Welcome

Visiting Committee on Advanced Technology
February 5-6, 2014

Dr. Patrick Gallagher

Under Secretary for Standards and Technology and NIST Director
Safety Update

Goal = Zero

**Recordable case (RC)**
- To a first approximation, an injury that required medical treatment beyond first aid

**DART case**
- An OSHA recordable that resulted in employee Days Away, Restricted duty, or job Transfer
Welcome to New VCAT Member

Rita R. Colwell

Distinguished University Professor, University of Maryland College Park and Johns Hopkins University Bloomberg School of Public Health
Senior Advisor and Chairman Emeritus, Canon U.S. Life Sciences
Chairman and President, CosmosID, Inc.

Career Highlights:

• 11th NSF Director, 1990-2004, and Co-chair of the NSTC Committee on Science
• Winner of 2006 National Medal of Science
• Former President of the University of Maryland Biotechnology Institute
• Has held leadership positions at many scientific organizations, including Chairman of the Board of Governors of the American Academy of Microbiology and President of the American Association for the Advancement of Science
• Member of US and International Science Academies
• Authored or co-authored 17 books and more than 800 scientific pubs
THANK YOU to Departing VCAT Members

Pradeep Khosla
Term: June 6, 2008–June 1, 2014
• Member of the VCAT Subcommittee on Cybersecurity, 2013
• Member of the VCAT Subcommittee on Public Safety Networks, 2011

Credit: NIST

Alan Taub
Term: May 9, 2008–May 8, 2014
• VCAT Chair: April 1, 2013–March 31, 2014
• VCAT Vice Chair: March 5, 2010–March 31, 2013
• Member of the VCAT Subcommittee on Manufacturing, 2013-2014
• Member of the VCAT Subcommittee on Safety, 2012–2013
• Chair of the VCAT Subcommittee on Manufacturing, 2011

Credit: NIST
A SMALL TOKEN OF OUR APPRECIATION

High-Strength Magnesium Alloy AZ91
Mg-Al-Zn \( \beta \)-Mg\(_2\)Al\(_2\)
Congratulations

Ana Maria Rey (NIST/JILA) has been named a 2013 MacArthur Foundation Fellow

“Atomic physicist advancing our ability to simulate, manipulate, and control novel states of matter through fundamental conceptual research on ultra-cold atoms”

Dan Madrzykowski won the 2013 Service to America Citizen Services Award

“Dramatically improved firefighting practices by conducting and sharing sophisticated research that has saved firefighters’ lives and protected property across the nation.”

Deborah Jin to receive 2014 Comstock Price in Physics

“Demonstrating quantum degeneracy and the formation of a molecular Bose-Einstein condensate in ultra-cold fermionic atomic gases, and for pioneering work in polar molecular quantum chemistry”
Congratulations

Presidential Early Career Awards for Scientists and Engineers

Gretchen Campbell nominated for
“pioneering research in the new field of atomtronics, proving the feasibility of this technology by demonstrating the first controllable atom circuit, and for mentoring young scientists through coursework, laboratory research, and sponsorship of a women-in-physics group.”

R. Joseph Kline, nominated for
“pioneering the use of grazing incidence X-ray diffraction for the characterization of molecular factors critical to the performance of organic electronics, and for building collaborations across NIST and with industry, and mentoring the next generation of scientists in this area.”

Ana Maria Rey (NIST/JILA), nominated for
“world-class accomplishments in the theory of complex interactions between atoms and light, guiding and explaining experiments in such areas as ultracold atoms and molecules, quantum information processing, atomic clocks, and quantum magnetism, and for outstanding mentoring of future generations of scientists.”
Budget Update

FY 2014 Enacted

• $850 M, increase of $81 M over FY13 enacted
• $651M for STRS, including +$30M for advanced manufacturing, +$5M for cybersecurity research, and +$1 for disaster resilience
• $143M for ITS, including $128M for MEP and $15M for AMTech
• $56M for Construction of Research Facilities

FY 2015 Request

• NIST Request submitted to OMB in September

FY 2016 Request

• Planning has started
NIST FY 2014 Omnibus Appropriations Bill
(Dollars in millions)

<table>
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<tr>
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<th>FY 2013 Enacted</th>
<th>FY 2014 President's Request</th>
<th>FY 2014 Congressional Budget</th>
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<td><strong>STRS</strong></td>
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<tr>
<td>Laboratory Programs</td>
<td>$579.8</td>
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<td>Corporate Services</td>
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<td>18.7</td>
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<td><strong>ITS</strong></td>
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<td>Advanced Manu. Tech. Consort.</td>
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<td>153.1</td>
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<td><strong>CRF</strong></td>
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<td>Const. &amp; Major Renovations</td>
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<tr>
<td>Saf. Cap., Maint., Maj. Repairs</td>
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<td>48.2</td>
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<td><strong>Total Discretionary</strong></td>
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<td><strong>$928.2</strong></td>
<td><strong>$850.0</strong></td>
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<td>NNMI (Mandatory)</td>
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<td>$1,000.0.0</td>
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<td>WIN (Mandatory) *</td>
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<td><strong>Total NIST</strong></td>
<td><strong>$769.3</strong></td>
<td><strong>$1,928.2</strong></td>
<td><strong>$850.0</strong></td>
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* The Middle Class Tax Relief and Job Creation Act of 2012 authorized $300M in funds; the first $100M is provided to NIST after successful spectrum auction of $7.2B or more; an additional $200M is allocated to NIST if spectrum auctions net more than $27.6B; CBO scored the first $100M coming to NIST in FY 2017; these spectrum auctions could take up to 7 years.
We know that the nation that goes all-in on innovation today will own the global economy tomorrow. This is an edge America cannot surrender. Federally-funded research helped lead to the ideas and inventions behind Google and smartphones. And that's why Congress should undo the damage done by last year's cuts to basic research so we can unleash the next great American discovery.

President Obama
2014 State of the Union Address
Program Update: Center of Excellence on Advanced Materials

- RFP published June 27th, closed August 12th. NIST received many strong proposals

- Awarded to new Center for Hierarchical Materials Design (CHiMaD) Consortium lead by Northwestern University of Chicago
  - Northwestern-Argonne Institute of Science and Engineering (partnership between Northwestern and DoE’s Argonne National Lab)
  - The Computation Institute (partnership between University of Chicago and Argonne National Lab)

- $5 million NIST award with $4.65 million consortium contribution

- CHiMaD will focus on the discovery of novel hierarchical materials. Hierarchical materials exploit distinct structural details at various scales from the atomic on up to achieve special, enhanced properties.
Program Update: Forensic Science

- National Commission on Forensic Science
  - Co-chaired by DOJ Deputy Attorney General and NIST Director
  - Includes forensic science service providers, researchers, law enforcement, prosecutors, defense attorneys, and judges
  - First meeting Feb 3-4, 2014
- Two additional roles for NIST:
  - Validation of forensic measurement;
  - Coordination of guidance to support forensic laboratories
- Guidance Groups
  - NIST has collected public comments and developed a plan for what we term the “Organization of Scientific Area Committees (OSAC)”
Program Updates -- National Strategy for Trusted Identities in Cyberspace (NSTIC)

• National Strategy for Trusted Identities in Cyberspace (April 2011)
• National Program Office (interagency)
• Identity Ecosystem Steering Group (private sector)

Second round of pilots awarded on September 17th:
over $7M in awards to 5 organizations

• Exponent (Calif.), $1,589,400;
• Georgia Tech Research Corporation (GTRC) (Ga.), $1,720,723;
• Privacy Vaults Online, Inc. (PRIVO) (Va.), $1,611,349;
• Troop ID (Va.), $1,204,957; and
• Transglobal Secure Collaboration Participation, Inc. (TSCP) (Va.), $1,264,074.

FFO for third round of pilots released January 16, 2014
Program Update: Cybersecurity for Critical Infrastructure Framework

- Draft framework outline published July 1, 2013
- Third Cybersecurity Framework Workshop held July 10-12, 2013 in San Diego, CA
- Preliminary Framework published August 28, 2013
- Fourth Cybersecurity Framework Workshop held September 11-13, 2013 in Dallas, TX
- Preliminary Framework published on October 10, 2013, formal comments requested by December 13, 2013
- Fifth Cybersecurity Framework Workshop held November 14-15, 2013 in Raleigh, NC

- Final Framework to be released February 12, 2014
Program Update: Advanced Manufacturing Technology Consortia Program

AMTech program funded in 2013 appropriations

Grants will support new or existing industry-driven consortia to develop research plans

Teaming and partnerships strongly encouraged

- With participation by the full value chain, including small-and mid-sized firms.

Planning projects sought that include:

- Facilitating development, diffusion, technology transfer, and knowledge adoption
- Identifying critical gaps in manufacturing common to an industry or sector.
- Creating roadmaps that guide new research and development to address industry problems.

FFO published July 24th; proposals due October 21st. Received a strong response.
Program Update: Measurement Science for Advanced Manufacturing

NIST awarded $7.4 Million in grants for Additive Manufacturing Research

- FFO published March 20
- Awarded September 17

Grants will go to two awardees

- Northern Illinois University, DeKalb, Ill ($2.4 million)
  Development and validation of physics-based additive manufacturing models for process control and quality assurance

- National Additive Manufacturing Innovation Institute, Youngstown, Ohio ($5 million)
  Holistic approach to solving measurement science challenges in additive manufacturing
President’s Council of Advisors on Science and Technology
Advanced Manufacturing Partnership 2.0

**AMP Mission:** Encourage approaches that sustain and grow U.S. leadership in advanced manufacturing

**AMP 1.0 – 16 Recommendations**

**Pillar I:** Enabling Innovation

**Pillar II:** Securing the Supply Chain

**Pillar III:** Improving Business Climate

**AMP 2.0 Working Teams**

- Transformative manufacturing technologies
- Demand-driven workforce solutions
- Supporting implementation of NNMI
- Manufacturing policy
- Manufacturing image

**AMP 2.0 focused on Implementation**

kickoff Sept 30, 2013

- Regional engagement and outreach
- Implementation on national initiatives
- Active Working Teams to issue “letter-reports”

**AMP Coordinating Group**

DOW, MIT, WH, AMNPO
NNMI: National Network for Manufacturing Innovation

**NNMI Mission:** Advance U.S. Manufacturing and strengthen workforce skills by “scaling-up” new innovative technologies from labs to production

NNMI Bipartisan/Bicameral Legislation

- Revitalize American Manufacturing & Innovation (“RAMI”) Act, Aug. 1, 2013
- Senate Commerce Committee Hearing, Nov. 13, 2013
- House Science Committee, Subc. on Research & Technology Hearing, Dec. 12, 2013

Administrative Action

- Pilot institute on Additive Manufacturing, Youngstown OH established Oct. 2012
- “Next Generation Power Electronics Innovation Institute,” Raleigh, NC, DOE, announced Jan. 15
- DOD Lightweight Metals and Digital Manufacturing Institutes, to be announced shortly.
  - SOTU – announcement of new Institutes (in addition to Youngstown and Raleigh, total of 8)
  - NIST leading effort to coordinate network of Institutes

“Tonight, I'm announcing we'll launch six more this year.”
SOTU, January 28, 2014
Manufacturing Subcommittee

Charge
- Assess approach to meeting needs of changing technology landscape in advanced manufacturing
  - Identify emerging trends
  - Mechanisms to develop technical capabilities
- Recommendations on approach to research, collaboration, tech transfer, and outreach across multiple programs

Agenda
State of Advanced Manufacturing Technologies
Stephanie Shipp, Deputy Director and Research Professor, Virginia Bioinformatics Institute at Virginia Tech
Stephen Ezell, Senior Analyst, Information Technology and Innovation Foundation
Rob Gorham, Deputy Director, Technology Development, America Makes

Coordination Among NIST Programs
Roger Kilmer, Chief Manufacturing Officer

Developing the Next Generation of Technical Thought-leaders in Manufacturing
Bob Celotta, Director, CNST
Joe Dehmer, Director, PML
Howard Harary, Acting Director, EL
Laurie Locascio, Director, MML
Cybersecurity Subcommittee

Charge
- Recommendations to position NIST to best respond to cybersecurity needs
  - How to ensure balance between short-term priorities and long-term technical expertise
  - How to confirm that methods of partnership, collaboration, and communication are sufficient?
- Comment on tools organizations need to address cybersecurity risk

NIST Initiating Review of Cryptographic Standards Development Process 11/1/13

“Trust is crucial to the adoption of strong cryptographic algorithms. To ensure that our guidance has been developed according the highest standard of inclusiveness, transparency and security, NIST has initiated a formal review of our standards development efforts. (...) We also will bring in an independent organization to conduct a formal review of our standards development approach and to suggest improvements.”

Agenda
Addressing Cybersecurity Risk, a focus of the Cybersecurity Framework for Critical Infrastructure
NIST Cybersecurity Leadership
Optimum Balance – Cultivating Long-Term Expertise to Support Short-Term Priorities
NIST Subject Matter Experts
NIST Response to the Nation’s Cybersecurity Needs
Information Security and Privacy Advisory Board (ISPAB) Members
Review of Cryptography Standards Development Processes
Pat Gallagher
VCAT Meeting Agenda Review Day 1

Session I: Overview
  Call to Order
  Alan Taub, VCAT Chair
  Welcome and Agenda Review
  Pat Gallagher, Director and Under Secretary for Standards and Technology
  NIST Safety Update
  Richard Kayser, Chief Safety Officer

Session II: NIST’s User Facilities and Other Examples of Ways in Which NIST Partners with Others
  Context Setting
  Willie May, Associate Director for Laboratory Programs and Principal Deputy
  NIST Center for Neutron Research (NCNR)
  Rob Dimeo, Director, NCNR
  Center for Nanoscale Science and Technology
  Bob Celotta, Director, CNST
  Other Examples of NIST’s Unique Capabilities
  Willie May

Break for Parallel Sessions for VCAT Subcommittee Business
  Subcommittee on Manufacturing
  Sujeet Chand (chair), Uma Chowdhry, Tony Haymet, Karen Kerr, Darlene Solomon, Alan Taub, John Tracy
  Subcommittee on Cybersecurity
  Roberto Padovani (chair), Rita Colwell, Tony Haymet, Bill Holt, Pradeep Khosla, Al Romig
VCAT Meeting Agenda Review Day 2

Session III: Disaster Resilience
   Overview of NIST’s Responsibilities in Disaster Resilience
   Steve Cauffman, Research Engineer, Materials and Structural Systems Division, Engineering Laboratory

Wrap up VCAT Business and Adjourn
   VCAT Subcommittee on Manufacturing Recommendations and Discussion
   Sujeet Chand, Chair, VCAT Subcommittee on Manufacturing
   VCAT Subcommittee on Cybersecurity Recommendations and Discussion
   Roberto Padovani, Chair, VCAT Subcommittee on Cybersecurity
   Alan Taub, Chair, VCAT