



*An Overview of NIST, The U.S.
Government's Role in the U.S. Standards
System & its Use of Standards*

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Outline

1. Overview of NIST
2. NIST and U.S. Government's role and participation in the U.S. standards systems
3. Govt.'s use of standards



NIST – In a nutshell

- **The National Institute of Standards and Technology (NIST):**
 - Is an over 100 year old federal agency within the U.S. Department of Commerce
 - Is the national measurement institute for the United States
 - Is non-regulatory in its functions
 - Contributes to the development of voluntary consensus standards
 - **Coordinates standards activities of federal agencies with those of the private sector**
 - Works closely with the private sector, in a model of public-private cooperation



NIST Mission

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

**measurement science,
standards,
technology**

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



How does NIST enhance productivity, facilitate trade, & improve the quality of life?

- By providing added **confidence** in the quality of **measurements** performed by other organizations – and, in turn, of products whose quality depends on measurements
- By helping to ensure the **technical efficacy** of documentary standards
- By **promoting efficiency** in the U.S. documentary-standards and conformity-assessment systems

NIST has.....world-class staff



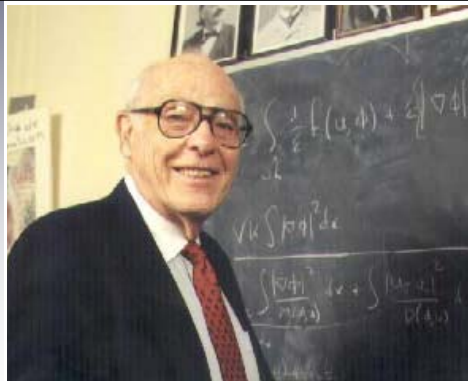
Jan Hall
2005 Nobel Prize
in Physics



Eric Cornell
2001 Nobel Prize
in Physics



Bill Phillips
1997 Nobel Prize
in Physics



John Cahn
1998 National Medal of
Science



Anneke Sengers
2003 L'Oréal-UNESCO
Women in Science Award

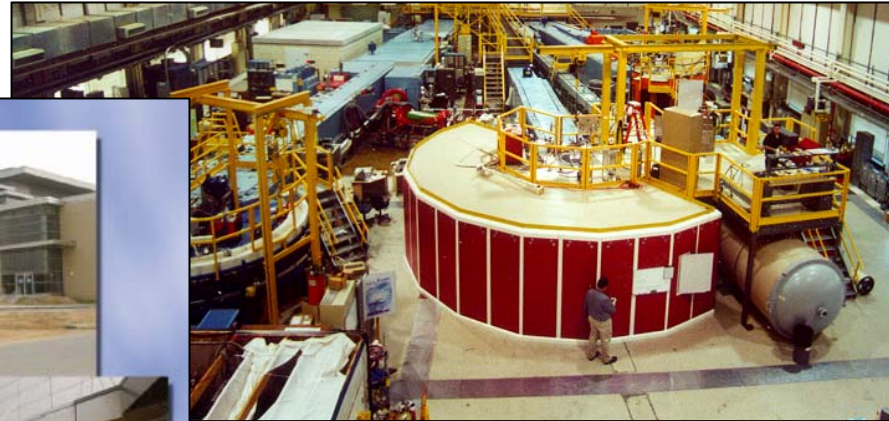


Debbie Jin
2003 MacArthur
Fellowship

NIST has Unparalleled Facilities

Gaithersburg, MD Site

- 578 acre site
- Laboratory space: ~700,000 assignable sq ft.
- Office space: ~500,000 assignable sq ft.



Advanced Measurement Laboratory (AML)

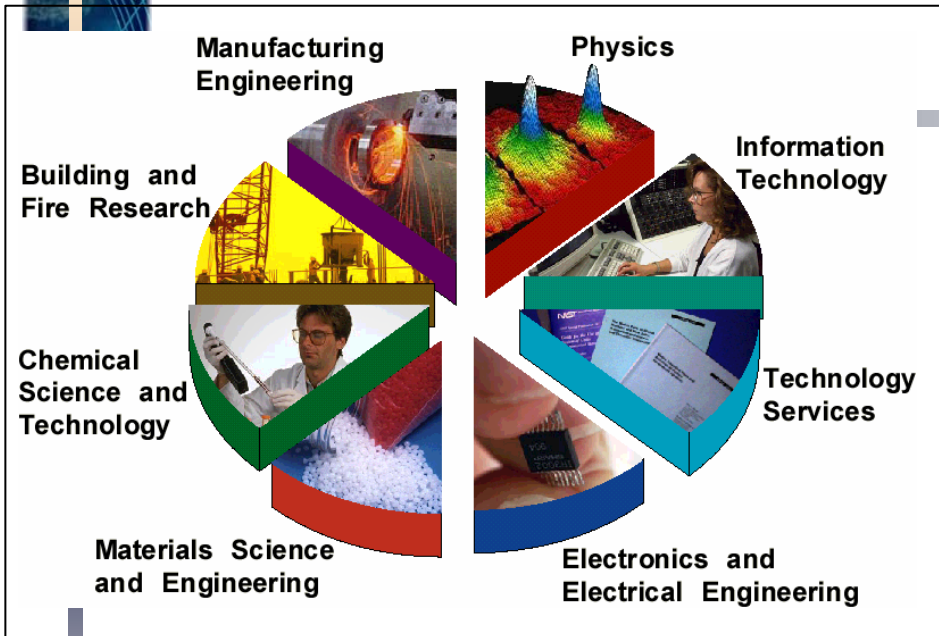
- Complex of 5 buildings, occupancy began in Jan '04
- Stringent control of temperature, vibration, humidity, cleanliness
- Establishes state-of-the-art nano-fabrication capabilities, in the ~90,000 sq ft Cleanroom Building



The NIST Center for Neutron Research (NCNR) Guidehall

- the only U.S. capability for studies of biological dynamics, both temporal and spatial information are obtained.
- Neutron methods at the NCNR encompass an enormous range of time and length scales.

NIST Laboratories



NIST's work enables

- Science
- Technology innovation
- Trade
- Public benefit

NIST works with

- Industry
- Academia
- Other agencies
- Government agencies
- Measurement laboratories
- Standards organizations



NIST Laboratories Products and Services

- **Measurement Research**
2,100 publications/year
- **Standard Reference Data**
90 types available
5,000 units sold/ year
- **Standard Reference Materials**
>1,200 products available
30,000 units sold/year
- **Calibrations and Tests**
3,200 items calibrated/year
- **Laboratory Accreditation**
826 accreditations
- **Standards Committees**
390 NIST staff, 450 committees



The U.S. Standards System

- **Is voluntary, market-driven and private sector led**
- **Works through cooperation and communication among stakeholders:**
 - **Standards organizations**
 - **Industry**
 - **Government**
- **Meets stakeholder needs by**
 - **Supporting protection of health, safety, environment**
 - **Enhancing industry competitiveness**
 - **Contributing to a liberalized global trading system**



The U.S. Standards System – differences between ANSI and NIST

- **ANSI: Private Sector Organization, that is the coordinator of the U.S. standards system, and is the U.S. representative to ISO and IEC.**
- **NIST: The National Institute of Standards and Technology, is a government agency. It is the national measurement institute for the U.S. and is charged with coordinating the standards policy activities of U.S. federal government agencies with those of the private sector.**
- **ANSI and NIST work very closely to further U.S. positions and interest, and to provide value to their customers.**



The Government's Role in the U.S. Standards System

- Standards user:
 - In product purchases
 - Through incorporation into regulations
- Participant in standards development through the voluntary process
 - Does not receive any special treatment/privileges for participation
- Contributes to the technical underpinning for standards
- Advocate for the U.S. national interest

Goal: protect health, safety and the environment while not creating unnecessary barriers to trade



Government has a stake

- In promoting fair trade and competition
- In having confidence
 - In performance and competently conducted activities
- In assuring interoperability – applicable to systems and components purchased
 - IT systems
 - Emergency communications systems
 - E-government
- In facilitating innovation



For the Government...

Use of non-government standards:

- Eliminates the cost of developing government standards
- Decreases cost of goods purchased and burden on regulated communities
- Provides incentives to develop standards that meet national needs
- Promotes efficiency and economic competition
- Furthers the policy of reliance on the private sector to supply government needs for goods and services



Federal Agency Use of Voluntary Consensus Standards

- **U.S. law* and policy** require Federal agencies to:**
 - use voluntary consensus standards to the extent practicable
 - report development of agency-unique standards
 - participate in the development of voluntary consensus standards relevant to their needs
- **Encouraging the trend toward Federal agency reliance on non-government standards is an important part of the U.S. Standards Strategy**

**Public Law 104-113 (1994), also referred to as the National Technology Transfer and Advancement Act (NTTAA) of 1994 (<http://ts.nist.gov/ts/htdocs/210/nttaa/nttaa-qa.htm>)*

***OMB Circular A-119 – Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*



The National Technology Transfer and Advancement Act (NTTAA)

- **All Federal agencies should use consensus technical standards in lieu of agency unique standards**
 - **Agencies must annually report use of agency unique standards and provide explanation of use**
- **Federal agencies should participate in standards developing activities**
- **Identifies NIST as the coordinator of Federal standards and conformity assessment activities with those of the private sector**



Policies of OMB Circular A-119

- **Encourage Federal agencies to *benefit from the expertise of the private sector***
- **Promote Federal agency participation in such bodies to *ensure the creation of standards that are useable by Federal Agencies***
- ***Reduce reliance on government unique standards* where private sector standards would suffice**
 - **No preference among types of standards (consensus versus non-consensus)**
 - **Use commercial off the shelf products regardless of source of underlying standard**



Goals of the Government in Using Voluntary Consensus Standards

- Eliminate the cost to the Government of developing its own standards
- Decrease the cost of goods procured and burden of complying with agency regulations
- Promote efficiency and economic competition through harmonization of standards
- Further the policy of reliance on the private sector to supply Government needs for goods and services



Examples of How Agencies Use Standards

- Incorporation of private sector standards into regulation by specific reference
- General references to private sector standards in regulation
- Agency-developed standards
- Recognition of consensus standards in support of regulations



Extent of Federal Use of Standards

- **In regulation**
 - NIST has identified 9622 citations of standards incorporated by reference; more than 6500 are non-government standards
 - **Regulatory SIBR stats:**
http://standards.gov/sibr/query/index.cfm?fuseaction=Home.total_regulatory_sibr
- **In procurement**
 - DOD, NASA and GSA maintain lists of standards suitable for use in procurement actions
 - NIST has identified 10559 standards incorporated by reference by agencies for procurement purposes
 - **Procurement SIBR stats:**
http://standards.gov/sibr/query/index.cfm?fuseaction=Home.total_procurement_sibr

Standards Incorporated by Reference Database

<http://standards.gov/sibr/query/index.cfm>

- **Despite duplication and overlap in lists, pattern of reliance on standards is clear**



Major Sources of Standards Used by the Federal Government

- **ASTM International**
- **Institute for Printed Circuits**
- **American Society of Mechanical Engineers (ASME)**
- **National Fire Protection Association (NFPA)**
- **Society of Automotive Engineers**
- **Underwriters Laboratories, Inc.**
- **American Petroleum Institute**
- **International Organization for Standardization/International Electrotechnical Commission (ISO/IEC)**
- **International Maritime Organization (IMO)**
- **Compressed Gas Association**



US Government Agency Participation in Standards Development

- **More than 3200 federal govt. staff participate in private sector standards development activities**
- **Government agencies seek out relevant voluntary standards development venues:**
 - **To support regulatory needs**
 - **To enable efficient procurement**
 - **To create solutions to support emerging national priorities**
- **NIST participation supports technical efficacy:**
 - **Contributing measurement expertise to development of test methods; product, system, and process specifications; etc.**
 - **Participating in data collection efforts in support of the development of test methods**
 - **Providing measurement standards needed to calibrate instruments used in test methods**



Advocating for U.S. Principles for Development and Implementation of Standards

- Encourage compatible governmental approaches to the use of standards as tools for meeting regulatory needs
- Encourage the use of standards that have global acceptance
- Promote key principles of standards development*: transparency, openness, impartiality and consensus, effectiveness and Relevance, coherence (avoidance of duplication)

** G/TBT/9: Second Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade Annex 4 (2000-11-13)*



Conclusions

- Individual federal agencies make effective use of private sector standards in many applications
- Agencies must consider whether the use of standards helps them accomplish their missions, increases efficiency, reduce the burden on regulated and other communities and whether there is an impact on trade
- At last count, more than 6500 private sector standards were incorporated by reference into federal regulations
- Greater use of standards with global acceptance facilitates both least burdensome regulatory approaches and trade



Web links of interest

- **NIST:** <http://www.nist.gov>
- **NIST's Standards Services Division:** <http://ts.nist.gov/ssd>
- **Code of Federal Regulations:** <http://www.gpoaccess.gov/cfr/index.html>
- **Federal Register:** <http://www.gpoaccess.gov/fr/index.html>
- **NTTAA and OMB A-119:**
<http://ts.nist.gov/ts/htdocs/210/nttaa/nttaa.htm>
- **Interagency Committee on Standards Policy:**
<http://ts.nist.gov/ts/htdocs/210/sccg/icspdes.htm>
- **Standards.gov:** http://standards.gov/standards_gov/index.cfm
- **Regulations.gov:**
<http://www.regulations.gov/fdmspublic/component/main>



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