

Office of Integrative Activities (OIA): *PROGRAMS and RESPONSIBILITIES*



Dr. Nathaniel G. Pitts
Director, Office of Integrative Activities



Email: npitts@nsf.gov ~ Tel. 703-292-8040 ~ internet: www.nsf.gov/od/oia

Overview

- The mission of the Office of Integrative Activities
- How we use selected programs to effect our mission
 - ✓ Science and Technology Centers: Integrative Partnerships
 - ✓ Major Research Instrumentation
- Possible future collaborations
- NSF's use of rotating program officers



The Mission of the Office of Integrative Activities

- To experiment at the frontiers of science and engineering research and education;
 - ✓ To experiment with the management of research;
 - ✓ To foster improvements in the internal (NSF) and external management of the research enterprise;
- To perform other duties as assigned by the Office of the Director.



History of the Science and Technology

Centers Program

- First STC Competition -- 1987
- Two competitions in late 80's for STCs yielded 25 centers
- Evaluation of the program against its goals and the NSF strategic plan
- 1996 the National Science Board approved New Program Competition every 3 years with a final steady-state budget of about \$75M



Science and Technology Centers: Integrative Partnerships

- To support research and education of the highest quality;
- To exploit opportunities in science, engineering and technology where the complexity of the research agenda requires the advantages of scope, scale, change, duration, equipment and facilities, that a Center can provide;
- To support frontier investigations at the interfaces of disciplines, and/or fresh approaches within disciplines;
- To engage the Nation's intellectual talent, robustly drawn from its full human diversity, in the conduct of research and education activities;
- To promote organizational connections and linkages within and between campuses, schools and/or the world beyond (state, local, federal agencies, national labs, industry, international);
- To focus on integrative learning and discovery and the preparation of U.S. students for a broad set of career paths; and
- To foster science and engineering in service to society especially with respect to new research areas, promising new instrumentation and potential new technologies.



STC: Evaluation Criteria

- **Standard Merit Review Criteria:**
 - ✓ What is the intellectual merit of the proposed activity?
 - ✓ What are the broader Impacts of the proposed activity?
- **Additional Merit Review Criteria specific to the STC Programs**
 - ✓ Integration of research and education.
 - ✓ Integration of diversity into NSF programs, projects, and activities.
 - ✓ Value of the center-mode to research, education, and knowledge transfer.
 - ✓ Integrative nature of the proposed center.
 - ✓ Leadership, management plan, impact of institutional support, and budget.



Class of FY 2000 STC Awards

- **Cornell University**
Nanobiotechnology
- **Georgia State University**
Behavioral Neuroscience
- **University of Arizona**
Sustainability of Semi-Arid Hydrology and Riparian Areas
- **University of California Santa Cruz**
Adaptive Optics
- **University of North Carolina Chapel Hill**
Environmentally Responsible Solvents and Processes



Class of FY 2002 STC Awards

- **Boston University**
Integrated Space Weather Modeling
- **University of California Davis**
Biophotonics Science and Technology
- **University of California Los Angeles**
Embedded Networked Sensing
- **University of Illinois Urbana Champaign**
Advanced Materials for Water Purification
- **University of Minnesota Twin Cities**
National Center for Earth-surface Dynamics
- **University of Washington**
Materials and Devices for Information Technology Research



Commercialization of NSF-Supported Research

- We support university-based research and education
- The universities have the ability to set their own policies about commercialization
- Require our centers to make formal agreements with their industrial partners
- Patents, licenses, disclosures, intellectual property – responsibility of the institution
- Knowledge transfer is a contact sport
- Education products are most valuable



Lessons Learned Through Intermediate Evaluation

- Ensure NSF pays close attention to the changes in the STC leadership and management team;
- Ensure that the external advisory bodies of the Center meet routinely, and that their advise is heard both at the Center (institution) and at NSF;
- Have annual site-visits but only one (5th-year) critical review that could terminate the center;
- Ensure simplicity and timeliness of a database that allows reviewers to access the progress of Centers in a given area;
- Awards are for \$1.5M to \$4.0M;
- Frequency of competitions...2-3 years;
- NSF technical coordinators must be senior, permanent staff;
- A shared governance between specific research directorates and the Office of Integrative Activities for managing the Centers and the competitions for new centers;



Lessons Learned Through Intermediate Evaluation (continued)

- Ensure organizational structures to resolve management issues;
- Procured an outside contractor to ensure strategic planning and communications among the various Centers; and for the development of a National Network of Center Directors;
- Extensive use of the Cooperative Agreement instrument to ensure clarity of issues of significant magnitude;
- Strategic planning before awards;
- Intellectual property rights issues;
- Ethics training;
- Addition of specialized communications equipment;
- Succession planning.



Major Research Instrumentation- Purpose

- The MRI program is designed to increase access to scientific and engineering equipment for research and research training in U.S. academic institutions.
- The MRI program seeks to improve the quality and expand the scope of research and research training in science and engineering, and to foster the integration of research and education by providing instrumentation for research-intensive learning environments.
- The MRI program encourages the development and acquisition of research instrumentation for shared use across academic departments, among research institutions, and in concert with private sector partners.



MRI: Evaluation Criteria

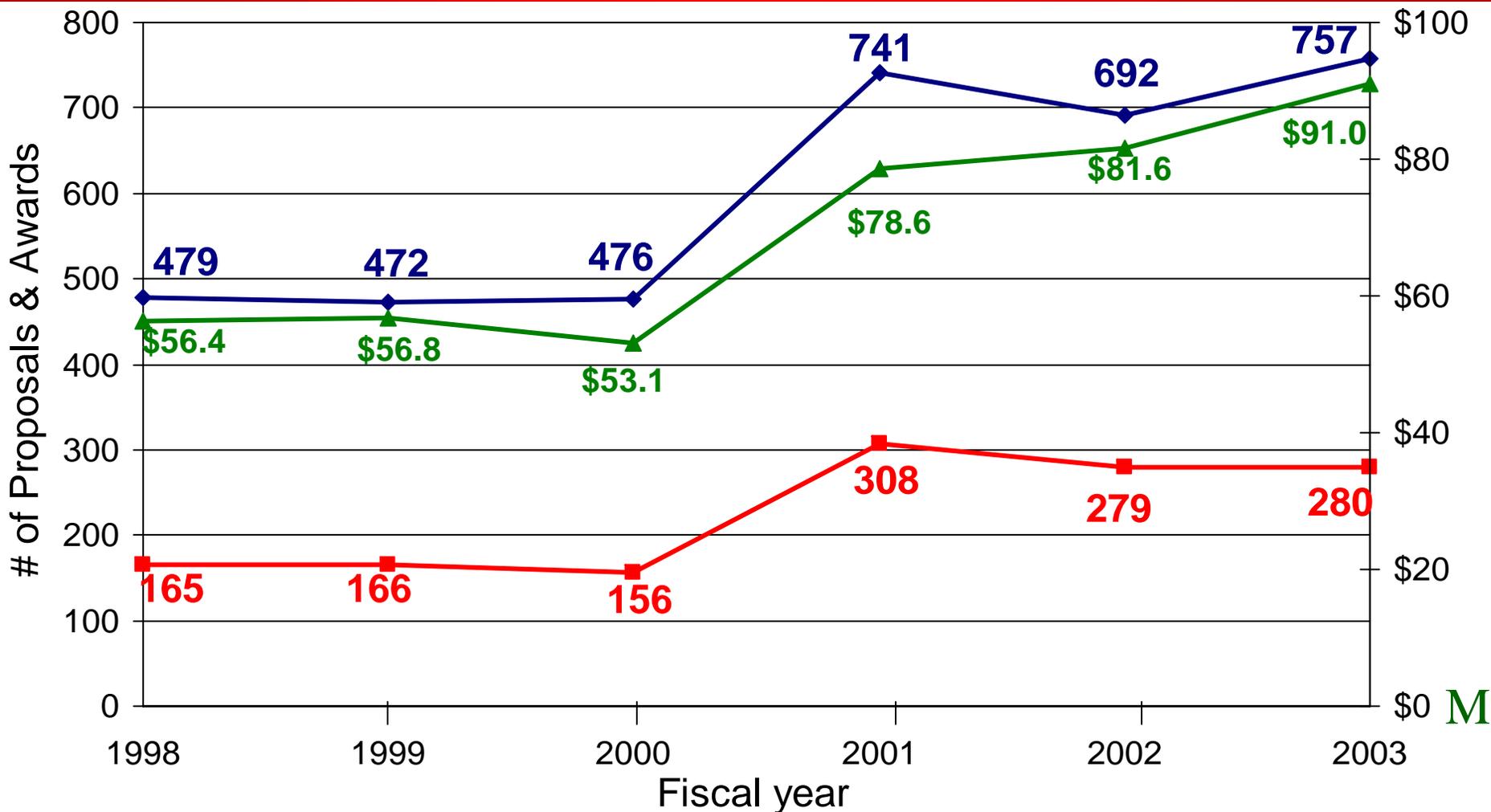
- Intellectual merit
- Broader impacts of the proposed activity

Additional Considerations:

- Plans for using the new research capability in teaching, training or learning;
- Institutional/ departmental infrastructure and expertise to make effective use of the new or enhanced instrumentation;
- Plan for the management and maintenance of the instrumentation;
- For development proposals, instrument uniqueness and usefulness to the scientific community



MRI Proposal and Award Information by Fiscal Year (FY 1998-2003)



◆ Proposals
 ■ Awards
 ▲ Dollars (in millions)

Program to Program Issues

- ✓ Evaluation of partnerships/collaborative activities
- ✓ Collaboration on general information flow across borders (Directors Network - link)
- ✓ Collaboration on management practices with center-like activities
- ✓ Communication regarding tendencies relevant to our enterprise (i.e. ethics in science and engineering, core values)
- ✓ Mutually beneficial exchange programs.



Rotating Program Officers at NSF

- ✓ From universities, colleges, non-profits, museums, government
- ✓ 30-50% of our program (PhD) staff
- ✓ Keeps our knowledge base fresh, closer to the cutting edge
- ✓ Turn-over...1-4 years in duration
- ✓ Changes the biases in the system
- ✓ Management challenges

