
**The President's FY 2007 Budget Request for
the National Institute of Standards and Technology...**
Part of the President's American Competitiveness Initiative

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Director

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Standards and Technology**
Technology Administration
U.S. Department of Commerce

President's 10-Year American Competitiveness Initiative

- **Announced in the State of the Union address**
- **Doubles, over 10 years, investment in:**
 - NIST laboratory and construction (STRS and CRF)
 - National Science Foundation
 - DOE Office of Science
- **Commits \$50 billion of new funding to these key agencies**
- **Makes permanent and updates the R&D Tax Credit**
- **Increases math and science education (K-12) and increases the number of math and science teachers**
- **Increases worker training and retraining opportunities**
- **Reforms immigration policies to attract and retain the best and brightest from around the world**

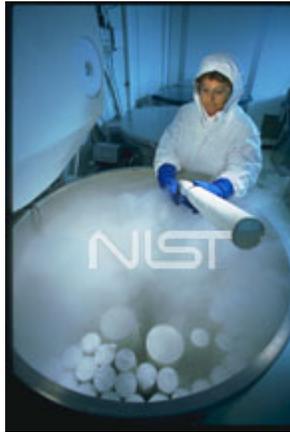
NIST Mission

To promote U.S. innovation and industrial competitiveness by advancing

measurement science,
standards, and
technology

in ways that enhance economic security and improve our quality of life

NIST labs serve a broad customer base...



Environmental
Technologies



Manufacturing



Food and
nutrition



Transportation



Pharmaceuticals



Law
enforcement



Biotechnology



Computer software
and equipment



Construction



Microelectronics

NIST FY 2007 President's Budget Request

(in millions of dollars)

	FY 2005 Enacted	FY 2006 Enacted	FY 2007 Base	FY 2007 Request	Change Over Base
STRS (w/o directed grants)	\$370.0	\$382.9	\$395.0	\$467.0	+\$72.0
Labs	364.6	375.6	387.4	459.4	+72.0
Baldrige	5.4	7.3	7.6	7.6	0.0
CRF (w/o directed grants)	29.6	48.3	35.9	68.0	+32.1
TOTAL (STRS + CRF)	399.6	431.2	430.9	535.0	+104.1
					+24%
ITS	247.9	183.6	183.6	46.3	-137.3
	(MEP/ATP)	(MEP/ATP)	(MEP/ATP)	(MEP)	
Directed Grants	51.7	137.3	N/A	N/A	N/A

NIST Increase in the FY 2007 President's Budget Request

Targeting the most strategic and rapidly developing technologies (+\$45 million)

- Nano Discovery to Manufacture
- Enabling the Hydrogen Economy
- Quantum Information Science – Infrastructure for 21st Century
- Innovations in Measurement Science
- Cybersecurity: Innovative Technologies for National Security

Increasing the capacity and capability of critical national assets (+\$27 million)

- NIST Center for Neutron Research (NCNR) Capacity and Capability
- Synchrotron Measurement Science and Technology

Meeting the Nation's most immediate needs (+\$12 million)

- Manufacturing Innovation through Supply Chain Integration
- Structural Safety in Hurricanes, Fires, and Earthquakes
- International Standards and Innovation: Opening Markets
- Bioimaging: A 21st Century Toolbox for Medical Technology
- Biometrics: Identifying Friend or Foe

NIST facilities improvement plan (+\$20.1 million)

- Design and renovation of 2 buildings in Boulder, CO
- Safety, Capacity, Maintenance and Major Repairs
- NCNR initiative mentioned earlier includes construction funds

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Enabling Nanotechnology from Discovery to Manufacture (+\$20 million)

- **Nanotech market predicted to exceed \$1 trillion by 2015**
- **NIST brings:**
 - multidisciplinary measurement expertise
 - world-class Advanced Measurement Lab
 - national user facility experience
- **Expand the Center for Nanoscale Science and Technology (CNST)**
 - work with industry, universities, and other agencies to bridge the gap between science and production
- **Expand NIST research efforts to support industry through nanoscale measurement science and standards**

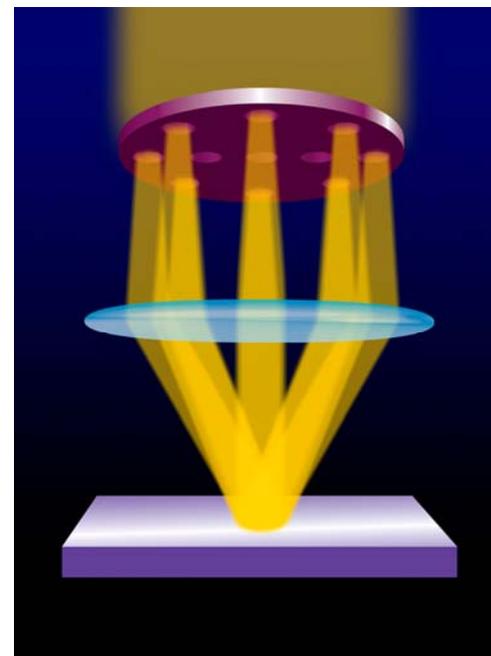


Illustration by Beanie Young

Enabling the Hydrogen Economy (+\$10 million)

■ Hydrogen fuels benefits

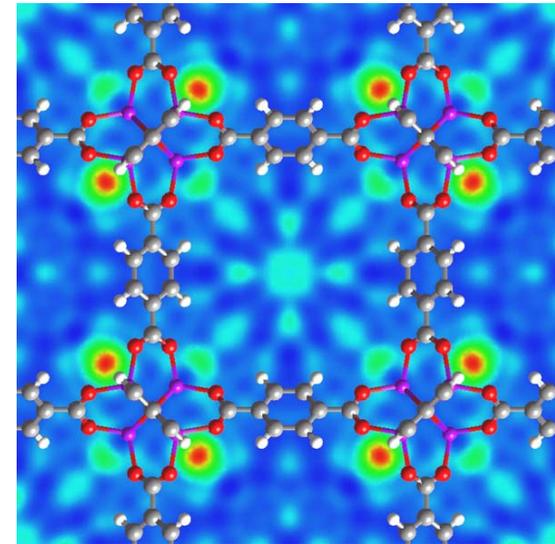
- reduced dependence on foreign energy sources
- lower environmental impact

■ NIST brings:

- 50 years of technical expertise
- Congressional mandates for weights and measures, pipeline safety

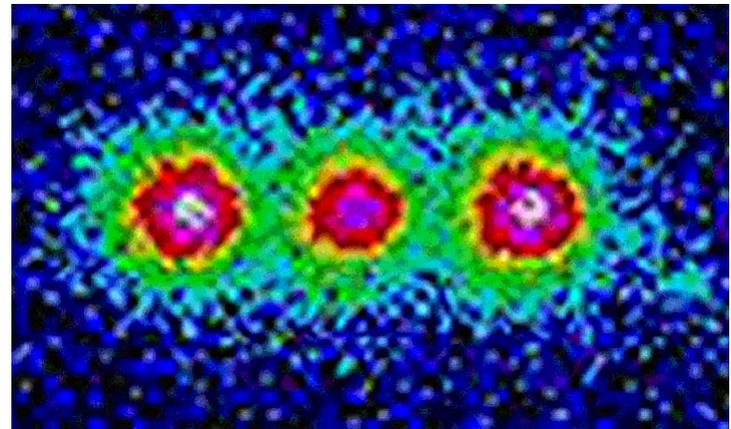
■ NIST will:

- improve efficiency, durability, manufacture of hydrogen fuel cells
- develop standards for pipeline safety and reliability
- develop standards, calibrations for equitable trade of hydrogen



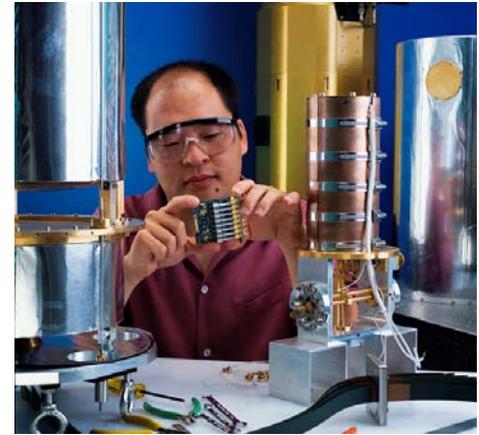
Quantum Information Science – Infrastructure for 21st-Century Innovation (+\$9 million)

- **Revolutionary potential, ultrapowerful computers, “unbreakable” code to protect financial transactions**
- **NIST is a world leader in the field**
 - world-renowned scientists, including three Nobel laureates
- **NIST will**
 - expand research on quantum information
 - develop new measurement tools and methods
 - support a Joint Quantum Institute with a university and the National Security Agency



Innovation in Measurement Science (+\$4 million)

- Innovation incubator
- Supports high-risk, leading-edge NIST research that anticipates industry's needs
- Launched NIST expertise in quantum information science, fuel cell science, three-dimensional chemical imaging, for example
 - All three NIST Nobel laureates had research funded by this program
- Competitive program to fund multidisciplinary work with greatest potential for fostering innovation



Cyber Security: Innovative Technologies for National Security (+\$2 million)

- **Critical to nation's productivity and infrastructure (transportation, financial systems, power grids, etc.)**
- **NIST has recognized technical expertise and statutory assignments**
 - encryption standards work estimated to have saved industry \$1 billion
- **Will develop measurement science and technologies**
 - identify and address vulnerabilities in real time
 - assess effectiveness of cyber security controls
 - mitigate attacks



photo courtesy Corbis

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NIST Center for Neutron Research Expansion and Reliability Improvements (+\$22 million, STRS+CRF)

- U.S. neutron facilities can't meet current demand

- Neutrons offer unique benefits

- protein structure/function
- trace chemical analysis



- NIST Center for Neutron Research (NCNR)

- nation's leading neutron facility
- serves more users than all other U.S. neutron facilities combined

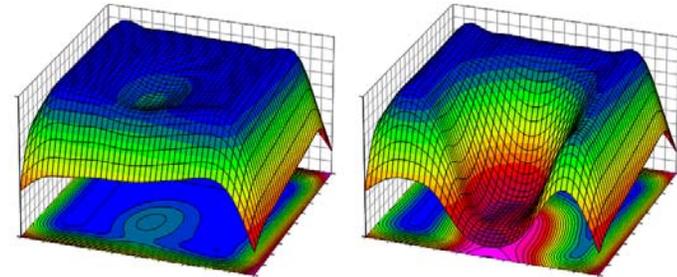
- Upgrade NCNR – 5-year plan

- Add additional cold source and new guide hall
- provide new generation of world-class instruments
- serve 500 more researchers each year

Synchrotron Measurement Science and Technology (+\$5 million)

- **Synchrotrons complement neutron sources—**

- imaging & analysis of chemical, electronic & structural properties used in developing new, innovative materials



- **National Synchrotron Light Source at Brookhaven National Lab**

- will upgrade three beamlines and establish two new beamlines
- **Will be used by 200 researchers a year**
 - any material, made of any elements, subnanometer resolution

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Manufacturing Innovation Through Supply Chain Integration (+\$2 million)

- **Inefficient exchange of product designs and data**
 - costs U.S. economy > \$25 billion/year
- **Opportunity mirrors NIST strengths**
 - standards, measurements, testing tools, neutral convener
- **Will foster seamless global supply chain for the auto, aerospace, and construction industries**
 - create “roadmaps” for developing open standards for enterprise integration
 - develop and test standards, ensuring consistency with international standards



photo courtesy Corbis

Structural Safety in Hurricanes, Fires, and Earthquakes (+\$2 million)

- \$52 billion annually in property damage, disruption of commerce, lost lives
- Goal is to save lives, reduce damage to structures
- Proposed program will advance:
 - extreme wind database and other tools
 - fire and smoke wildland prediction methods
 - earthquake-resistant design and construction methods
 - better prediction of structural capacity



International Standards and Innovations (+\$2 million)

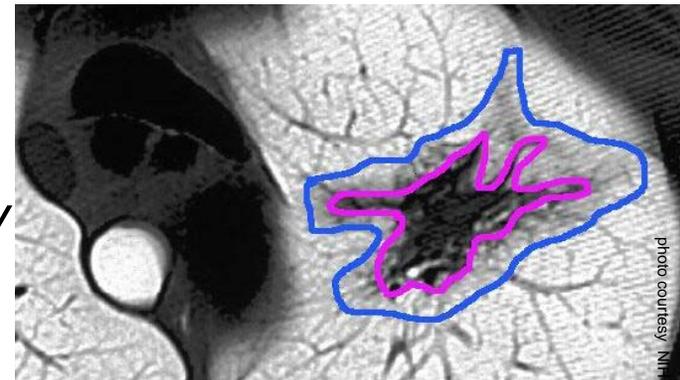
- **Standards-related barriers to trade constrain innovation, entrench inferior technologies, raise transaction costs, and hinder interoperability**
- **NIST works to open markets for American workers and exporters**
- **NIST will**
 - provide technical leadership to ensure standards are not a barrier to U.S. exports
 - provide information and effective U.S. coordination with international standards organizations



photo courtesy Corbis

Bioimaging: A 21st Century Toolbox for Medical Technology (+\$4 million)

- **Vision—to convert pictures into reliable data for diagnosis and analysis**
- **Measurements foundation is lacking—assessments must be accurate, reliable, repeatable**
- **NIST will partner with NIH, bioimaging industry to improve**
 - molecular imaging for understanding bio processes
 - assessment of advanced biomaterials' behavior *in the body*
 - methods and technologies for bioinformatics



Biometrics: Identifying Friend or Foe (+\$2 million)

- **Automated tools needed to identify people**

- protect borders while allowing efficient travel

- **NIST has decades of experience**

- now managing Face Recognition Grand Challenge Program

- **Funding allows**

- testing of multimodal systems (2 or more biometrics)
- image quality standards and tests
- guidelines for system interoperability



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NIST Facilities Improvement Plan

Construction of Research Facilities (CRF)

- Design/some renovation of two buildings in Boulder, Colo. (\$10.1 million)
- Safety, Capacity, Maintenance, and Major Repair (+\$10 million)
- NCNR initiative also includes \$12 million for construction-related expenses.



President Eisenhower dedicates NIST's Boulder campus in 1954



Summary

- **The American Competitiveness Initiative will:**
 - ensure that America leads the world in opportunity and innovation for decades to come, and
 - improve the lives and livelihoods of generations of Americans.

- **The responsibilities for NIST in the ACI are a recognition of our mission to promote U.S. innovation and industrial competitiveness by advancing:**
 - measurement science,
 - standards, and
 - technology

... in ways that enhance economic security and improve the quality of life

- **The President's FY 2007 budget will allow NIST to focus on the Nation's most critical measurements and standards needs**