When completed, the Large Hadron Collider (LHC), currently under construction at the CERN Laboratory in Geneva, Switzerland, will be the world's most powerful high energy physics accelerator. Research at the LHC is expected to lead to a new understanding of science at the smallest scales ever investigated. For example, it will enable a search for particles, predicted by a powerful theoretical framework known as supersymmetry, which will provide clues to how the four known fundamental forces of nature evolved from different aspects of the same "unified" force in the early universe. The LHC project is a large, complex, and expensive instrumentation project that involves the collaboration of an international consortium of more than twenty-five nations. The total estimated cost of the project is $6 billion, of which NSF is contributing $81 million. The NSF contribution supports the construction of components for the ATLAS and CMS detectors, two of the four detection devices that are being built for the LHC and the largest particle physics detectors ever constructed. LHC construction began in 1999 and is expected to be completed in 2006. In this photo, the outer shell of the vacuum tank has been welded and inserted into the central yoke of the CMS detector.

EXPANDING FRONTIERS

For more than fifty years, the National Science Foundation (NSF) has been the steward of America's science and engineering enterprise. Although NSF represents only 4 percent of the total federal budget for research and development, it accounts for one-fifth of all federal support for basic research and 40 percent of support for basic research at academic institutions, excluding the life sciences. Despite its small size, NSF has an extraordinary impact on scientific and engineering knowledge and capacity.

During NSF's five decades of leadership, groundbreaking advances in knowledge have reshaped society and enabled the United States to become the most productive nation in history. The returns on NSF's strategic investments in science, engineering, and mathematics research and education have been enormous. Much of the sustained economic prosperity America has enjoyed over the past decade is the result of technological innovation—innovation made possible, in large part, by NSF support.

Realizing the promise of the 21st century will depend in great measure on the investments that NSF makes in the years to come. The events of September 11 demonstrated that we live in a society defined by and dependent on science and technology. Solutions to the problems arising in the aftermath of those tragic

events—airline security, bioterrorism, failure of communication links, threats to our food and water supplies, and damage to the nation's infrastructure—depend on scientific and technical knowledge. There has been no other time in the postwar period when NSF's investments to catalyze progress in science and engineering have been more critical to securing our future.

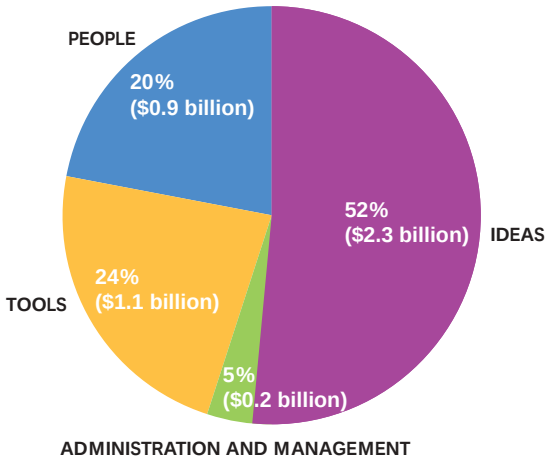
People. Ideas. Tools.

To promote the progress of science, NSF invests in three strategic areas.

People: Facilitating the creation of a diverse, internationally competitive, and globally engaged workforce of scientists and engineers and well-prepared citizens is NSF's first priority. To achieve this goal, NSF supports improvement efforts in formal and informal science, mathematics, engineering, and technology education. Across its science, mathematics, engineering, and technology research and education programs, NSF works to enhance the diversity of our science and engineering workforce. The Foundation provides support for almost 200,000 people, including students, teachers, researchers, post-doctorates, and trainees.

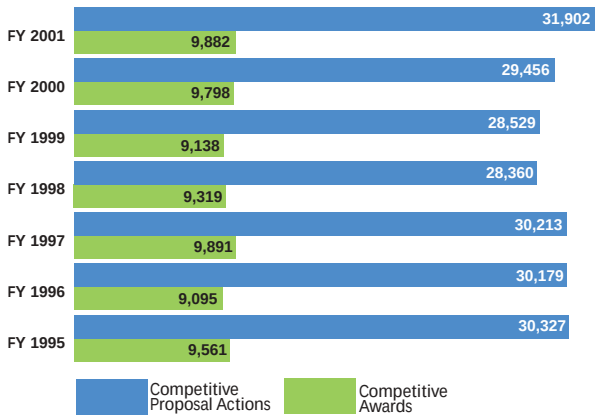
Ideas: Investments in ideas support cutting edge research and education that yield new and important discoveries and promote the development of new knowledge and techniques within and across traditional boundaries. These investments help maintain America's academic institutions at the forefront of science and engineering. The results of NSF-funded projects provide a rich foundation for broad and useful applications of knowledge and development of new technologies. Support for ideas also promotes the education and training of the next generation of scientists and engineers.

FY 2001 BUDGET
$4.46 BILLION



In FY 2001, NSF invested half of its $4.46 billion budget in ideas, and almost that much in people and tools. Only 5 percent of the Foundation's total budget is allocated to administration and management.

NUMBER OF COMPETITIVE PROPOSALS AND AWARDS



NSF funds about one in three proposals each year.

Tools: NSF investments provide state-of-the-art tools for research and education, including instrumentation and equipment, multiuser facilities, digital libraries, research resources, accelerators, telescopes, research vessels and aircraft, and earthquake simulators. These tools also include large surveys and databases as well as computation and computing infrastructure for all fields of science, engineering, and education. Support for these unique national facilities is essential to advancing U.S. research and education.

A Catalyst for Innovation

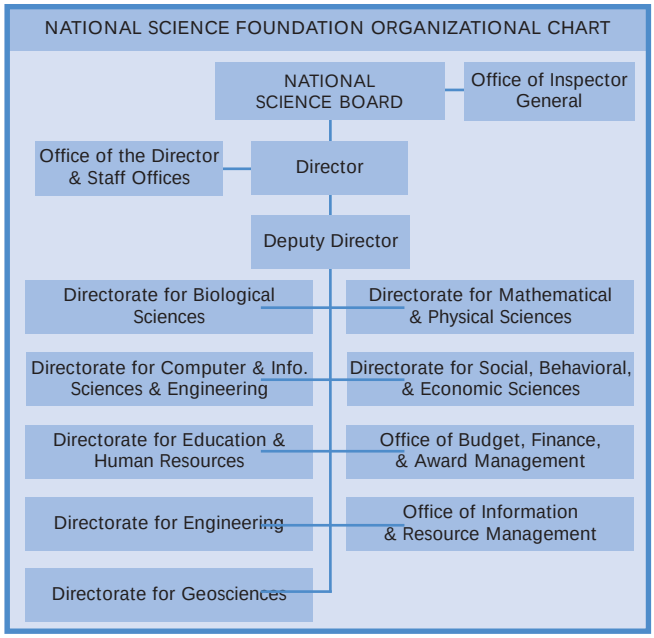
NSF does not conduct research or operate laboratories. Instead, the Foundation is a catalyst—seeking out and funding the best ideas and most capable people, making it possible for these researchers to pursue new knowledge, discoveries, and innovation. Each year NSF receives about 30,000 proposals, of which about one in three is funded. During FY 2001, NSF invested $4.2 billion in promising research and education projects at nearly 2,000 colleges, universities, and other institutions—public and private; state, local, and federal—throughout the United States.

Nearly 90 percent of NSF funding is allocated through a rigorous competitive process that is critical to fostering the highest standards of excellence and accountability—standards for which NSF is known the world over. Each year nearly 40,000 external reviewers from all segments of the science, engineering, mathematics, and education communities help NSF program officers conduct more than 200,000 merit reviews. Reviewers focus on two primary criteria: the intellectual merit of the proposed activity and its broader impacts. Reviewers also consider how well the proposed activity fosters the integration of research and education and broadens opportunities to include diverse participants, particularly from underrepresented groups.

NUMBER OF PEOPLE DIRECTLY ENGAGED IN NSF ACTIVITIES

Senior Researchers	27,601
Other Professionals	9,904
Postdoctoral Associates	5,608
Graduate/Undergraduate Students	56,505
K-12 Students	11,335
K-12 Teachers	83,401
Total	**194,354**

Abolhassan Astaneh-Asl, an NSF-supported researcher from the University of California, Berkeley, recovers critical evidence from the site of the collapsed World Trade Center (WTC) towers. The knowledge obtained from Ground Zero can help prevent future tragedies by enabling construction of buildings more resistant to earthquakes, bombs, and other catastrophic forces. In the wake of the attacks on September 11, NSF quickly funded several studies on the engineering, communications, and psychological implications of those events. In December 2001, a team of scientists from Rensselaer Polytechnic Institute headed to the site of the WTC attacks to study how New York's utility companies worked together to quickly restore water, power, transit, and phone services. A team from Northern Arizona University is studying how individuals respond to collective loss. Results from the study may aid intervention efforts directed at coping with catastrophic loss.



NSF is headed by a director, who is appointed by the President and confirmed by the Senate. The current director, distinguished biologist Dr. Rita R. Colwell, was appointed in 1998 and holds the distinction of being the first woman to head the Foundation. See the Appendix for a detailed description of each directorate and management office and for a list of NSF Executive Staff and NSF Officers.

A twenty-four member National Science Board (NSB) oversees the policies and programs of the Foundation. NSB members—prominent contributors to the science, mathematics, engineering, and education communities—are appointed by the President with the consent of the Senate. The Board also serves the President and the Congress as an independent advisory body on policies related to the U.S. science and engineering enterprise. See the Appendix for a list of National Science Board members.

A Center of Excellence

The White House Office of Management and Budget (OMB) recently lauded NSF as a true center of excellence in government. The Foundation has long been recognized as a model of administrative efficiency for low overhead costs—just 5 percent of its total budget—and the proposal review system, which disseminates tax dollars through a merit-based competitive process to researchers pursuing the frontiers of science. As an example of performance results, OMB noted that eight of the twelve most recent Nobel Laureates were supported by NSF.

As part of the Administration's focus on strengthening performance, OMB developed a management scorecard in the fall of 2001. The scorecard used red, yellow, and green indicators to reflect an agency's performance in each of the President's five government-wide Management Agenda initiatives. OMB noted that NSF received a better baseline evaluation than most other agencies, and, in fact, NSF was the only agency to receive a green indicator—for financial management. NSF was cited as having received clean audit opinions for three consecutive years, with no material weaknesses or reportable conditions. OMB also commended NSF as a federal government leader for E-Government and information technology.

The growing demands on NSF will require the Foundation to further improve its management and administrative processes in the years to come. Over the past decade, the Foundation's budget increased more than 80 percent and its program responsibilities have become more challenging, now including international or multidisciplinary research projects involving partnerships with other government agencies and organizations. However, NSF staffing levels have remained essentially flat. In order to accommodate the increased and more complex workload as well as better serve its diverse and growing customer base, NSF is engaged in an ongoing effort to streamline work processes, invest in systems and infrastructure improvements, and better deploy its human and capital resources.

NSF's pursuit of advanced information technologies to facilitate business transactions with the academic research community has produced impressive results. Virtually all of the more than 30,000 grant proposals received each year are now submitted electronically. NSF is currently the only federal research agency that receives and processes proposals and payments to grantees electronically on a production basis.

NSF is committed to making and implementing effective management, stewardship, and policy and program decisions. The Foundation adheres to the highest standards of management efficiency and integrity and, in its pursuit of excellence and efficiency, assumes a proactive role in meeting its management challenges. Looking ahead, significant challenges to be addressed include accommodating new functions and processes, and an increased workload; better human capital management to sustain a high-performing workforce; increased emphasis on leadership and succession planning; and better oversight, management, and accountability of larger, more complex interdisciplinary program activities and large infrastructure projects. The President's Management Agenda initiatives dealing with Human Capital, Competitive Sourcing, Improved Financial Management, e-Government, and Budget/Performance Integration are high priorities for the Foundation.

President's Management Agenda **Scorecard**

FY 2001 Baseline Evaluation

Initiative	Current Status
Human Capital: NSF received a red because its agency human capital strategy is not integrated into its budget and strategic plans and the agency does not implement succession plans. NSF does use staffing flexibilities well, such as that provided for in the Intergovernmental Personnel Act. NSF is moving expeditiously to develop a Training Academy and to conduct an Organizational Assessment Survey. The agency also will initiate a significant workforce analysis in 2002. The Foundation is developing a five-year administration and management strategic plan to lay out how it plans to address its workforce issues in the coming years.	
Competitive Sourcing: NSF has not launched a viable competitive sourcing initiative. In its 2000 analysis of workforce activities, NSF identified 533 positions as performing commercial functions. NSF has not decided if it will compete any positions at this time. The agency wants to wait until it gets results from its upcoming workforce analysis before it makes a decision on competing positions. At that rate it will be difficult for the agency to meet 2003 competition goals. NSF must develop and submit a competitive sourcing plan to meet near-term goals.	
Financial Management: NSF is a leader in financial management and has met all core criteria for a green rating for financial management. NSF's financial management systems meet federal financial management system requirements and it has received unqualified and timely audit opinions on its annual financial statements. NSF expects to maintain this position.	
E-Government: NSF meets most, but not all, of the standard core criteria for expanding E-Government. All major information technology projects provided sufficient business cases. However, NSF's Government Information Security Reform Act report reflects deficiencies in a number of important areas of security. These concerns include failure to implement appropriate security controls to protect critical information and risk of disruption of essential services. NSF has submitted its corrective action plans and will be reallocating 2002 funds to quickly correct identified problems.	
Budget/Performance Integration: NSF's budget does not tie resources to results, provides limited focus on outcomes, and does not charge the full budgetary cost to individual activities. There are inherent difficulties in integrating the budget with performance, given the long-term nature of research in which results may not occur for ten years or more. Nonetheless, NSF could do more. In spring 2002, OMB and the White House Office of Science and Technology Policy will work with major research agencies to develop criteria for evaluating basic research during the formulation of the 2004 Budget.	

KEY:

- Indicates that the agency has met all of OMB's core criteria for the initiative.
- Indicates achievement of some but not all of OMB's core criteria for the initiative and agency has no "red" conditions.
- Indicates that at least one of the conditions identified by OMB for that initiative is in need of correction.

For a more detailed discussion of the President's Management Agenda, see the Budget of the U.S. Government, FY 2003.