Federal Cyber Service: Scholarship For Service (SFS)
Student Placement Issues:
Exploration of the Solution Space

A report from a NSF workshop held August 5-6, 2003.

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National Science Foundation, Room 830
4201 Wilson Boulevard
Arlington, VA

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I. Executive Summary

The Federal Cyber Service: Scholarship for Service (SFS) program seeks to increase the number of qualified students entering the fields of information assurance and computer security and to increase the capacity of the United States higher education enterprise to continue to produce professionals in these fields. The program has two tracks, Scholarship and Capacity Building. The workshop, SFS Student Placement Issues: Exploration of the Solution Space, focused on problems associated with placing students participating in the Scholarship Track described below:

> The **Scholarship Track** provides funding to colleges and universities to award scholarships in information assurance and computer security fields. Scholarship recipients will become part of the Federal Cyber Service of information technology specialists who ensure the protection of the U.S. Government's information infrastructure. Upon graduation after their two-year scholarships, the recipients will be required to work for a federal agency for two years in fulfillment of their Federal Cyber Service commitment.

The service agreements that each scholarship student signs with the Office of Personnel Management (OPM) states that upon graduation if a Federal position has not been made available, the student is then released from any obligation to the program. SFS students are selected partially based on their desire to go to work for the Federal government. The university principal investigators, OPM, and NSF in partnership are all very motivated to make these placements happen. Heroic efforts on all sides to date have resulted in a placement rate well over 90%. A concern over the ability of the program to maintain and improve on this high placement rate as the program continues to grow was the primary force behind this workshop.

II. Introduction

Simply stated, the problem addressed by this workshop is the ability to place SFS students in internships and permanent Federal positions as the number of students continues to grow. The goal was to bring together principal investigators (PIs) (see Appendix 1) of the SFS scholarship track to address concerns about student selection and placement. Day One of the workshop focused on developing short-term solutions for student selection, internship opportunities, and job placement. Day Two was devoted to long-term approaches to improving these and other aspects of the SFS program. The group identified best practices and areas for improvement, and developed a list of recommendations for the Interagency Coordinating Committee (ICC), which oversees the SFS program.

By the end of 2005, the SFS program will have produced about 350 graduates. The Office of Personnel Management provided a breakdown of current student enrollment as of August 1, 2003 (see Appendix 2) (some PIs acknowledged they had incoming students who were not yet registered with OPM). A total of 301 students were registered at 19 universities; one student is enrolled in a doctoral program while the majority are seeking master's degrees. Of 55 graduates, as of August 2003, 30 have been placed in full-time positions, and 17 are awaiting security clearances related to placements. Graduates have been placed at 17 Federal agencies (see Appendix 3) to date, 60–70 percent of placements are related to the National Security Agency (NSA). Two students have not yet been placed, and six have been released from the program without obligation.

Of 35 students expected to graduate in December 2003, 20 have tentative placements. OPM projected that 77 students will graduate between March and May of 2004. In May 2004, 190 students will need internship opportunities to satisfy their program requirements.

III. Actions Taken in Response to Problem

Special Projects to Increase Awareness
Since June 2003, NSF has supported several special projects, most aimed at increasing awareness about the SFS program among potential students and employers:

- Pilot project: Forming Academic Partnerships with Local Federal Activities, a Florida State University effort to hire an individual dedicated to recruiting and placing SFS students in the region. (Award #0342008)
- A workshop to define a National Cyber Defense Exercise Competition, a showcase for SFS students intended to raise visibility of the SFS program, particularly among the Armed Forces community. West Point Military Academy and George Washington University representatives are among those involved in this effort. (Award #0342739)
- Federal Cyber Service Initiative: Computer Forensics Curricula. (Award #0342296)
- Regional information assurance (IA) workshop for underrepresented groups. (Award #0342794)
- IA educational support program: workshop for course development and more. (Award #0343292)
- Partners in Securing Cyberspace through Education and Service Capacity Building. (Award #0338494)
- A summer workshop for beginning information systems security educators. (Award #0341259)
- Trustworthy Computer Systems: Undergraduate Research Experience. (Award #0342038)

Students Awaiting Security Clearances
The program has limited funds available to support graduates who have not been placed or are waiting for security clearances. So far, seven institutions have requested such funds, and the total has reached about $170,000. NSF emphasized that these support funds are limited, and PIs should continue to seek placement opportunities for graduates as soon as possible after graduation.

Program Rules Revised
New solicitations are to be published three months before the January 2004 deadline. The fiscal year 2004 SFS program solicitation includes the following revised language:

> It is important for all PIs and SFS scholarship students to understand that OPM expects and needs active participations on your part to help assist with both summer internship and permanent placement at a Federal agency. The program has a (as near as possible to) 100 percent placement goal, which can only be reached through active cooperation between all parties involved. Material to assist PIs in this process developed at a recent NSF workshop dealing with this issue is available. Contact the lead program director for SFS for details.

NSF and OPM Raise Awareness About the Program

NSF, OPM, and a number of SFS Principal Investigators and their students have given numerous presentations and attended numerous conferences to raise awareness about the SFS program among potential employers. They have addressed Department of Defense (DOD) Computer Forensics Laboratory representatives, as well as the Committee for National Security Systems, which involved representatives from 23 Federal agencies. Upcoming presentations include the NSF/National Institute of Standards and Technology Invitational Workshop on Cybersecurity: Workforce Needs, Assessment, and Educational Innovation and the Interagency Resources Management Conference. Presentations will be provided as frequently as feasible and suggestions for opportunities to reach gatherings of potential employers are welcome.

IV. Recommendations

Immediate Action Items to Address Short-Term Issues

OPM Related:

- OPM is arranging for a demonstration to show PIs what agency officials see when they run student searches.

- OPM staff and PIs are exploring other possible implementations (e.g. the University of Tulsa and Florida State University are both working on projects to address this issue) to gather information on such "best practices" and disseminate them among PIs and participating agencies.

- OPM staff is developing a fact sheet for Federal human resource personnel about hiring SFS students. (http://www.sfs.opm.gov)

NSF Related:

- NSF will consider funding experimental programs that address improving the SFS student placement process.

- NSF will evaluate information about students who were released from the SFS program (i.e., not placed) to determine if any trends can be identified to enhance the recruitment, application, selection, or placement process.

- NSF will explore the feasibility, costs, and desirability of performing a National Agency Check for all scholarship students. Ideally, the National Agency Check will take place as early as possible in the process, for example, when student nominations are sent to OPM for final selection.

- NSF will consider using the results of publicity efforts (successful student placements and testimonials from agency representatives) to initiate a marketing campaign. In budgeting for the upcoming year, NSF will consider a marketing campaign to launch as early as December 2003.

- As other entities evaluate the assumption that the government is facing a critical shortage of individuals trained in IA, NSF will report the results back to the SFS program participants and take into account the relationship of the findings to the program.

- NSF will consider including in the program solicitation a requirement that PIs design and implement their own feedback mechanisms for students who are placed.

Action Items to Address Long-Term Selection and Placement Issues

NSF Related:

- The program should consider extending the potential length of available scholarships to allow more than two years of funding, and consider removing the requirement that scholarship students attend school on a full-time basis.

- The program should evaluate what changes would be needed to better accommodate student co-op opportunities in lieu of internships.

- The program should consider funding an internship coordinator position at OPM for SFS students.

- The program should assess the perceived level of need for IA personnel at Federal agencies in the coming years as well as the available positions. If the assessment suggests insufficient Federal placement opportunities will be available for SFS students, the program should consider allowing students to meet the service requirement by taking IA jobs at government-owned, contract-operated facilities, such as the national laboratories, and at the state and local government levels. The program should also consider whether faculty positions in IA could be considered as placement opportunities that meet the service requirement. If further placement opportunities are needed, consider other Federal contractor positions.

- The program should evaluate the post placement survey conducted by the Information Assurance Scholarship Program (IASP) program and consider whether a similar survey should be implemented for SFS students.

- The program should consider a mechanism to enable the current and incoming SFS/NSF program directors to work together (for as long as six months) before the incoming SFS/NSF program director takes over the position. Participants felt that continuity of management at this point in the program is highly desirable.

- As much as possible, the program should strive to maintain consistent or comparable guidelines for length of Federal employment commitment between the IASP and SFS programs.

- The program should consider requiring proposals to include (in an appendix) matriculation data that document the existence of courses, etc.

- NSF should consider including on the review panel individuals with knowledge about the Centers of Academic Excellence.

Principal Investigator Related:

- To identify a larger pool of potential scholarship students, PIs may wish to consider personalized recruitment efforts.

- To enhance recruitment efforts and to attract more women and minority students to the program, PIs may wish to consider other NSF grant opportunities (such as the Course, Curriculum, and Laboratory Improvement program, which could support outreach activities to high school and community college students, and the Advanced Technological Education program, which partners with community colleges).

Potential Short-Term Approaches to Internship and Job Placement

Principal Investigator Related:

- Hold a job fair for SFS students to meet with representatives of Federal agencies. Invite representatives of Federal agencies to visit your school (as early as possible in the academic year) and meet with SFS students. Ideally, representatives should include both those in the areas of technical focus as well as those with authority to hire.

- Gather representatives of Federal agencies and present profiles of available SFS students.

- Meet with Federal agency representatives who have possible hiring influence, explain the SFS program, present student résumés, arrange for private meetings with students, and talk with human resources representatives from the agency about hiring SFS students.

- Aggressively seek out potential internships with Federal agencies; if the agency can accommodate an internship but is unable to fund it, contact NSF for a one-time funding solution (as a last resort).

- If an agency is willing to provide a paid internship but has difficulty putting an intern on its payroll, consider an arrangement whereby the agency makes a grant to or contract with the university, and the university pays the student intern. This arrangement allows for leeway among the parties involved.

- Contact currently placed students; invite them to represent their agency at a job fair or have them identify a contact person in the agency with hiring authority who may be interested in SFS students.

- Direct agencies that have recruited through the IASP program to check the SFS database if they need more interns.

- Consider publicity opportunities. Send details of successful placements to NSF and identify representatives of Federal agencies who will give testimonials about the high quality of SFS students.

- Present details of successful placements and testimonials from employers to your university's PR office; ask the PR staff to publicize in local papers, students' hometown papers, and alumni magazine.

- Ask OPM to promote SFS students for internship positions related to IA but not necessarily denoted as 2210.

- Network among each other, PI to PI. If you have contact with an agency representative who is interested in the program but none of your students meet the specific needs of the job, refer the representative to other PIs.

- Consider small-scale publicity/marketing efforts, such as including text on the back of business cards or on individual faculty or department websites promoting the SFS program.

NSF Related:

- NSF will work with the NSF public relations office to place stories promoting SFS in national media outlets.

APPENDIX 1: Meeting Participants

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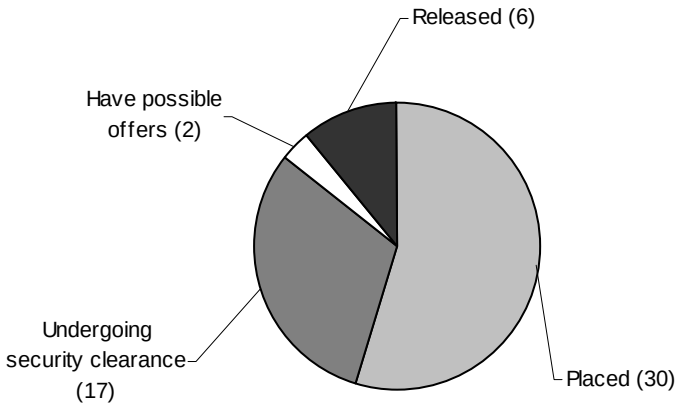
APPENDIX 2: SFS Program Statistics
(as of August 26, 2003)

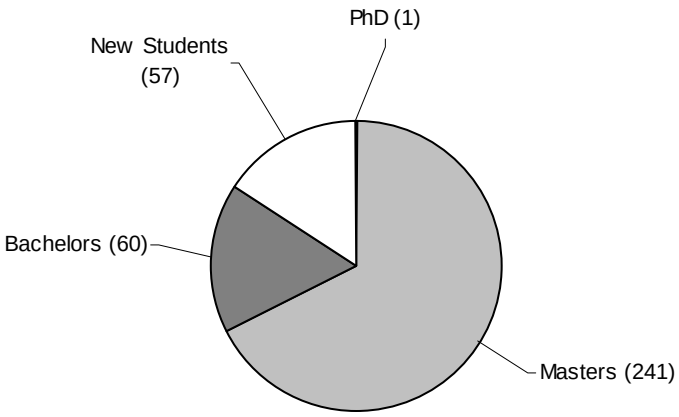
Participating Institutions:	Number of Students
Carnegie Mellon	45
Florida State University	5
Georgia Tech	19
George Washington University	9
University of Idaho	34
Idaho State University	0*
Iowa State	34
Jackson State	2
Johns Hopkins University	9
Mississippi State	13
Naval Postgraduate School	38
University of Nebraska	0*
New Mexico Institute of Mining & Technology	11
University of North Carolina	35
Norwich	2
Polytechnic University	24
Purdue University	19
Syracuse	10
University of Tulsa	48
TOTALS	**357**

***Idaho State University and University of Nebraska have not submitted selections for Fall 2003**

SFS Graduates as of September 2003



Degrees Obtained by SFS Students



- **35 Students to Graduate in December 2003**
  - 20 tentatively matched
  - 15 not matched
- **77 Students will graduate between March 2004 and May 2004**
- **190 Students will need an internship in May 2004**

APPENDIX 3: Agencies That Have Hired SFS Students

The following agencies have placed SFS students either in an internship or for post-graduation employment:

1. CIA (Internship)
2. Department of Agriculture
   - CSREES (Permanent)
3. Department of Army
   - Corps of Engineers (Internship)
4. Department of Commerce
   - NIST (Internship/Permanent)
   - CIO (Permanent)
   - International Trade Administration (Internship/Permanent)
5. Department of Defense
   - Defense Computer Forensics Lab (Internship/Permanent)
   - NSA (Internship/Permanent)
6. Department of Energy (Internship)
7. Department of Homeland Security
   - FedCirc (Permanent)
8. Department of Housing and Urban Development
   - OIG (Internship/Permanent)
9. Department of Justice
   - Federal Bureau of Investigation (Internship/Permanent)
   - CIO (Permanent)
10. Department of Navy
    - Naval Oceanographic Agency (Internship)
11. Department of Transportation
    - Federal Aviation Administration (Internship)
    - Coast Guard (Internship)
12. Department of Treasury
    - Treasury Inspector General for Tax Administration (TIGTA) (Internship)
    - Secret Service (Internship/Permanent)
    - Internal Revenue Service (Internship)
13. Department of Veterans Affairs
    - OIG (Internship)
14. Federal Deposit Insurance Corporation (FDIC) (Internship/Permanent)
15. General Accounting Office (Permanent)
16. National Science Foundation (Internship)
17. NASA
    - Goddard Space Center (Internship/Permanent)
    - HQ East Coast (Internship)
    - Propulsion Lab (Internship)
    - OIG (Internship)

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