Briefing for American Chemical Society
Board of Directors
March 23, 2003

Dr. Arden Bement, Jr., Director
National Institute of Standards and Technology
U.S. Department of Commerce

BASEBALL GAMES ARE OFTEN DECIDED BY A FEW INCHES.

FOR U.S. INDUSTRY AND TECHNOLOGY, THAT'S A FEW TOO MANY.

When it comes to American industries and technologies, precise measurements are no game. From perfectly honed 100 foot steel girders for our buildings, to microscopic fiber optic materials to support the information age, we depend on the *National Institute of Standards and Technology* (NIST) for the research and information necessary to develop and assure the quality of their finished products and services.

Right now, NIST is helping industry to develop new technologies to refine ultra-pure substances that are essential for effective pharmaceuticals. New plastics are also being explored that could one day result in new ways to make wires, ultrathin composite materials, and biomedical implants.

New technologies enhance our economy, and the quality of our lives. The critical support from NIST – part of the U.S. Department of Commerce – helps make all this possible.

The *American Chemical Society*, the world's largest scientific society, salutes the National Institute of Standards and Technology on its 100th anniversary.

100 1901-2001

NIST CENTENNIAL

Laying the Foundation for Technological Development

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.

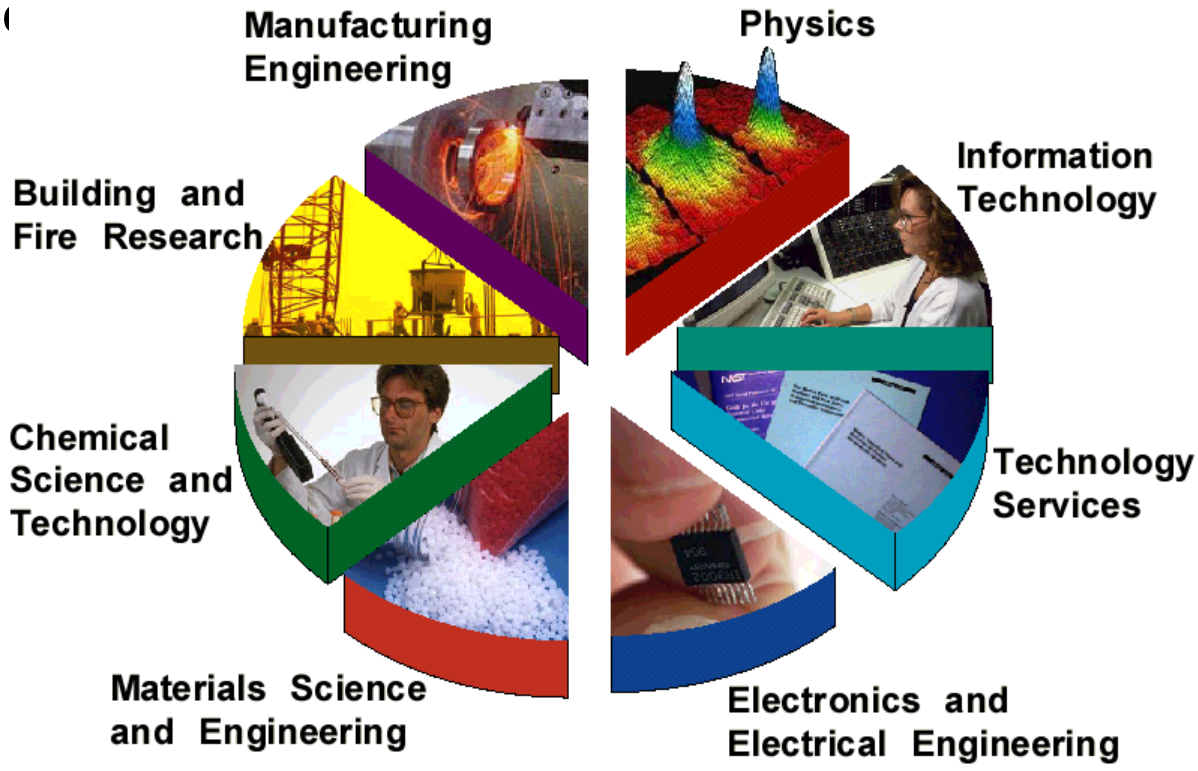
NIST Assets Include:

- 3,000 employees
- 1,600 guest researchers
- $820 million annual budget
- NIST Laboratories -- National measurement standards
- Advanced Technology Program -- $640 million current R&D partnerships with industry
- Manufacturing Extension Partnership -- 400 centers nationwide to help small manufacturers
- Baldrige National Quality Award

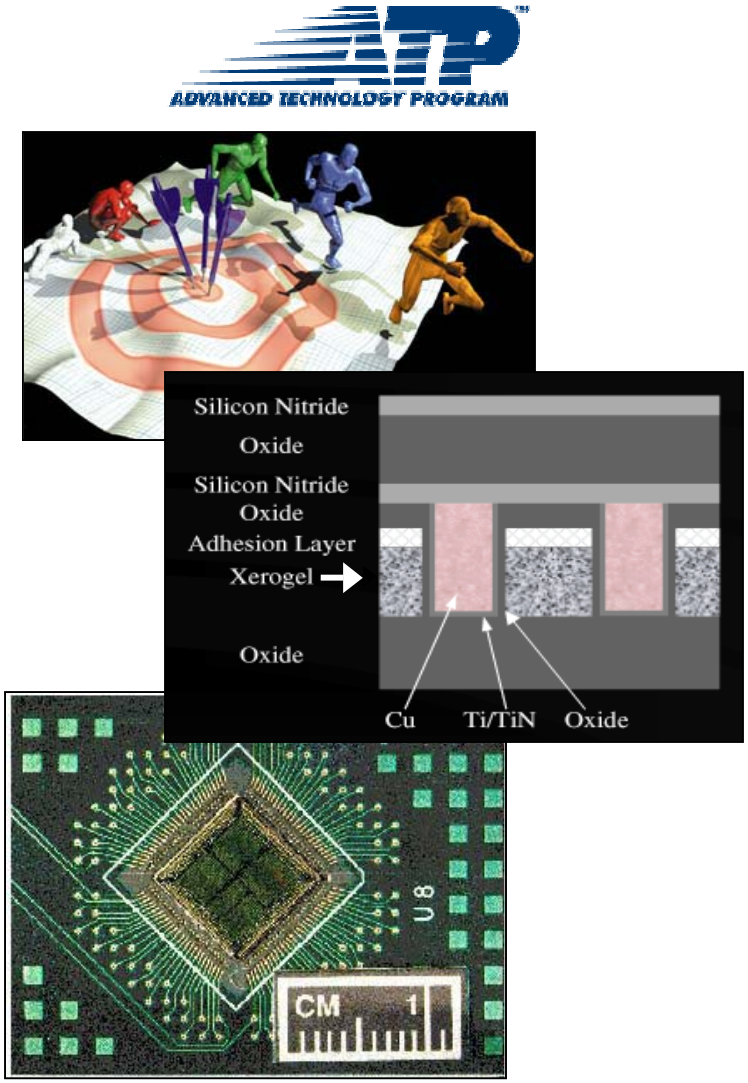
NIST's Laboratories

- Enhance US industrial competitiveness and economic growth through critically-needed standards, measurements, and data

- Highly leveraged measurement and research capabiliti supporting trillions of dollars in products and services



Advanced Technology Program



R&D partnerships with private sector to accelerate the development of high-risk, broadly enabling technologies and helping to bridge the gap between the laboratory and the marketplace.

Constituent industries include:

- Biotechnology
- Electronics and Photonics
- Information Technology
- Chemistry and Materials
- Manufacturing

NIST's Chemical Science and Technology Laboratory: Goals

Measurement Standards

- Establish CSTL as the pinnacle of the national traceability and international comparability structure for measurements in chemistry, chemical engineering and biotechnology, and provide the fundamental basis of the nation's measurement system

Chemical and Process Information

- Assure that U.S. industry has access to accurate and reliable data and predictive models to determine the chemical and physical properties of materials and processes

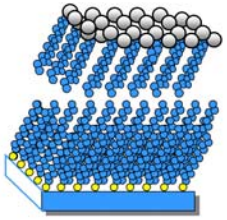
Measurement Science

- Anticipate and address next generation measurement needs of the nation, by performing cutting-edge research

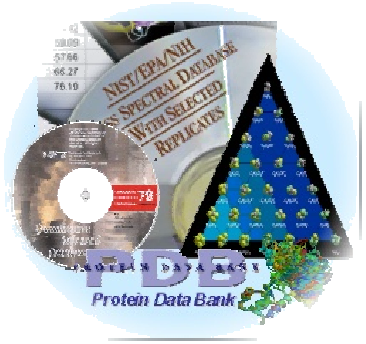
CSTL Programs

Automotive and Aerospace

Biomaterials



Data and Informatics



Chemical and Allied Products

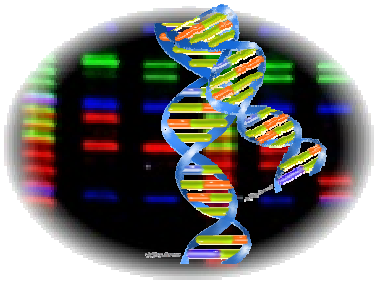
Energy Systems

Environmental Technologies

Food and Nutrition

CSTL Programs, cont.

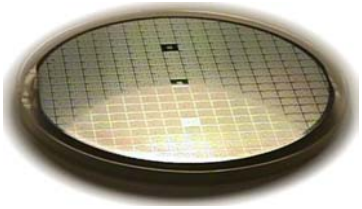
Forensics and Homeland Security



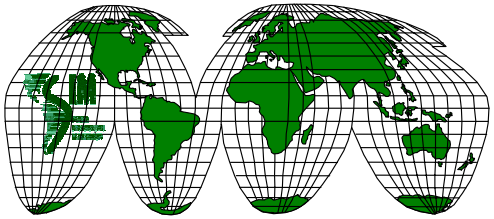
Health and Medical Technologies

Industrial and Analytical Instruments

Microelectronics

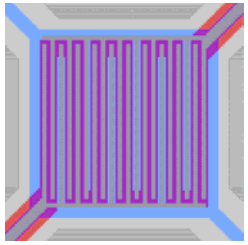


Measurement Standards



Pharmaceuticals and Biomanufacturing

Technologies for Future M&S



NIST Mission, Vision and Strategic Plan

- **Mission: To develop and promote measurement, standards and technology to enhance productivity, facilitate trade, and improve the quality of life.**
- **Vision: To be the global leader in measurement and enabling technology, delivering outstanding value to the nation.**
- **Strategic Plan: NIST 2010**

Preeminent Performance

Leadership in areas where NIST has unique value

Responsiveness to national needs through service to industry and other agencies

Prominent participation in national and global science and technology community

Accountability to our external stakeholders and internally to ourselves

Responsiveness to the President's Management Agenda

NIST-wide Strategic Focus Areas

Homeland Security

Health Care

Nanotechnology

Information/Knowledge Management

Unique NIST Contributions

Unique, critically-enabling NIST role in the national science and technology enterprise:

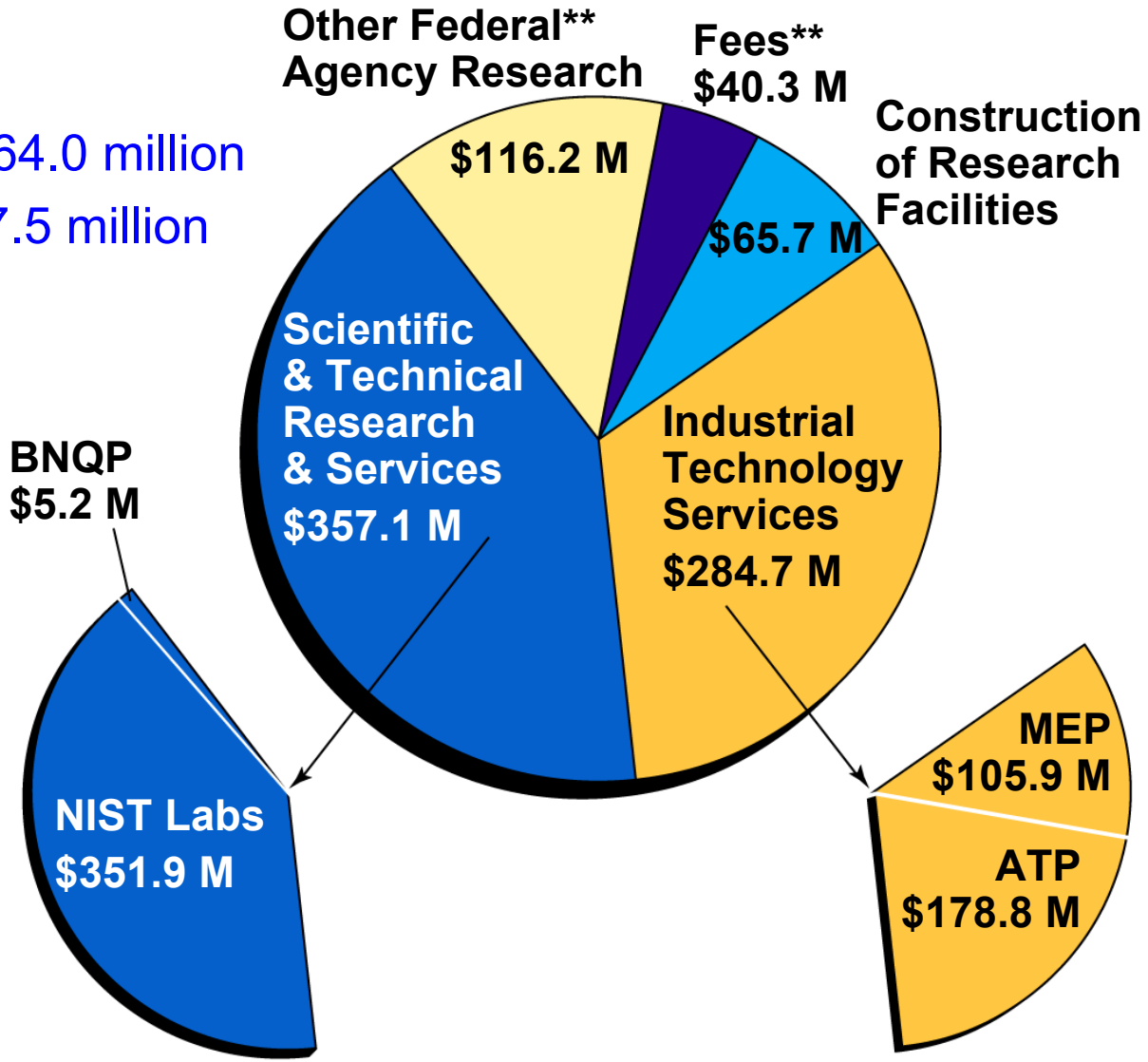
- NIST provides the measurements, standards, and data that:
  - underpin the development of new technologies,
  - ensure that products and services can be made efficiently and work properly,
  - and enable new scientific R&D.
- NIST's unique role and value-add require the closest possible interactions and partnerships with the S&T community.

NIST Resources for FY 2003

NIST Resources
Fiscal Year 2003*

Total Resources = $864.0 million

Appropriations = &707.5 million



*All numbers rounded
**Estimated

FY 2003 Appropriations Highlights (selected)

Infrastructure

- AML equipment and utilities $14.9 M
- AML fitup $ 4.4 M
- Boulder construction $11.0 M

Homeland Security

- Law enforcement standards $ 3.0 M

Health Care

- In vitro diagnostics, tissue engineering $ 2.0 M

Nanotechnology $ 1.5 M

President's FY 2004 Budget Request for NIST

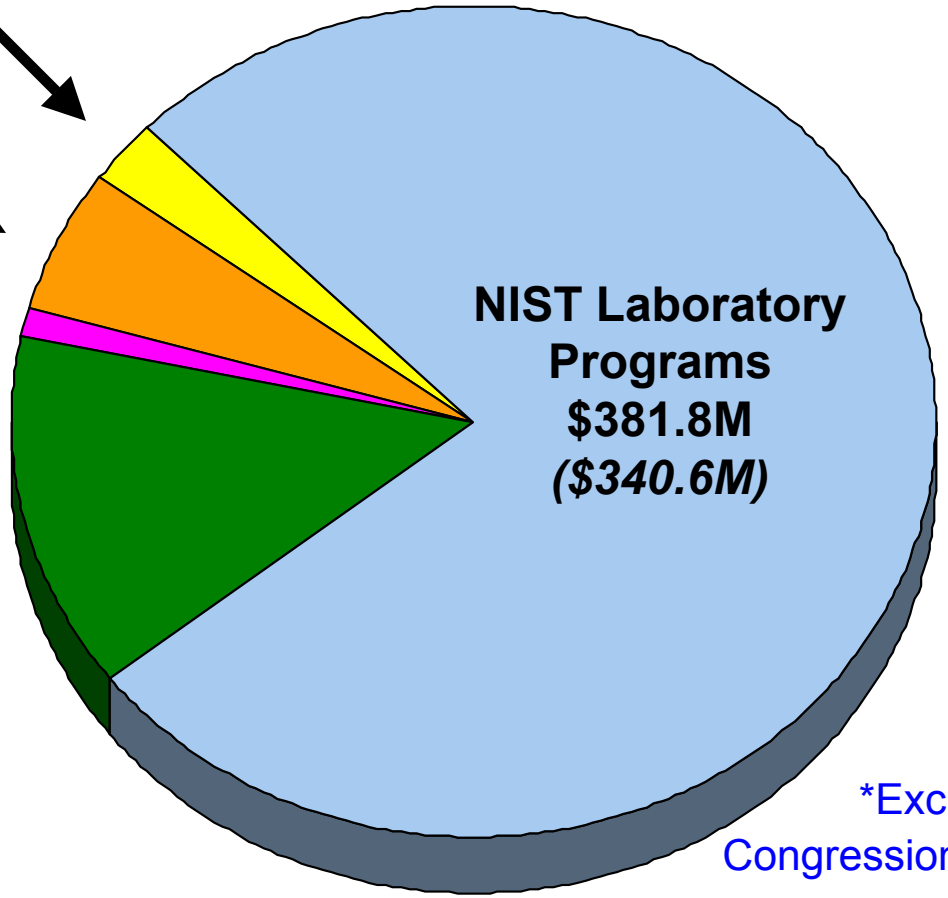
Total Request: $496.8M
$171.3M < FY 2003 appropriation*
(shown in italics)

Manufacturing Extension Partnership
$12.6M
($105.9M)

Advanced Technology Program
$27.0M
($178.8M)

National Quality Program
$5.8M
($5.2M)

Construction of Research Facilities
$69.6M
($37.6M)



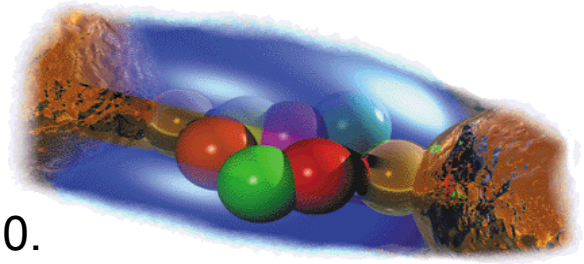
*Excludes Congressional earmarks

President's FY 2004 Budget Request for NIST

- **Invest in core NIST Laboratory measurement and research programs to:**
  - Ensure optimal use of technologies to strengthen homeland security.
  - Provide the measurement infrastructure to sustain innovation and long-term economic growth (*$9.2 million increase).*
  - Provide the 21st century facilities the NIST Laboratories need to fulfill their mission.
  - Redirect scarce resources from ATP and MEP to fund top national priorities.

NIST: Infrastructure for Technology Innovation

Nanoscale Measurement Science ($5.2 million)



- Atomic-scale measurements and standards needed to transform R&D into useful products and services and enable scientific advances.
- Potential $1 trillion global annual market by about 2010.
- European and Asian governments investing heavily in nanotechnology R&D.

NIST solutions

- New measurements and standards for making smaller and more powerful semiconductor and magnetic storage devices, for solid state lighting technology saving tens of billions of dollars in annual energy costs, and for applying nanotechnology to problems in biotechnology, medicine, and other key areas.
- NIST provides the measurements and standards underpinning the $847 million FY 2004 multi-agency National Nanotechnology Initiative (NNI).

NIST: Infrastructure for Technology Innovation

Health Care Quality Assurance ($1.0 million)

- $50 billion annual loss due to inaccurate medical tests and measurements.
- 100,000 annual deaths due to medical errors partly resulting from inaccurate tests and measurements.
- NIST can currently provide only about 30 of the more than 200 standards needed to ensure “CE mark” compliance for $3.5 billion in annual exports of diagnostic products to EU beginning December 2003.

NIST solutions

- New measurement methods and standards for protein-based and DNA markers to better diagnose heart disease, breast cancer, prostate cancer, diabetes, and other diseases.
- Standards to comply with EU trade regulations.
- Part of a longer-term, broader development of standards to improve health care quality, reduce costs, and save lives.
- NIST currently partners with NIH/NCI, FDA, CDC, medical centers, medical professional organizations, and many other health agencies and organizations.

Advanced Measurement Laboratory

- Will be the world's best measurements laboratory.

- Will provide the measurements and standards needed by industry and science for key 21st century technologies.

- Establishes nano and micro-fabrication capabilities, primarily in the Cleanroom Building, through cross program usage.

- Provides NIST with the basis for enhanced external collaborations.

Domestic Collaboration

- User Facilities
- Standards organizations
- Industry roadmaps
- Universities
- Interagency cooperation: other agency projects
- Consortia
- Private sector advisory committees and evaluation panels
- Informal collaborations
- Risk and cost-sharing: ATP
- Hands-on technical and business assistance through MEP centers
- Cooperative R&D Agreements
- Guest Researchers

Standards Initiative to Reduce Barriers to Trade

Eight-Point Plan:

1. Global Standards Activity Assessment

2. Expertise in Key Markets

Standards Initiative (continued)

Eight-Point Plan:

3. Training and Outreach

4. Best Practices Database….

Standards Initiative (continued)

Eight-Point Plan:

5. Expanded “Early Warning” System

6. Partner with President’s Export Council

7. Liaison at International Trade Administration

8. Outreach to U.S. Industry

Standards Initiative (continued)

PARTICIPATE!