

# Workshop on the Evaluation and Monitoring Procedures of INFM Research and Development Centers

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# Overview

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## Review Methods Adopted and Lessons Learned in the Evaluation of NSF Science and Technology Centers

### FOCUS

- Originating review process
- Results of intermediate evaluations
- Lessons learned...continues



# Vision

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**The STC Program supports  
innovation in the integrative  
conduct of research, education  
and knowledge transfer  
through partnerships.**



# History

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- 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.
- 1998 competition yielded 5 new centers.
- 2000 competition yielded 6 new centers.



# The Science and Technology Centers Program

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## Three main thrust areas:

- Highest quality research
- Integration of the research with education
- Knowledge (technology) transfer through partnerships



# The New Program

## Science and Technology Centers (STC): Integrative Partnerships

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- 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.



# Basic Center Organization

- Basic research and education theme;
- Based at an academic institution, with partnering institution and/or industries;
- Has an external advisory body (without conflicts) composed of interested parties;
- Has one Center Director, as well as someone responsible for detailed center management, an associate responsible for education activities, and an associate responsible for knowledge transfer;
- Has a maximum of 10 years, with a 2-year phase-out period (years 9 and 10);
- May be terminated in year 5 if not successful;
- Has about \$4.0M of NSF support but other support from partners.



# Originating Review Process

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## → Merit Review

- ✓ Expert Panels (peer review)
- ✓ Pre-proposals - concept paper

## → Selection Process

- ✓ Full Proposals
- ✓ Site-visits
- ✓ Blue Ribbon Panel



# 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 Program:

- ✓ 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.



# Generic Issues Brought Up During the Review Process

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- (1) Balance of research and education
- (2) Time commitment of principle investigators
- (3) Management across universities
- (4) Multiple center proposals from the same institution
- (5) Proposal from prior institutions or investigators
- (6) Research vs. management issues



# 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 (5<sup>th</sup>-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 (continues)

- 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.



# Where are we now?

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- Graduate 23 Centers after 11 years;
- 5 Centers — 2 years old;
- 6 Centers — to be active by August;
- Next Competition to start in 2003.



# Management Issues

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- Strategic planning at Centers
- Training of NSF Technical Coordinators
- Cooperative Agreement fine tuning



# Site Visit

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- Objective is to determine strengths and weaknesses in the proposed center
- The external site visit team writes a joint report during the site visit
- The report does NOT make a recommendation about funding the proposal; instead, it addresses issues as outlined in the report structure
- The PIs will have an opportunity to respond to the report by a 10 page addendum



# Generic Site Visit Agenda

## Day 1

7:00 am-8:00 am: Travel to Site Review Location,  
breakfast

8:00 am-12 noon: Introductions  
STC Rationale and Goals  
Research

**(10:00 am-10:20 am): NSF Executive Session/Break**  
Research  
Facilities and Physical Infrastructure

**(12 noon - 12:30 pm): NSF Executive Session**

12:30 pm-1:30 pm: Lunch - Discussion with students  
1:30 pm-3:00 pm: Integrating Research and Education  
Developing Human Resources

**(3:00 pm-3:30 pm): NSF Executive Session/Break**

3:30 pm-4:15 pm: Partnerships and Knowledge  
Transfer  
4:15 pm-5:15 pm: Administration and Management  
Plans  
5:15 pm-5:30 pm: Wrap-up

Break, feedback to PI, working dinner

5:15 pm-6:30 pm: Break

## Day 2

7:00 am-8:00 am Travel to Site Visit Location,  
breakfast

8:00 am-9:00 am Meeting with Administrators  
Only/Institutional Support

9:00 am-10:00 am Summary/Proposing team  
respond to Critical Feedback

10:00 am-4:00 pm Site Review Team prepares  
Site Visit Report  
(Working lunch provided)



# Format of the Site Visit Report

## *Evaluation of Strengths and Weaknesses for Each Section*

(Length: 8-10 pages)

- Executive Summary
- Intellectual Merit of the Proposed Center Research
- Intrinsic Merit of the Education, Training & Human Resource Development
- Integrative Nature of the Proposed Center
- Partnerships and Knowledge Transfer
- Leadership and Management Plan
- Shared Experimental Facilities (if appropriate)
- Impact of Institutional Support and Budget
- Institutional and Other Sector Support for the Center

