



NIST Overview

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***NIST Standards in Trade Workshop on Cement
and Concrete for the Americas
December 9-13, 2002***

National Institute of Standards and Technology

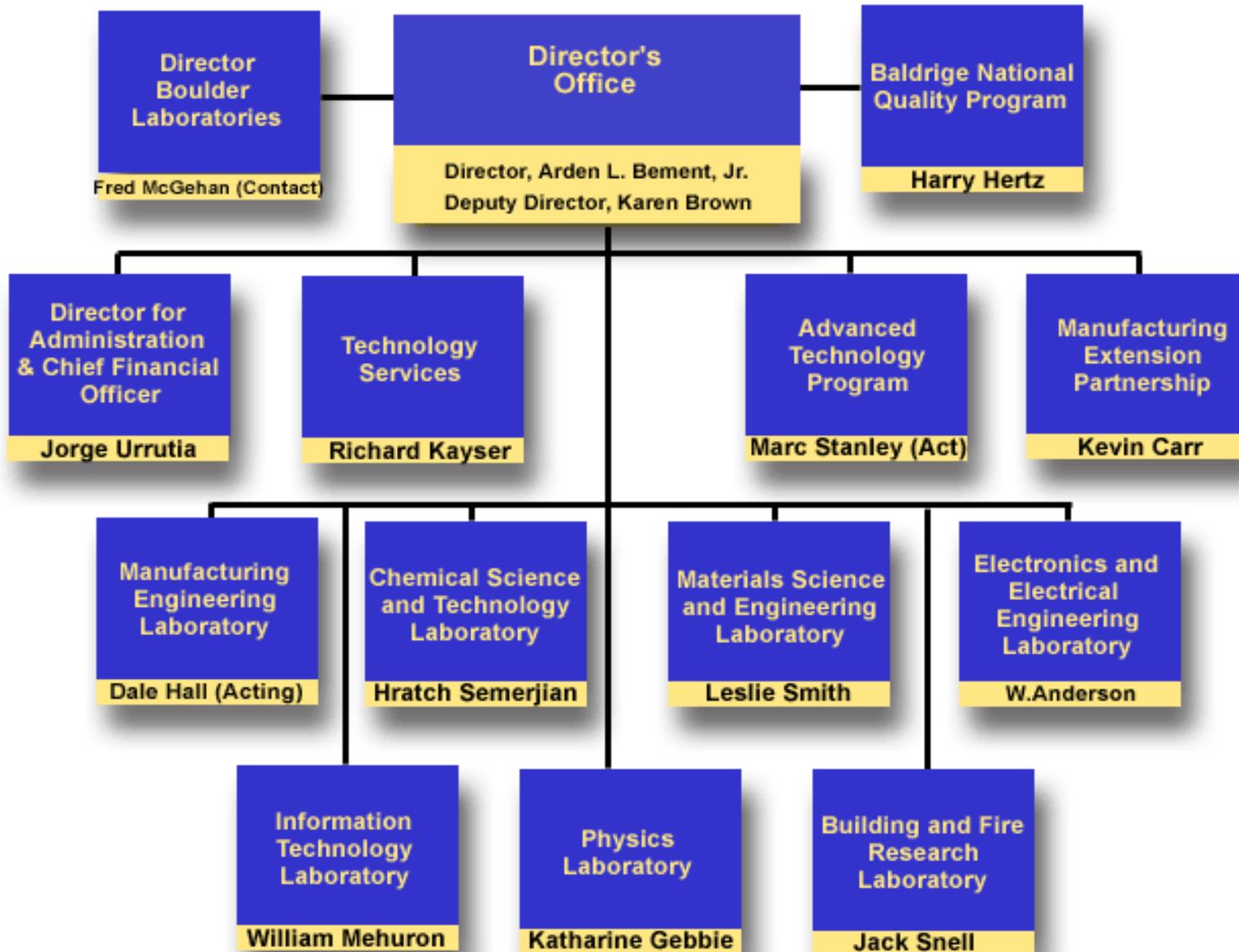
NIST's mission is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life.

NIST Assets Include:

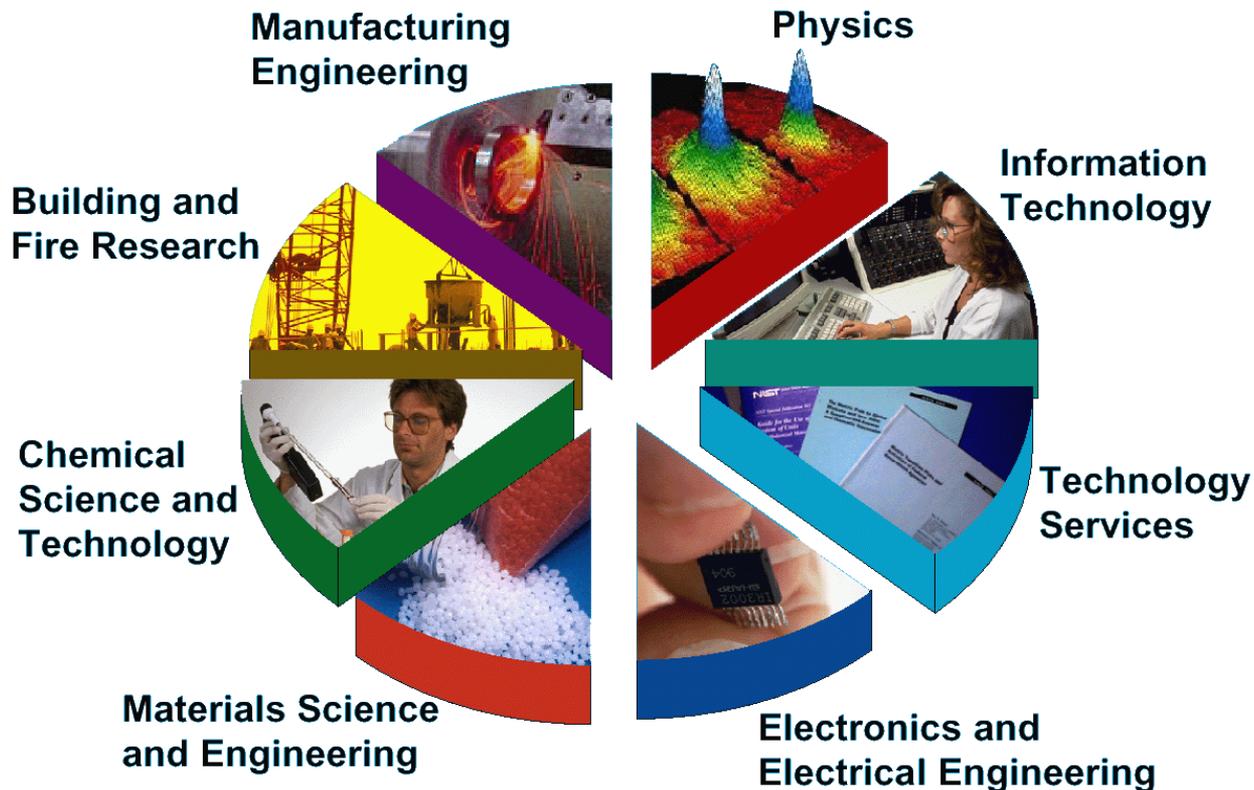
- **3,100 employees**
- **1,600 guest researchers**
- **\$819 million annual budget**
- **NIST Laboratories -- National measurement standards**
- **Advanced Technology Program -- \$570 million current R&D partnerships with industry**
- **Manufacturing Extension Partnership -- 400 centers nationwide to help small manufacturers**
- **Baldrige National Quality Program**



NIST ORGANIZATIONAL CHART



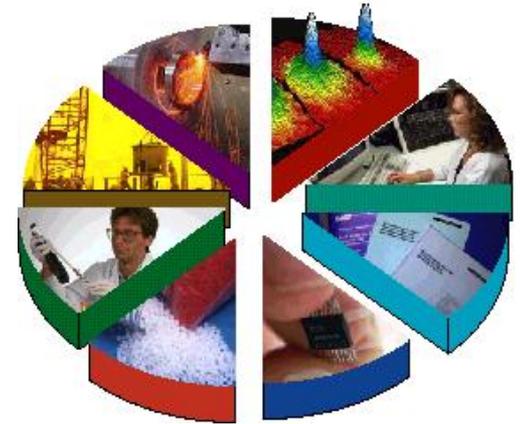
NIST Measurement and Standards Laboratories



- Measurement methods
- Calibration services
- Standard Reference Materials
- Generic industrial technologies
- Software interface standards
- Accredited testing laboratories and
- Evaluated scientific data

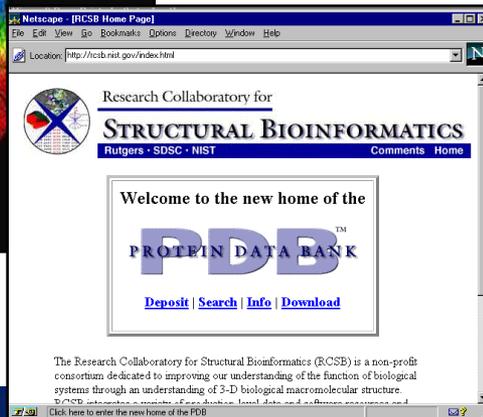
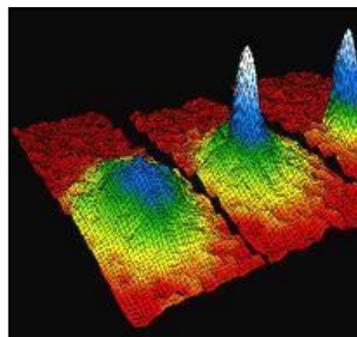
Laboratory Activities

- Laboratory R&D:
 - perform research planned and implemented in cooperation with industry that anticipates and addresses the most important measurement and standards needs in a timely fashion.
- The National Measurement System:
 - strengthen the national system of standards, measurement, measurement traceability, and conformity assurance.
- The International Measurement System:
 - provide leadership in harmonizing international measurements and standards to facilitate trade.



NIST Laboratories Products and Services

- Measurement Research
2,200 publications/year
- Standard Reference Data
65 types available
5,000 units sold/ year
- Standard Reference Materials
1,300 types available
32,000 units sold/year
- Calibrations and Tests
>3,000 items/year
- Standards Committees
400 NIST staff, 950 committees



Future Areas of Opportunity

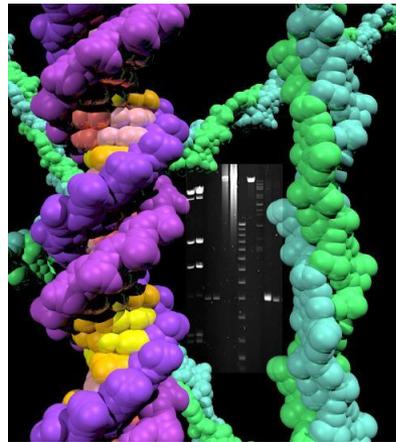
• **Information Technology**



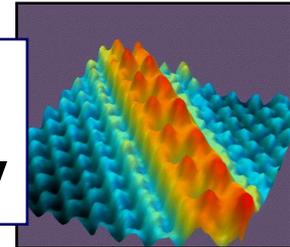
• **Electronic Commerce**



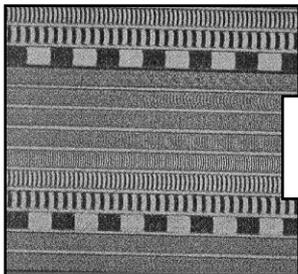
• **Biotechnology**



• **Nano-technology**



• **Magnetics**



• **Homeland Security**

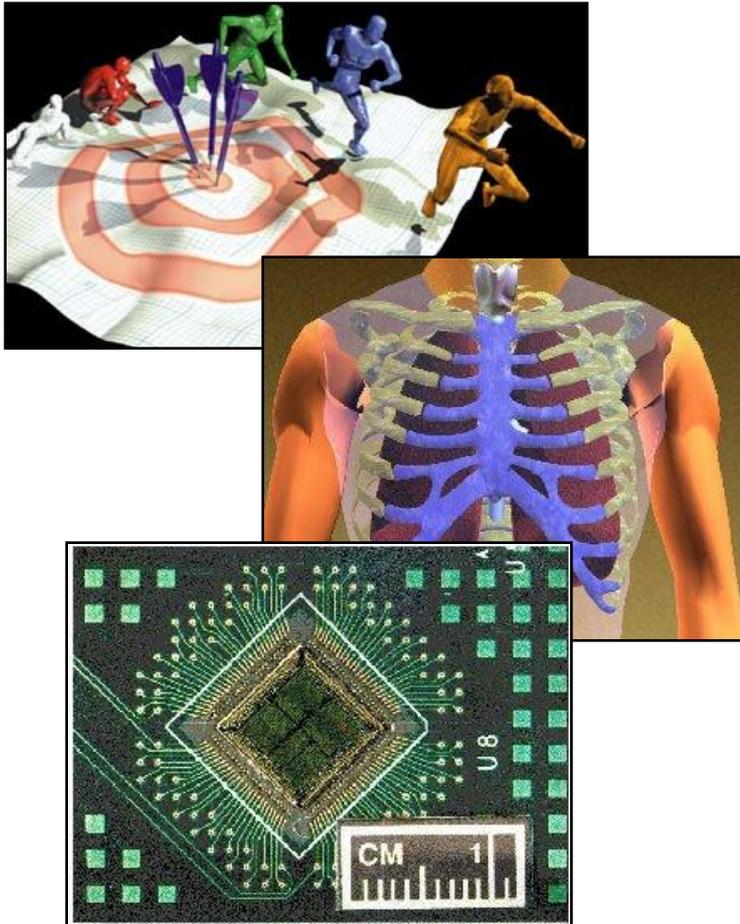
• **Construction and Fire**



NIST Advanced Technology Program

- Co-funding of private sector R&D to accelerate the development of high-risk, broadly enabling technologies
- Since 1990: 4,435 proposals submitted to 41 competitions, requesting \$9.6B from ATP
- 522 projects awarded with 1,162 participants and an equal number of subcontractors
- 172 joint ventures and 350 single companies
- \$3.3 billion of high-risk research funded
 - ATP share = \$1.640 billion
 - Industry share = \$1.629 billion
- Small businesses are thriving
 - 59% of projects led by small businesses
- Over 100 universities participate
- Nearly 20 national laboratories participate

ATP – A Decade of Innovation



- Auto Body Consortium - improved fitting of parts to save money for manufacturers and consumers
- Tissue Engineering - new materials to repair damaged ligaments and tendons: several billion dollar impact
- “DNA Chips” - new technology for cheap, rapid genetic analysis

www.atp.nist.gov

Manufacturing Extension Partnership

- Nationwide network providing hands-on help to smaller manufacturers to become globally competitive
- **Business assistance**
 - Quality management
 - Human resource development
 - Financial planning
 - Other services
- **Technical assistance**
 - E-commerce
 - Process improvement
 - Plant layout
 - Product development
 - Energy audits
 - Other services



361,000 small U.S. manufacturers produce 55% of value added in manufactured goods, employ more than 12 million workers

Baldrige National Quality Program



- Premier U.S. award for performance excellence and quality achievement.
- Awards in Manufacturing, Service, Small Business, Education, Health Care.
- More than 2 million copies of Criteria for Performance Excellence distributed (not including downloads from Web).

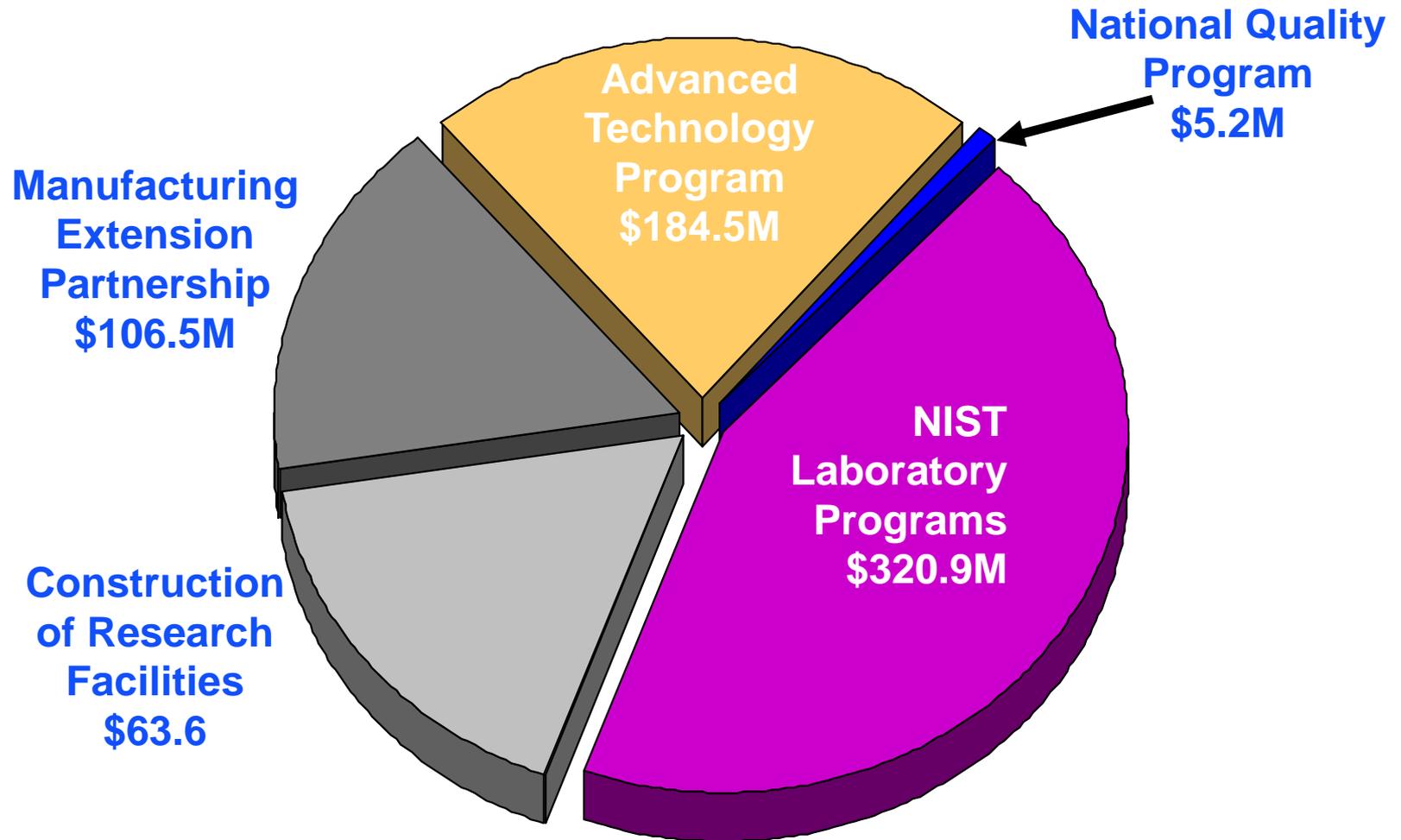
- Quality programs modeled on Baldrige: 55 state and local (up from fewer than 10 in 1990); 60 international.



www.quality.nist.gov

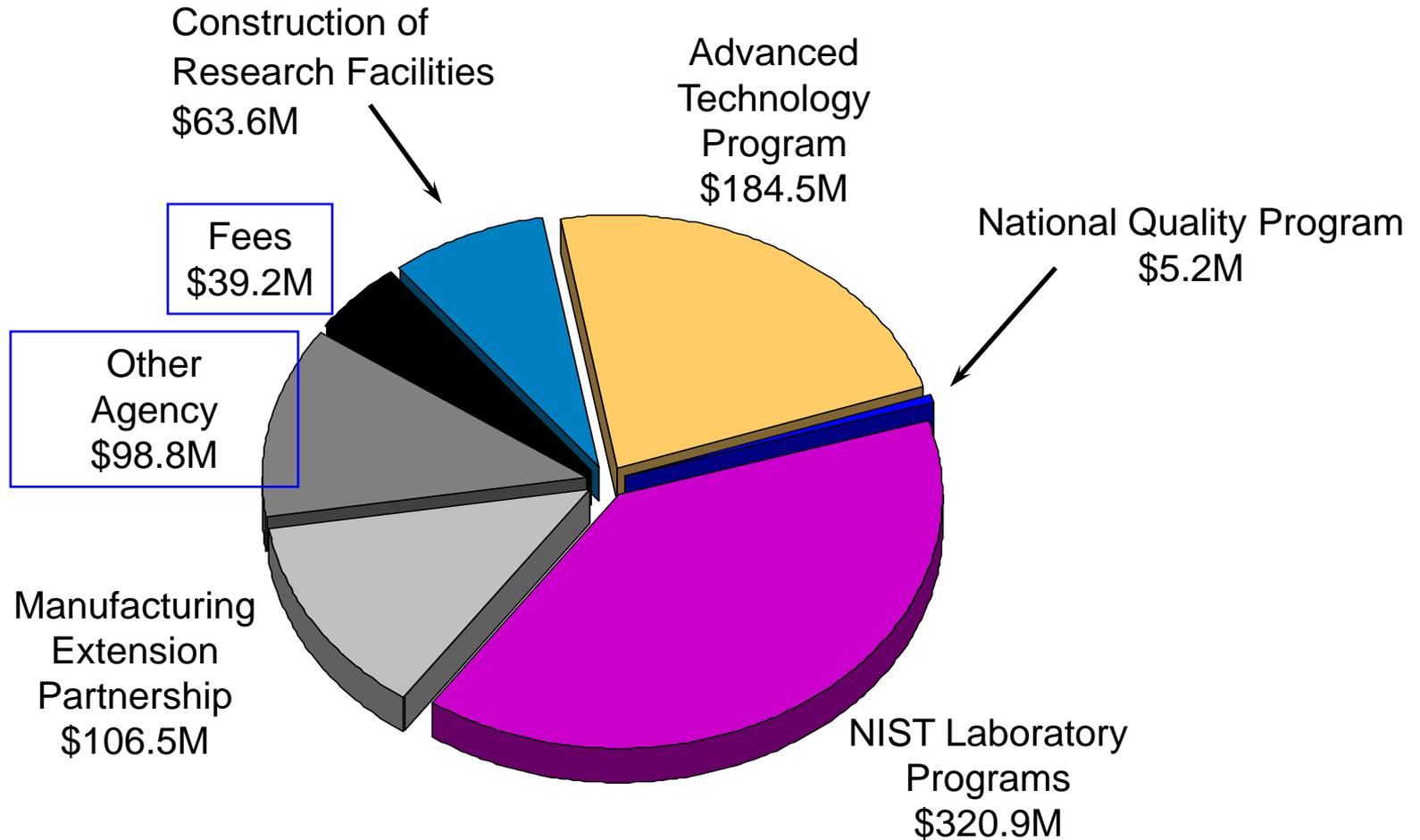
FY 2002 NIST Appropriations

Total: \$680.7M

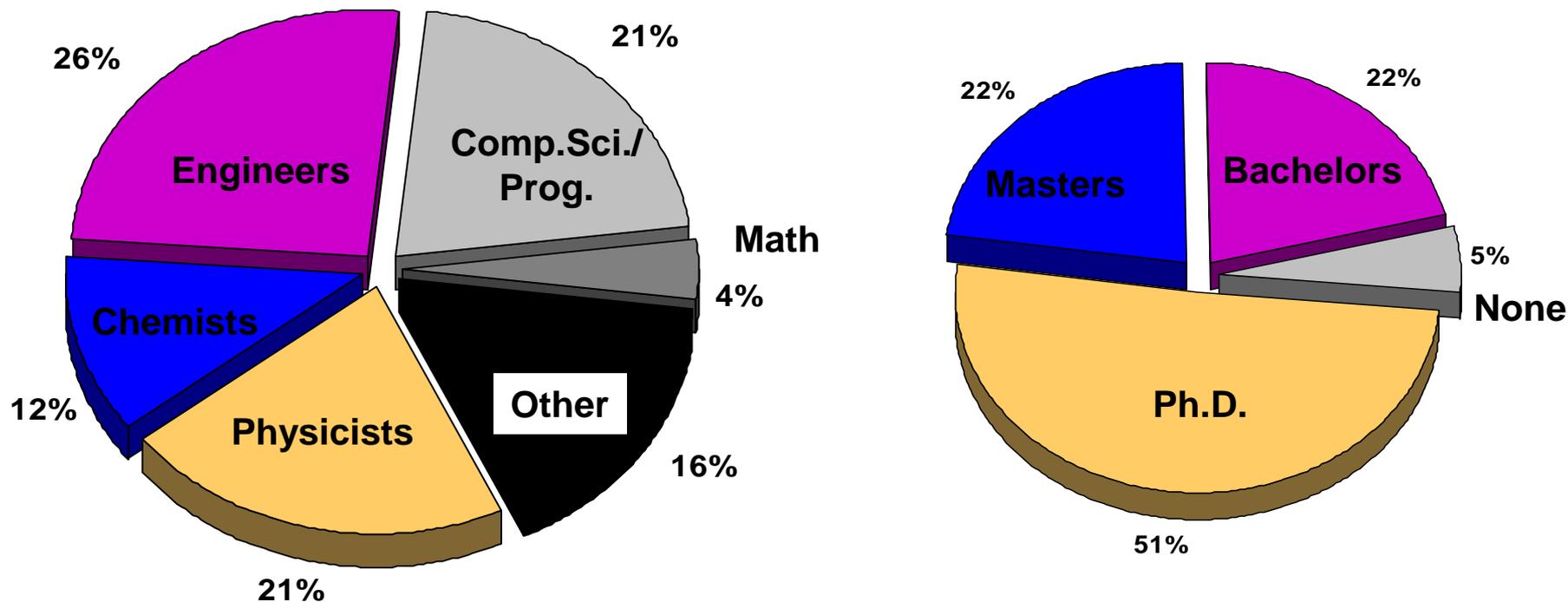


FY 2002 NIST Annual Program Level

Total Operating Budget: \$ 818.7M(est.)



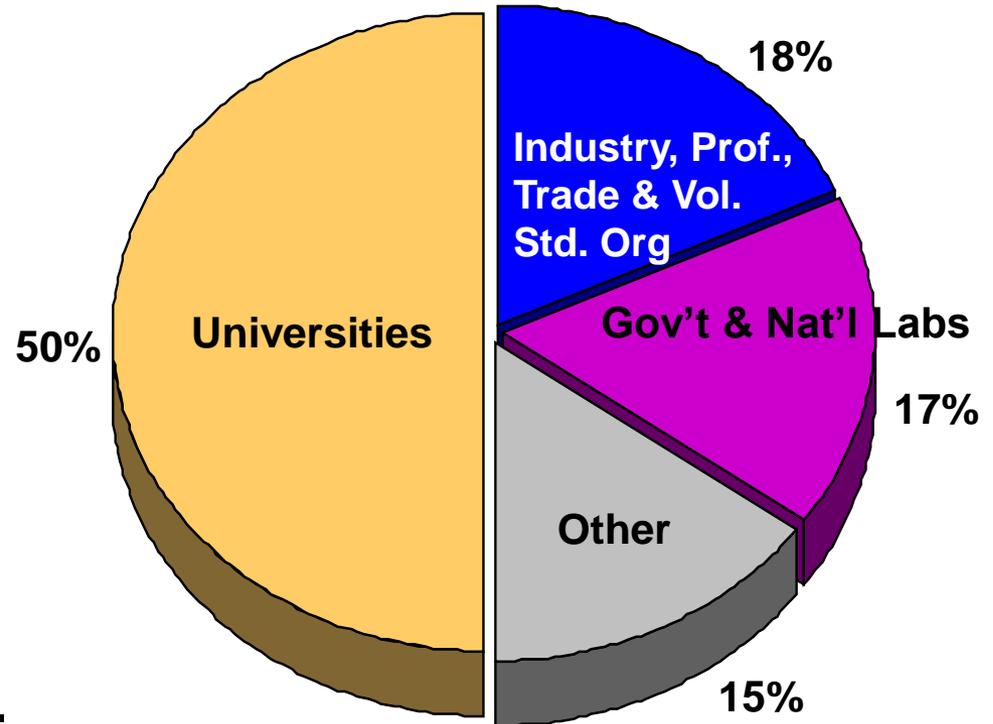
NIST Technical Staff



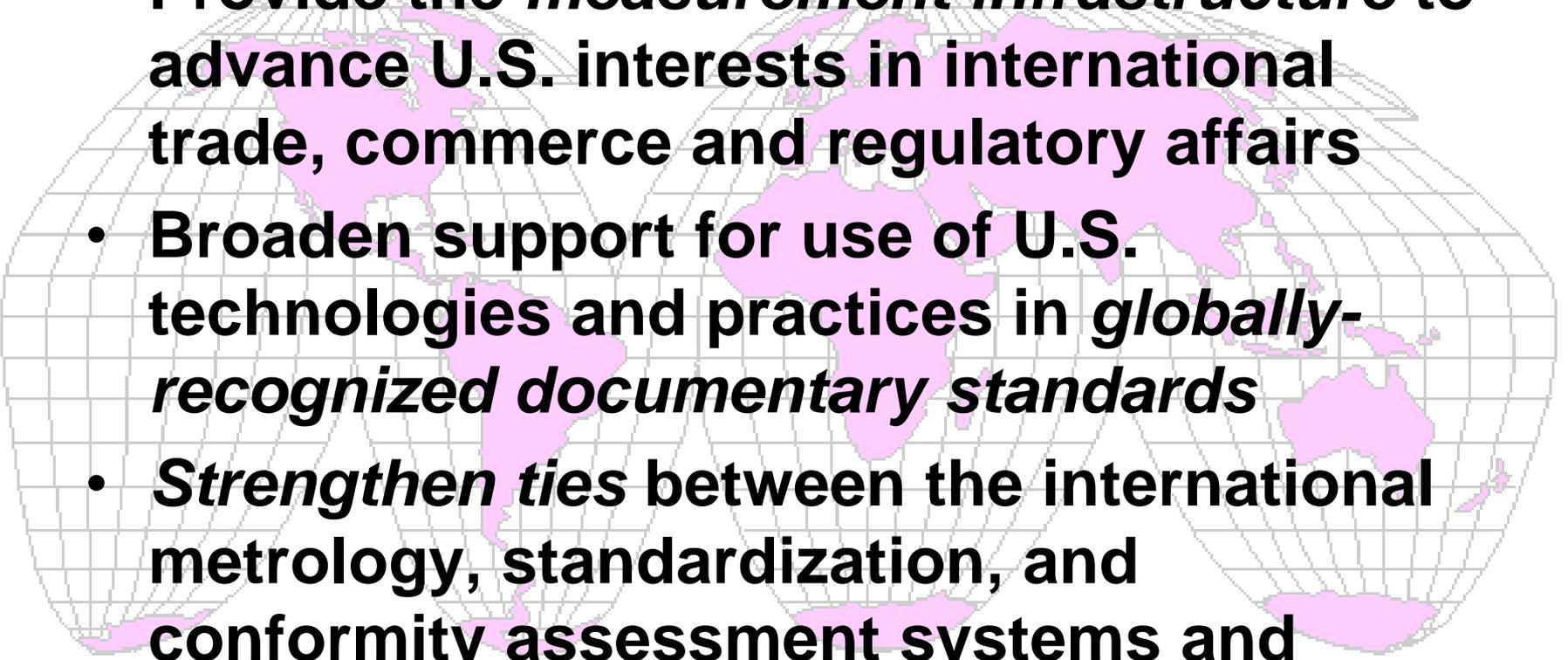
Total Professional Staff (FTP) = 1528 (FY 2002)

Guest Scientists and Engineers

- ~1600 Guest Scientists & Engineers
- 69% from U.S. Organizations
- 31% from Non-U.S. Organizations



NIST Priorities in International Activities

- 
- Provide the *measurement infrastructure* to advance U.S. interests in international trade, commerce and regulatory affairs
 - Broaden support for use of U.S. technologies and practices in *globally-recognized documentary standards*
 - *Strengthen ties* between the international metrology, standardization, and conformity assessment systems and regulators

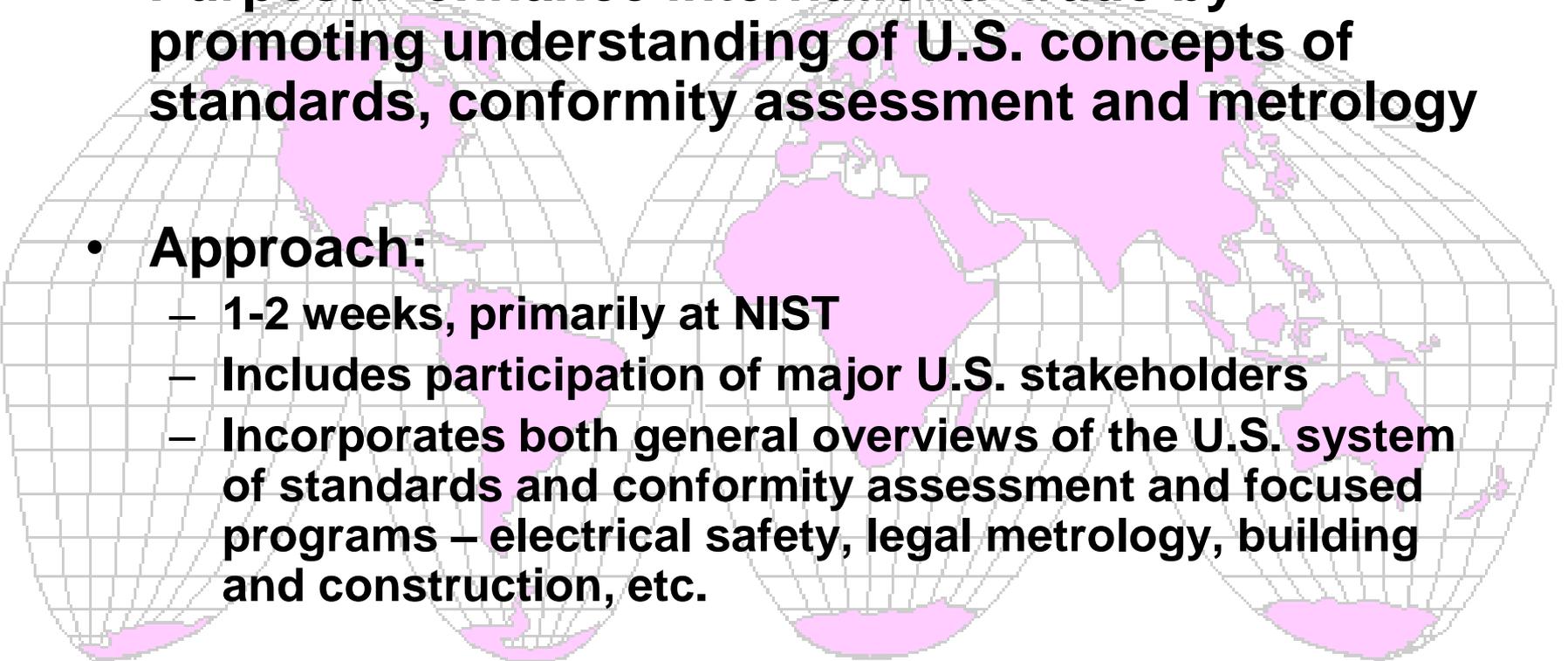
Collaboration Mechanisms

- 
- **International Agreements**
 - **Joint Research Projects**
 - **Participation in International Conferences**
 - **Guest Researchers**
 - **International Visitors Program**
 - **Workshops and Training**
 - **Documentary Standards Activities**

Guest Researcher and Visitor Programs

- Guest Researchers
 - ✓ FY99: 612, 67 countries
 - ✓ FY2000: 600, 72 countries
 - ✓ FY 2001: 615, 68 countries
 - ✓ Currently: 362
- International Visitors
 - ✓ 1999: 782 visitors, 87 countries
 - ✓ 2000: 1052, 72 countries
 - ✓ 2001: 952

Standards in Trade Workshops

- 
- **Purpose:** enhance international trade by promoting understanding of U.S. concepts of standards, conformity assessment and metrology
 - **Approach:**
 - 1-2 weeks, primarily at NIST
 - Includes participation of major U.S. stakeholders
 - Incorporates both general overviews of the U.S. system of standards and conformity assessment and focused programs – electrical safety, legal metrology, building and construction, etc.
 - **Since 1995, have hosted 700+ experts from 40+ countries**

NIST's Documentary Standards Activities

- Participate in key consensus-based standards-developing organizations
 - ✓ 38% of NIST professional staff are actively involved in 137 voluntary standards organizations
 - ✓ 180 international committees, 39 in a lead role
 - ✓ 30 U.S. technical advisory groups to ISO committees
- Participate extensively in international industrial consortia
- Focus on building and construction, health care, information technology, manufacturing and telecommunications

Additional Standards-Related Roles

- Participate in ANSI policy activities
 - ✓ National Standards Strategy
 - ✓ National Conformity Assessment Principles
- Promote the use of private-sector voluntary consensus standards by federal agencies
 - ✓ U.S. National Technology Transfer and Advancement Act of 1995
- Promote the use of private-sector voluntary consensus standards internationally
 - ✓ Need technically sound, flexible solutions, not one size fits all!

Conclusion – What NIST Does

- Metrology services
 - Measurement science research
 - Calibration services, Standard Reference Materials, Standard Reference Data
 - Accreditation of testing and calibration laboratories
- Legal metrology support (weights and measures)
- Technical expertise for documentary standards development
- U.S. Inquiry Point (WTO/TBT) and trade support activities

What NIST Does Not Do

- Regulate
- Write voluntary consensus documentary standards
- Evaluate or test products
- Certify products or systems
- Accredite certification bodies



...working with industry to develop and apply technology, measurements and standards

<http://www.nist.gov>

<http://ts.nist.gov>

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