NSF IN A CHANGING WORLD

Executive Summary of The National Science Foundation's Strategic Plan

The National Science Foundation: Investing in the Future

Since its inception in 1950, the National Science Foundation has served the Nation by investing in research and education in science, mathematics, and engineering. Over the years NSF's investments in research and education have helped the Nation achieve an unmatched capability in scientific and technical fields — a capability that has taken on increasing importance as we approach the 21st century.

What is the payoff from this investment? Tools for navigating the information superhighway...the enzymes needed to crack the genetic code...the discovery of humankind's earliest ancestors...the micromachines that control the airbags in our cars...new medical devices... teaching tools that bring cutting-edge science and technology to our classrooms...and countless other benefits and breakthroughs. Virtually every day, the scientists, engineers, and educators supported by the National Science Foundation fortify the base of advanced knowledge that fuels prosperity and social progress in our nation.

Today, NSF's role as a leader and steward of the Nation's science and engineering enterprise faces new tests — promoting new approaches to research, education, and workforce training that reach all Americans; responding to the increased importance of science and engineering in many aspects of daily life; modernizing the Nation's research infrastructure, and adapting to a constrained budget environment.

This strategic plan provides a framework for moving forward in this time of change. It underscores the advantages that result from advances in understanding, and it emphasizes the principles that

have guided the Foundation from its beginning — excellence, openness, stewardship, and impact on society.

The plan is an invitation to the research and education communities to respond to a rapidly changing world. It emphasizes a set of principles, goals, and core strategies for science, mathematics, and engineering that are aimed at developing a greater sense of interdependence between the research and education communities and the public. Only by succeeding in this partnership can we realistically expand the promise of science and more fully engage the public in its future course.

NSF's Goals: Setting a True Course

- Enable the U.S. to uphold a position of world leadership in all aspects of science, mathematics and engineering.
  - This goal grows from the conviction that a position of world leadership in science, mathematics, and engineering provides the Nation with the broadest range of options in determining the course of our economic future and our national security.

- Promote the discovery, integration dissemination, and employment of new knowledge in service to society.
  - This goal emphasizes the connection between world leadership in science and engineering on the one hand, and contributions in the national interest on the other.

  - It provides the impetus for setting fundamental research priorities in areas that reflect national concerns.

- Achieve excellence in U.S. science, mathematics, engineering, and technology education at all levels.
  - This goal is worthy in its own right, and also recognizes that the first two goals can be met only by providing educational excellence.
  - It requires attention to needs at every level of schooling and access to science, mathematics, engineering, and technology educational opportunities for every member of society.

Meeting the Goals: Core Strategies

Develop intellectual capital: Seek out and support excellent activities among groups and regions that traditionally have not participated as full stakeholders in science, mathematics, and engineering including women, minorities, and individuals with disabilities.

Strengthen the physical infrastructure: Modernize existing facilities and instruments and plan for future needs, including taking full advantage of the capabilities of emerging information technologies.

Integrate research and education: Infuse education with the joy of discovery and an awareness of its connections to exploration through directed inquiry, careful observation, and analytic thinking for students at all levels.

Promote partnerships: Continue to collaborate with the academic community, industry, elementary and secondary schools, other Federal agencies, state and local governments, and comparable organizations worldwide. NSF's approach to partnerships emphasizes shared investments, shared risks, and shared benefits.

The NSF Vision

The National Science Foundation is a catalyst for progress through investment in science, mathematics, and engineering. Guided by its longstanding commitment to the highest standards of excellence in the support of discovery and learning, NSF pledges to provide the stewardship necessary to sustain and strengthen the nation's science, mathematics, and engineering capabilities and to promote the use of those capabilities in service to society.

NSF is confident in the power of connections and partnerships to deliver the greatest return on this investment. It will exercise leadership in strengthening linkages among the many individuals, institutions, and organizations that are committed to progress in research and education. It will also dedicate itself to fostering the natural connections between the processes of learning and discovery.

At the core of this vision is a dynamic and diverse community of researchers, educators, and institutions who work in partnership with NSF. This community shares with NSF a commitment to discovery and learning, to enhancing the nation's capacity for excellence in research and education, and to the use of science, mathematics, and engineering for the betterment of humanity.

Making It Happen: Approaches to Implementation

To meet the challenges of the changing world, NSF will use a variety of approaches in pursuing its goals. NSF's future will see support of teams, centers, and consortia as well as individual investigators; focused proposal solicitations as well as unsolicited proposals; increased emphasis on integration of knowledge; and increasing reliance on partnerships.

Offer Different Modes of Support — The needs and opportunities of the science and engineering enterprise come in all shapes and sizes. The challenge to NSF is to meet these needs and pursue these opportunities in ways that are appropriate in each case. Examples include: individual investigator support, groups of specialists, Centers, small grants for short-term exploration, specialized instruments, facilities, dedicated research platforms that are beyond the size and scale available to individuals or small groups.

Improve Agency Efficiency and Accountability — As the steward for public investments in science and engineering research and education, NSF is committed to improving its organization performance. Merit review with peer evaluation is the core of NSF's decision making process. Developing credible performance measures and assessment methods is a critical component of NSF planning. Accountability for public funds will demand assessment of the effectiveness of agency operations and the return on the Foundation's investment strategies.

Promote Intellectual Integration — Intellectual integration brings the knowledge and skills from different disciplines to bear on com-

plex problems. NSF will encourage intellectual integration among fields of science and between research and education missions.

Accelerate Knowledge Transfer — NSF's knowledge transfer activities are focused on building working relationships at the research project level between academia, industry, and other potential users, such as local and State governments. Reflecting changing national priorities, there has been a gradual shift so that NSF, while increasing its support for fundamental research, has also assumed a greater concern with technology and the transfer of knowledge to industry. NSF has established programs that are actively oriented toward knowledge transfer, such as multidisciplinary centers, Small Business Innovation Research (SBIR), and Small Business Technology Transfer (STTR) programs.

Enduring Strength in a Time of Change

In strengthening NSF's position, the plan reaffirms certain core values and commitments that form the cornerstone of the agency's tradition of success. NSF remains committed to supporting and promoting:

- The most creative ideas and capable researchers, selected through merit review, including peer evaluation, of investigator-initiated proposals;
- Pathbreaking research at many points on the frontiers of science, mathematics, and engineering;

- Excellence in education and in the development of human resources in science, mathematics, and engineering — building upon the natural linkages between education and research;
- The effective discovery, dissemination, integration, and application of new knowledge through cooperation with industry, other Federal agencies, and public and private organizations concerned with science and technology.
- A partnership of trust built with America's scientists, mathematicians, and engineers.

These core values and commitments establish a strong foundation for NSF — one that is rooted in the agency's tradition of success while also underpinning its future leadership.

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