NIST Director's Update

Visiting Committee On Advanced Technology June 8-9, 2010

Dr. Patrick D. Gallagher
Director

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

Overview

- New VCAT Members

- Realignment update

- Budget update

- Safety review update

- News

- VCAT meeting

New VCAT Member

Sujeet Chand

Senior Vice President and
Chief Technology Officer

Rockwell Automation

photo credit: Rockwell Automation

- Appointed Senior Vice President of Rockwell Automation in 2005 and CTO in 2001

- Responsible for Rockwell Automation's development of technology strategy and evolution of next-generation architecture and platforms while leading R&D, standards, and trade activities for the company's operations in Asia, Europe, and U.S.

- Leads Rockwell Automation Technical Council

- Named Rockwell Engineer of the Year in 1993

- Led numerous innovations in industrial automation technology and applications

- Serves on several boards, including the Wisconsin Technology Council

- Published over 50 technical papers and holds 9 patents

New VCAT Member

Shaygan Kheradpir

Executive Vice President
and Chief Information Officer

Verizon Communications

- Appointed Executive Vice President and CIO of Verizon Communications in 2007

- Responsible for the IT initiatives of all Verizon's business units

- Leads technology development and innovation for key Verizon initiatives, including having developed and implemented the systems and products for Verizon's FiOS

- Began communications career with GTE in 1987 and became Vice President for GTE Labs in 1994.

- Chairs the CIO Council for the Alliance for Telecommunications Industry Solutions (ATIS)

- Named to the CIO Hall of Fame by CIO magazine in 2007

- Published over 20 journal papers and holds several patents

New VCAT Member

Michael A. McRobbie

President

Indiana University

Photo Credit: Courtesy
of Indiana University

- Appointed 18th President of Indiana University (IU) in July 2007

- Joined IU in 1997 as VP for IT and CIO, became VP for research in 2003, and named interim provost and VP for Academic Affairs for IU-Bloomington in 2006

- Initiated development of IU's IT Strategic Plan, considered a model for institutions across the U.S., and created IU's School of Informatics

- As an active researcher in computer science and logic, led major research projects in high performance computing and high-speed networking nationally and internationally

- Broad experience in fostering research partnerships

- Among many awards, named one of the Premier 100 IT Leaders for 2004 by *Computer World Magazine*

- Co-founder of the Asia Pacific Advanced Network (APAN)

- Held numerous appointments in various government, research and private sector committees, boards, and advisory groups

NIST Realignment
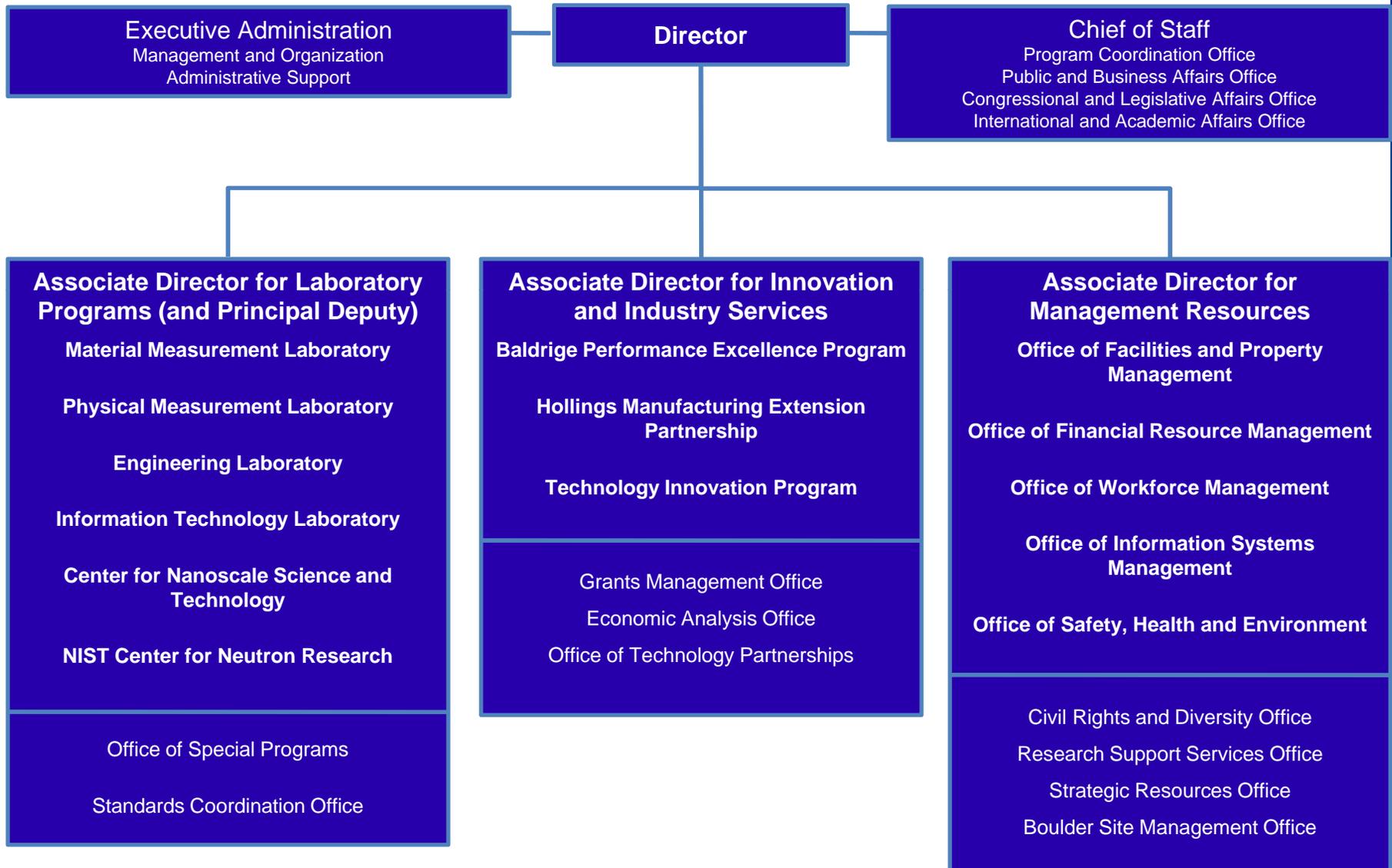## *Objectives*

- **Leadership:** strengthen and stabilize the Director's Office with a core, senior career leadership team.

- **Accountability:** not about moving 'boxes', but about assigning responsibility through the organization.

- **Empowerment:** provide resources and authority to carry out assigned responsibilities.

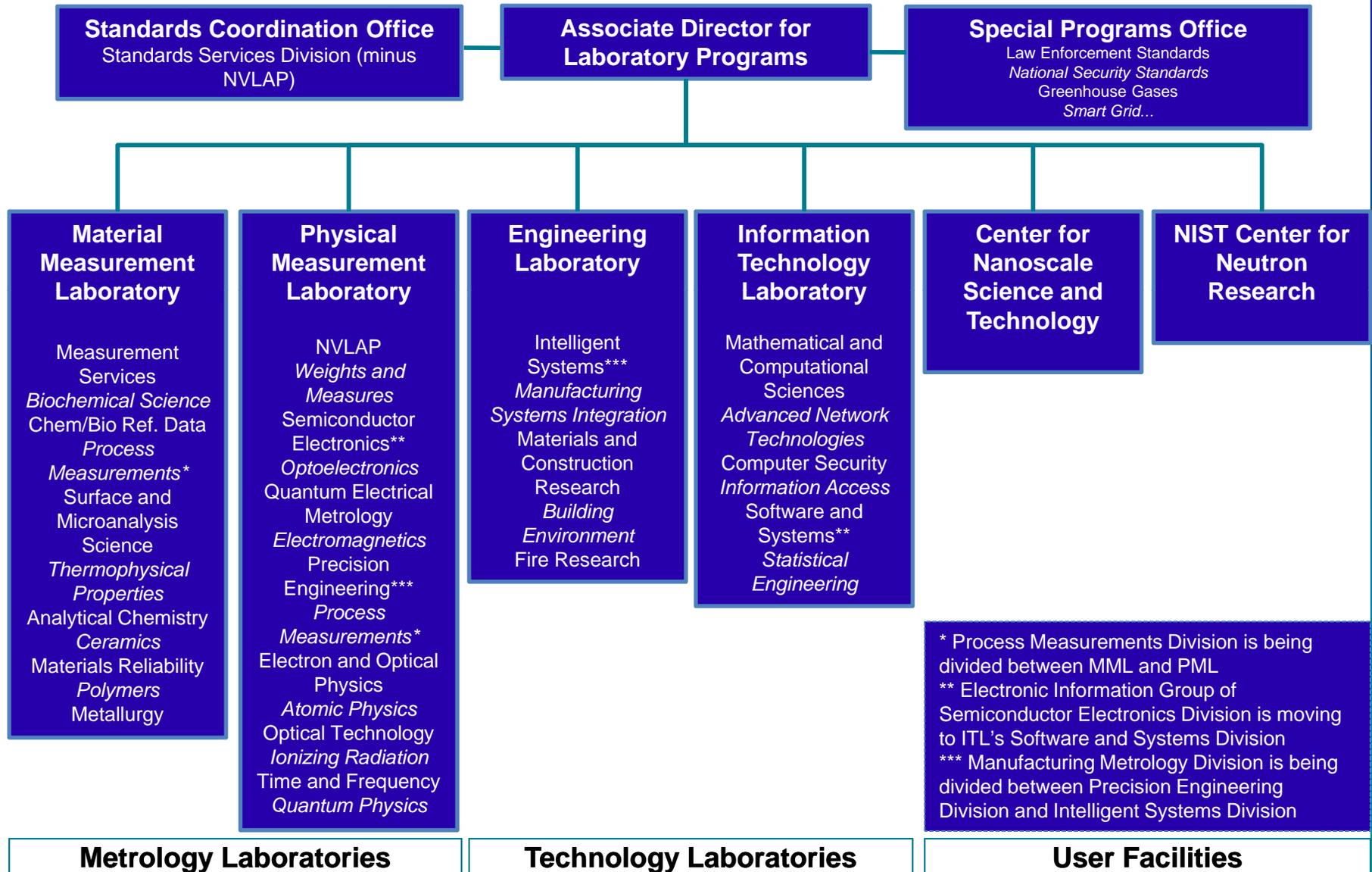- **Alignment:** strengthen ties to our unique mission activities.
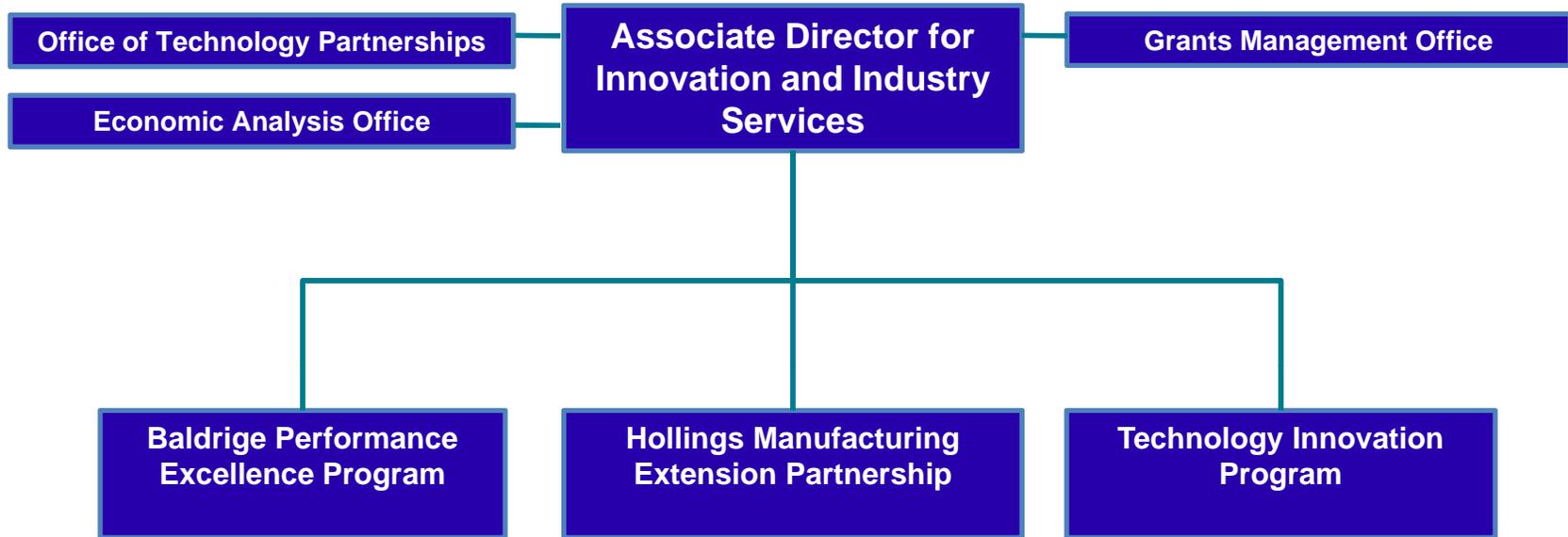
NIST Proposed Realignment
New Structure

Executive Administration
Management and Organization
Administrative Support

Director

Chief of Staff
Program Coordination Office
Public and Business Affairs Office
Congressional and Legislative Affairs Office
International and Academic Affairs Office

Associate Director for Laboratory Programs (and Principal Deputy)

Material Measurement Laboratory

Physical Measurement Laboratory

Engineering Laboratory

Information Technology Laboratory

Center for Nanoscale Science and Technology

NIST Center for Neutron Research

Office of Special Programs

Standards Coordination Office

Associate Director for Innovation and Industry Services

Baldrige Performance Excellence Program

Hollings Manufacturing Extension Partnership

Technology Innovation Program

Grants Management Office

Economic Analysis Office

Office of Technology Partnerships

Associate Director for Management Resources

Office of Facilities and Property Management

Office of Financial Resource Management

Office of Workforce Management

Office of Information Systems Management

Office of Safety, Health and Environment

Civil Rights and Diversity Office

Research Support Services Office

Strategic Resources Office

Boulder Site Management Office

NIST Proposed Realignment
Structure of the Laboratory Programs

Standards Coordination Office
Standards Services Division (minus NVLAP)

Associate Director for Laboratory Programs

Special Programs Office
Law Enforcement Standards
National Security Standards
Greenhouse Gases
Smart Grid...

Material Measurement Laboratory

Measurement Services
Biochemical Science
Chem/Bio Ref. Data
*Process Measurements**
Surface and Microanalysis Science
Thermophysical Properties
Analytical Chemistry
Ceramics
Materials Reliability
Polymers
Metallurgy

Physical Measurement Laboratory

NVLAP
Weights and Measures
Semiconductor Electronics**
Optoelectronics
Quantum Electrical Metrology
Electromagnetics
Precision Engineering***
*Process Measurements**
Electron and Optical Physics
Atomic Physics
Optical Technology
Ionizing Radiation
Time and Frequency
Quantum Physics

Engineering Laboratory

Intelligent Systems***
Manufacturing Systems Integration
Materials and Construction Research
Building Environment
Fire Research

Information Technology Laboratory

Mathematical and Computational Sciences
Advanced Network Technologies
Computer Security
Information Access
Software and Systems**
Statistical Engineering

Center for Nanoscale Science and Technology

NIST Center for Neutron Research

* Process Measurements Division is being divided between MML and PML
** Electronic Information Group of Semiconductor Electronics Division is moving to ITL's Software and Systems Division
*** Manufacturing Metrology Division is being divided between Precision Engineering Division and Intelligent Systems Division

Metrology Laboratories	**Technology Laboratories**	**User Facilities**

NIST Proposed Realignment
Structure of the Extramural Programs

```
Office of Technology Partnerships ──┐
                                     ├── Associate Director for      ──── Grants Management Office
Economic Analysis Office ────────────┘    Innovation and Industry
                                          Services
                                               │
              ┌────────────────────────────────┼────────────────────────────────┐
    Baldrige Performance          Hollings Manufacturing          Technology Innovation
    Excellence Program            Extension Partnership            Program
```

NIST Proposed Realignment
Structure of the Administrative Programs

Civil Rights and Diversity Office	**Associate Director for Management Resources**	**Strategic Resources Office** Project management expertise *Strategic planning expertise*
Research Support Services Office Information Systems *Information Services* Fabrication Technology		**Boulder Site Management Office**

- **Office of Financial Resource Management**
- **Office of Workforce Management**
- **Office of Facilities and Property Management**
- **Office of Information Systems Management**
- **Office of Safety, Health and Environment**

NIST Budget
FY 2008 – FY2011

	FY 2008 Enacted	FY 2009 Enacted	FY 2010 Enacted	FY 2011 Request	FY 2011 Change
STRS[1]	**$440.5**	**$472.0**	**$515.0**	**$584.5**	**$69.5**
ITS	**$154.8**	**$175.0**	**$194.6**	**$209.6**	**$15.0**
Technology Innovation Program	65.2	65.0	69.9	79.9	10.0
Hollings Manufacturing Extension Partnership [2]	89.6	110.0	124.7	129.7	5.0
CRF	**$160.5**	**$172.0**	**$147.0**	**$124.8**[3]	**$(22.2)**
NIST Construction & Major Renovations	42.6	29.7	22.0	52.3	30.3
Safety, Capacity, Maintenance, and Major Repairs	36.6	68.3	58.0	72.5	14.5
Competitive Construction Grants Program	30.0	30.0	20.0	0.0	(20.0)
Congressionally Designated Projects	51.3	44.0	47.0	0.0	(47.0)
Total NIST	**$755.8**	**$819.0**	**$856.6**	**$918.9**	**$62.3**

[1] FY 2011 Includes $69.4 M in initiatives and redirection of FY 2010 Congressionally Designated Projects toward FY 2011 ATBs.

[2] FY 2011 Includes $0.4 M in ATBs.

[3] FY 2011 includes $66.1 M to fund $52.3 M in construction and major renovations (to include $22 M of construction drop-out from FY 2010) for Building 1 Renovation ($37.9 M), General Purpose Laboratories ($14.4 M), and $13.8 M in Safety, Capacity, Maintenance, and Major Repair (SCMMR). An additional $0.7 M in ATBs increases SCMMR to $14.5 M from the FY 2010 enacted level.

NIST FY 2011 Budget Request

STRS: Investments on National Priorities **(+$69.5 M)**

- Measurement science research and standards to address critical national priorities in energy, environment, manufacturing, cybersecurity, and healthcare
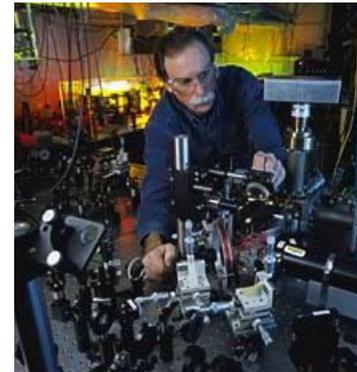
ITS: Revitalizing extramural programs **(+15.0 M)**

- Hollings Manufacturing Extension Partnership ($5.0 M)

- Technology Innovation Program ($10 M)

CRF: Strengthen facilities to assure U.S. leadership in measurement science **(+66.1 M)**

- Boulder Building 1 Renovation ($37.9 M)

- Gaithersburg General Purpose Laboratories (GPL) Renovation Planning and Design ($14.4 M)

- Safety, Capacity, Maintenance, and Major Repair ($13.8 M)

FY 2011 STRS Initiative Requests

Focused Investments on National Priorities (+$69.4 M)

- *Competitive Manufacturing and Construction In a Clean-Energy Economy (+$20 M)*
  - Green Manufacturing and Construction
  - Innovations for 21st Century U.S. Manufacturing

- *Standards and Conformity Assessment for Interoperability in Emerging Technologies ($10 M)*

- *Scalable Cybersecurity for Emerging Technologies and Threats ($10 M)*

- *Innovations in Healthcare – Measurement Science and Standards to Support Manufacturing and Regulatory Approval of Biologic Drugs ($10 M)*

- *Sustainable Energy Sources and Nanomaterials ($9 M)*
  - Advanced Solar Technologies – 3rd Generation Photovoltaics
  - Nanomaterial Environmental, Health, and Safety

- *Disaster Resilient Buildings and Infrastructure ($5 M)*

- *Enhancing Science, Technology, Engineering and Math Education ($3.4 M)*
  - NIST NRC Postdoctoral Research Associateships

- *Strategic and Emerging Research Initiatives ($2 M)*

NIST ARRA Update
as of 6/7/2010
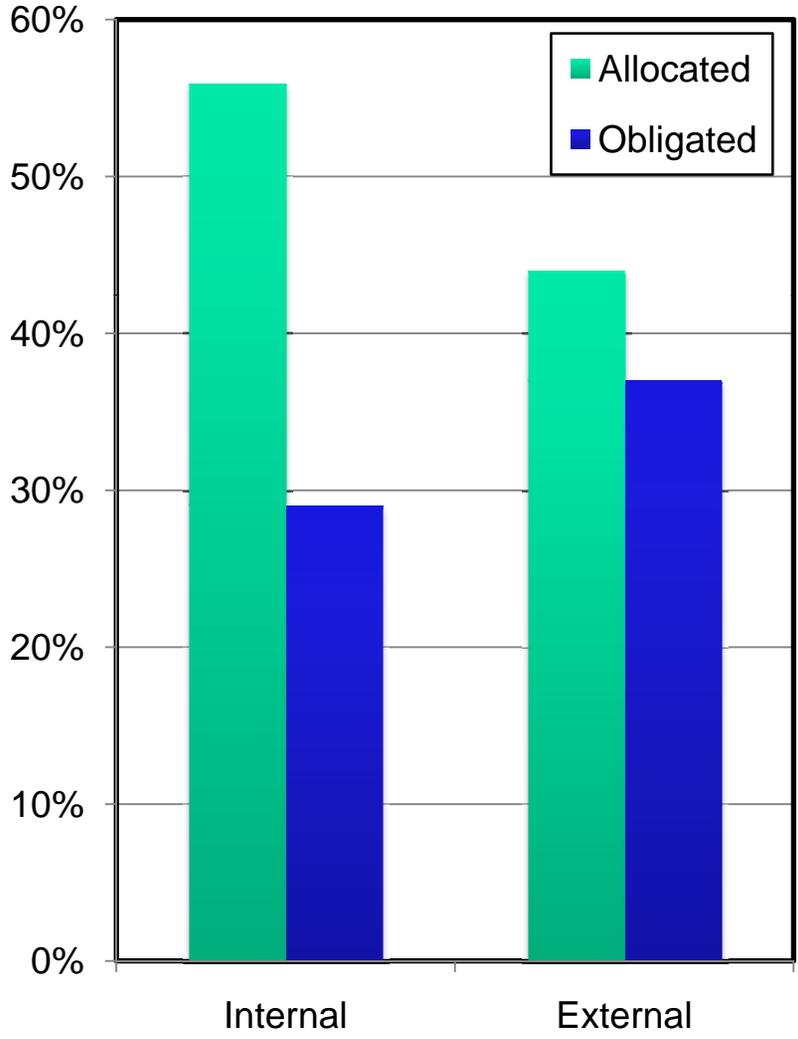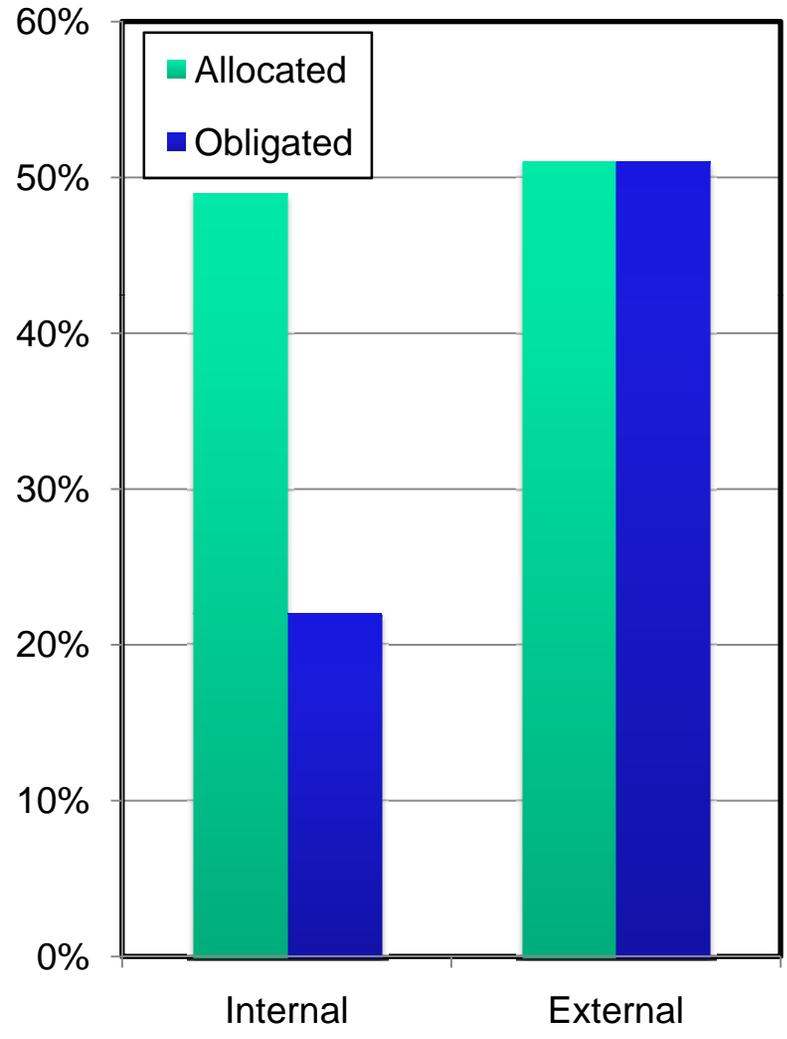
Competes Reauthorization

- **On May 28th, 2010 the House passed its version of the COMPETES Reauthorization legislation 262-150**

- **What this Bill could mean for NIST**
  - House Bill Reauthorizes NIST for 5 years – continues path to doubling laid out in original bill.
  - Gives NIST Director the additional title of Under Secretary of Commerce for Standards and Technology
  - Proposes changes in the cost share of MEP centers from 1/3 Federal, 2/3 State and private sector to a 50/50 cost share
  - Creates a NIST Bioscience Research Program
  - Codifies renaming of the NIST laboratories

- **Next steps**
  - Senate is working on its own version of the language
  - Senate is looking for a much cleaner authorization bill, but are supportive of some elements such as the new Under Secretary position

Safety Management
Blue Ribbon Commission II

- Original Blue Ribbon Commission (BRC) was a FACA that met during the fall of 2008.

- Issued five core findings based on its review of NIST's management structure and safety systems:

    1. Safety is not a core value at NIST.

    2. Safety is not integrated with the conduct of operations in a meaningful way across organizational units.

    3. NIST has not benchmarked safety protocols and performance against similar organizations with strong safety cultures.

    4. NIST is plagued by a serious lack of resources for safety.

    5. The staff is eager, willing, and ready to embrace a safety culture.

- Charge to BRC II would be to examine NIST's progress towards addressing these findings.

Safety Management
BRC II Membership

- All the members of the original BRC have agreed to participate again

  - ✓ **Paul A. Croce**
    Former VP and Manager of Research FM Global (Ret.)

  - ✓ **Charles V. Shank**
    Fellow Janelia Farm Research Center, Former Director LBNL (1989 – 2004)

  - ✓ **Kenneth P. Fivizzani**
    Former Research Scientist Nalco Company (Ret.)

  - ✓ **Kenneth Rogers**
    Former Commissioner of the NRC

  - ✓ **William VanSchalkwyk**
    Managing Director, EH&S Programs, MIT

  - ✓ **A. Thomas Young**
    Former Executive Vice President, Lockheed Martin (Ret.)

External Staff Awards and Recognition
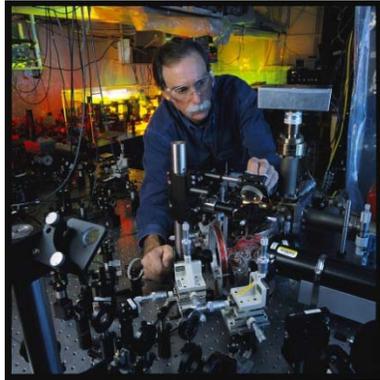
© Geoffrey Wheeler

Dr. David Wineland shared the *2010 Benjamin Franklin Medal in Physics* for the experimental realization of the first device that performed computer-logic operations using the quantum properties of individual atoms.

Dr. Till Rosenbrand was nominated for the *Service to America's Call to Service Medal* for inventing the world's most precise atomic clock based on quantum computing research.
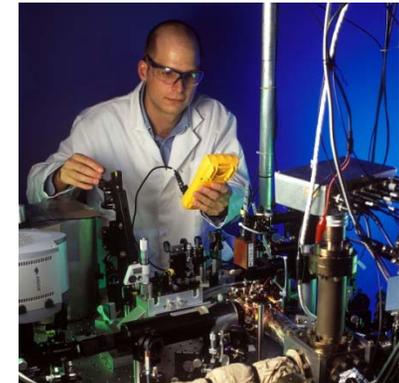
© Geoffrey Wheeler

NIST

Dr. Joshua Bienfang was nominated for the *Service to America's Science and Environmental Medal* for his ground-breaking work to demonstrate record-speed encryption services in a system whose security is based on quantum objects.

External Staff Awards and Recognition

2009 Arthur S. Flemming Award Winners

Dr. Steven Brown – *advanced light measurement and its applications to the environmental remote sensing of the Earth.*

Dr. John Kitching – *developed ultra-miniature devices for applications such as atomic clocks and magnetic imaging.*

NIST

Dr. Dietrich Leibfried – *honored for his many research innovations in quantum computing including the "geometric phase gate".*

Dr. Marla Dowell – *provided leadership to one of the most comprehensive laser metrology programs in the world.*

Dr. Eite Tiesinga – *established a world-class research program on the theory of cold atom collisions.*

© Geoffrey Wheeler

Catalyzing Transition of University Research from Lab to Marketplace

- Secretarial Priority – Involving top leadership from NIST, EDA, and USPTO

- February 24 Forum at the National Academies

  Wide Representation

  - Senior Commerce and White House Officials
  - Universities, Entrepreneurs, and Venture Capitalists

  Topics

  - From the lab to the Marketplace: Crossing the Valley of Death
  - University Strategies to Support Commercialization
  - Role of Universities in Regional Economic Development
  - Entrepreneurship education

- Office of the Secretary is setting up a series of 4 regional meetings to explore these topics in more detail.

  Meetings will take place this summer from the end of June to mid July
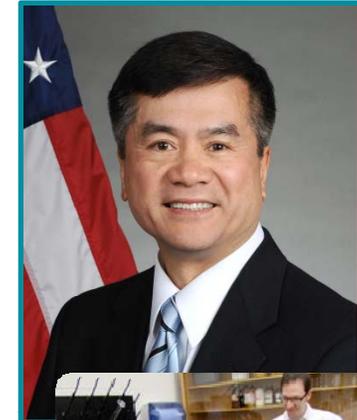
U.S. Assistant Secretary of Commerce for Economic Development, John Fernandez, holds Roundtable at University of Kentucky

NIST Response
Deepwater Horizon incident

NIST has been aiding in the response efforts for the Deepwater Horizon Incident. So far, NIST has conducted two types of activities in direct response to NOAA requests

- **Specimen Banking:** Through the Hollings Marine Laboratory (HML), NIST is assisting in the collection of specimens from areas likely to be affected in order to establish an ecological baseline.

- **Oil Flow Metrology:** NIST metrologists are supporting an "Expert Team" to assess the flow rate of oil leaking from the ocean floor.

  estimate for the low-end of the oil leak between 12,000 to 25,000 bbl/day.

NIST
National Institute of
Standards and Technology

VCAT Charter

"The Committee shall review and make recommendations regarding general policy for NIST, its organization, its budget and the programs, within the framework of the applicable national policies as set forth by the President and the Congress.

The Committee will function solely as an advisory body, in accordance with the provisions of the FACA."

My goals:

- *Maximize the impact of the VCAT for NIST.*

- *Respecting the valuable time of the VCAT members.*
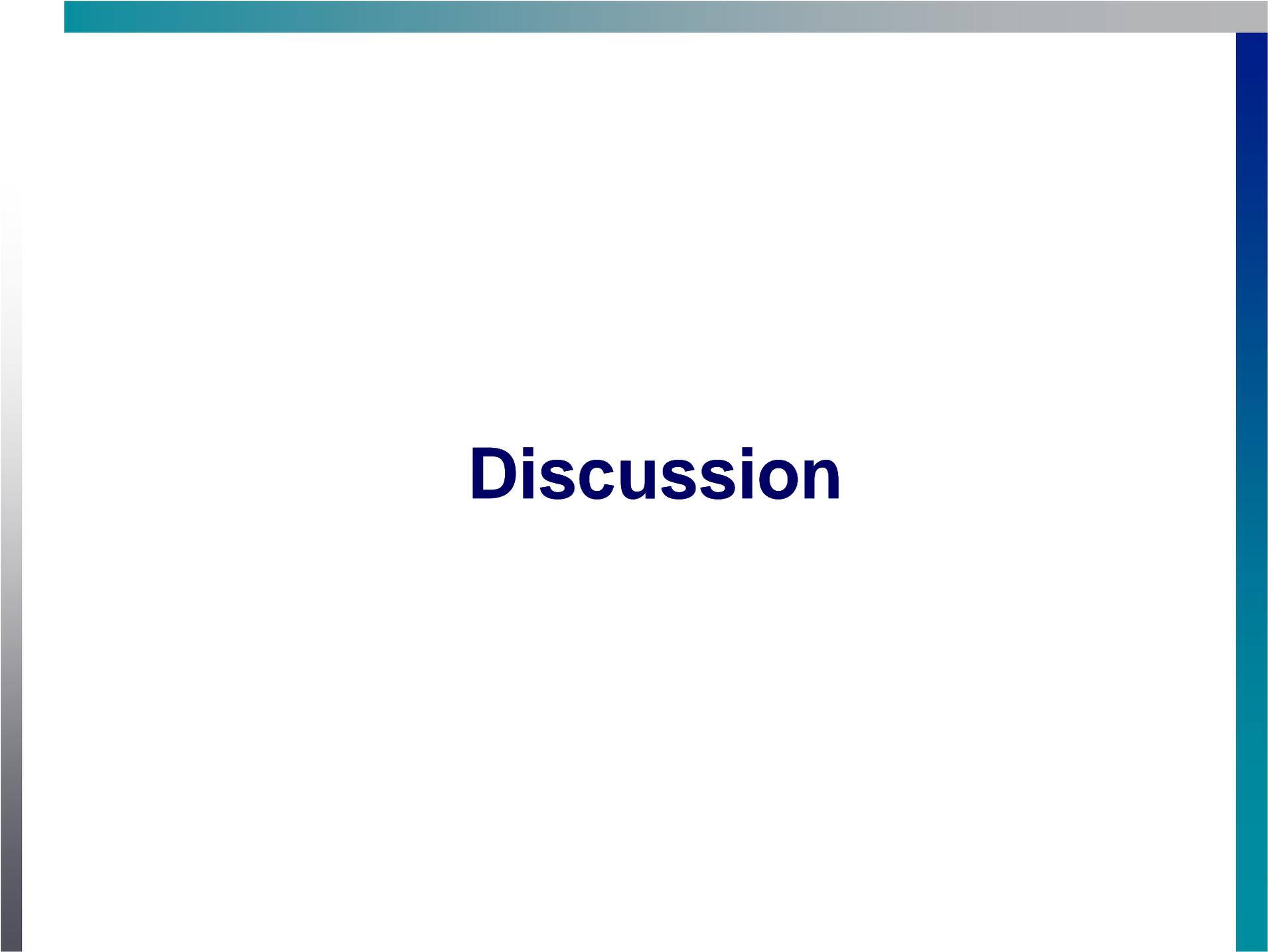
VCAT themes by timeframe

Retrospective

o *Performance metrics and assessment*

Ongoing activities

o *Safety*

o *Security*

o *Documentary Standards*

o *Organizational Realignment*

Future Direction

o *Grand Challenge Workshops*

o *Program planning, Budget development*

o *NIST's Measurement Services*

Discussion