institutional Responsibilities for Scholarship Projects. The institution receiving the award ("Awardee") shall require that each recipient of a scholarship accepts the terms of the scholarship and agrees to provide the institution and OPM with annual certification of employment and up-to-date contact information. The recipients must also agree to participate in surveys conducted by the project and/or program evaluators as part of project-level and program evaluation efforts. Monitoring the compliance of scholarship recipients with respect to completing their service requirements will be the joint responsibility of OPM and the Awardee. Failure to satisfy the academic requirements of the program or to complete the service requirement will result in forfeiture of the scholarship award, which will revert to a student loan with repayments pro-rated accordingly to reflect partial service completed. The Awardee is responsible for collecting the repayment amounts, including interest, consistent with the provisions of part B or D of Title IV of the Higher Education Act of 1965. All forfeited scholarship funds, less reasonable, allocable, and allowable Awardee costs associated with collection of the repayment not to exceed 5% of the forfeited amount, will be returned to the United States Treasury and may not be re-used by the Awardee. Scholarship recipients in coordination with the Awardee and the PI may petition the NSF Program Office to waive or suspend repayment of scholarships in cases of extreme hardship or other circumstances that would preclude the fulfillment of the service obligation.

Scholarship funds awarded to students for stipends, tuition and education related fees, and student support allowances must be listed as Participant Support Costs in the NSF proposal budget (Line F on the FastLane budget and Field E on the Grants.gov Budget). Additional funds up to 20% of the total Participant Support Costs listed in the proposal budget may be requested for activities in other cost categories (e.g., faculty and staff salaries, travel, materials, supplies etc.) that contribute to the effectiveness of the Scholarship program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification.

The Principal Investigator will have overall responsibility for the administration of the institution's award, the management of the project, and interactions with NSF and OPM. The PI and the grantee institution are expected to have or to develop an administrative structure that enables faculty, academic administrators, scholarship recipients, and others involved in the project to interact productively during the award period. The PI is expected to be an integral participant in the educational activities of the SFS project and is required to participate in boot camps, job fairs, symposia and other SFS-sponsored activities.

A proposing institution must provide clearly documented evidence of a strong existing academic program in cybersecurity. Such evidence can include Center of Academic Excellence in Information Assurance Education (CAEIAE, or in Research, CAE-R) designation by the National Security Agency and the Department of Homeland Security; a specialized designation by a nationally recognized organization (for example, in forensics or cyber operations); or equivalent evidence documenting a strong program in cybersecurity.

A focus on recruiting and retaining underrepresented minorities, women, first-generation/low-income students, persons with disabilities and/or veterans is strongly encouraged. Application by and partnerships with minority institutions, as recognized by the U.S. Department of Education's list is encouraged (See http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html for a list of qualifying institutions.)

Capacity Track

The SFS Capacity Track seeks innovative proposals leading to an increase in the ability of the United States higher education enterprise to produce cybersecurity professionals. Proposals focusing on capacity building should contribute to the expansion of existing educational opportunities and resources in cybersecurity. This might include but is not limited to the following efforts:

- Conduct research on the teaching and learning of cybersecurity, including research on materials, methods and small-scale interventions
- Establish curricula recommendations for new courses, degree programs, and educational pathways with plans for wide adoption nationally
- Evaluate teaching and learning effectiveness of cybersecurity curricular programs and courses
- Integrate cybersecurity topics into computer science, information technology, engineering and other existing degree programs with plans for pervasive adoption
- Develop virtual laboratories to promote collaboration and resource sharing in cybersecurity education
- Strengthen partnerships between institutions of higher education, government, and relevant employment sectors leading to improved models for the integration of applied research experiences into cybersecurity degree programs
- Evaluate the effectiveness of cybersecurity competitions, games, and other outreach and retention activities

All projects, regardless of the scope, should have clearly stated goals and an evaluation plan that explains how they will be measured. Evaluation plans should include both a strategy for monitoring the project as it evolves to provide feedback to guide these efforts (formative evaluation) and a strategy for evaluating the effectiveness of the project in achieving its goals and for identifying positive and constructive findings when the project is completed (summative evaluation). Proposals must clearly explain how their projects will address the previously stated objectives of the program. Project goals must be translated into a set of expected measurable outcomes that can be monitored using quantitative or qualitative approaches or a combination of the two. These outcomes should be used to track progress, guide the project, and evaluate its impact.

Program Evaluation

NSF conducts on-going program monitoring and evaluation to determine how effectively the SFS program is achieving its goals to increase the quantity of new entrants to the federal workforce with the education and training that will enhance the security of critical federal information infrastructure; to increase the national capacity for the education of cybersecurity professionals; to increase national research and development capabilities in critical information infrastructure protection; and to strengthen partnerships between institutions of higher education and relevant employment sectors. In addition to project-specific evaluations, all projects are expected to cooperate with this third party program evaluation and respond to all inquiries, including requests to participate in surveys, interviews and other approaches for collecting evaluation data. Project-specific evaluations should provide indicators of program achievement including, but not limited to, the areas of placement, student achievement, faculty development, curriculum and institutional partnerships.

III. AWARD INFORMATION

The SFS Scholarship Track supports two- to three years of stipends, tuition and allowance for students in the general area of cybersecurity. The scholarships provide academic year stipends of $20,000 per year for undergraduate students and $32,000 per year for graduate students. In addition, SFS scholarships cover expenses normally incurred by full-time students in the institution, including tuition and education related fees (does not include items such as meal plans, housing, or parking); a health insurance reimbursement allowance up to $2,000 per year; a professional development allowance of $3,000 for SFS Job Fair and other travel, professional certification etc. of and a book allowance of $1,000 per academic year. A typical award might be approximately $3 million for five years supporting five cohort classes of 7 first-year students (year 1), 7 first-year and 7 second-year students (year 2), 7 first-year and 7 second-year students (year 3), 7 first-year and 7 second-year students (year 4), and 7 second-year students (year 5). The above example assumed that no students received three years of support. The total award sizes will depend upon the tuition amount and on the cost of management and development.

SFS Capacity Track projects may vary in size. A typical project will request a total of $200,000 to $300,000 over a two to three year period. A small number of large scale projects may be awarded with total budget limited to $900,000 and duration of three to four years.

NSF anticipates that approximately $25 million will be available for new standard and continuing awards under this program solicitation in FY 2015, pending the availability of funds. Scholarship awards are usually funded as continuing grants over a five-year period. Depending on the quality of proposals received, the program expects to make 10-15 awards in the Scholarship Track and 10-15 awards in the Capacity Track.

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

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

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: 2

An individual may participate as PI, Co-PI, or Senior Personnel in at most one proposal per track in each annual SFS competition. These eligibility constraints will be strictly enforced and in the event that an individual exceeds this limit, proposals received within the limit will be accepted based on the earliest date and time of proposal submission (i.e., the first proposal received for the Scholarship and/or Capacity track will be accepted and the remainder will be returned without review).

Additional Eligibility Info:

For the Scholarship Track: A proposing institution must provide clearly documented evidence of a strong *existing* program in cybersecurity. Such evidence can include Center of Academic Excellence in Information Assurance Education (CAEIAE, or in Research, CAE-R) designation by the National Security Agency and the Department of Homeland Security; a specialized designation by a nationally recognized organization (for example, in forensics or cyber operations); or equivalent evidence documenting a strong program in cybersecurity.

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.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

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.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Other Budgetary Limitations:

The scholarships provide academic year stipends of $20,000 per year for undergraduate students and $32,000 per year for graduate students. In addition, SFS scholarships cover expenses normally incurred by full-time students at the institution, including tuition and education related fees (does not include items such as meal plans, housing, or parking); a health insurance reimbursement allowance up to $2,000 per year; a professional development allowance of $3,000 for SFS Job Fair and other travel, professional certification etc. and a book allowance of $1,000 per academic year.

The Capacity Track projects may vary in size. A typical capacity building project will request a total of $200,000 to $300,000 over a two to three year period. A small number of large scale projects may be awarded with total budget limited to $900,000 and duration of three to four years

In the Scholarship Track, funds awarded to students for stipends, tuition and education related fees, and student support allowances must be listed as Participant Support Costs in the NSF proposal budget (Line F on the FastLane budget and Field E on the Grants.gov Budget). Additional funds up to 20% of the total Participant Support Costs listed in the proposal budget may be requested for activities in other cost categories (e.g., salaries, travel, materials, supplies etc.) that contribute to the effectiveness of the Scholarship program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification.

C. Due Dates

- **Submission Window Date(s)** (due by 5 p.m. proposer's local time)**:**

  October 09, 2014 - October 21, 2014

  Scholarship Track

  November 01, 2014 - November 14, 2014

  Capacity Track

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 *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. 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 strategic objectives 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 must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation’s most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of 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

Proposals submitted to the SFS program will be evaluated with careful attention to the following:

- A project plan and tangible metrics described to evaluate the success of the proposed project.
- The extent to which the project fulfills cybersecurity education and workforce needs with broad impact across the cyber education community.
- The quality of education and research in cybersecurity at the institution and the extent to which they are integrated.
- The quality of applied experiences to increase students understanding of cybersecurity.
- The extent to which cybersecurity faculty members are integrally involved with the scholarship students and working with the students as a cohort.
- The degree to which investigators interact with the cybersecurity community to share knowledge and experience in developing and evaluating innovations.
- Institutional sustainability and evidence of a reasonable expectation of persistent effects of the grant-funded work consistent with the aims of the project.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by 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.

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:

- Victor P. Piotrowski, Program Director, telephone: (703) 292-5141, email: vpiotrow@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:

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