NIST Update

Visiting Committee on Advanced Technology

February 8, 2017

Outline

- Personnel changes – VCAT and NIST
- Safety and security
- Organization update and NIST values
- Noteworthy events
  - Cool science
  - NIST reauthorization
  - Manufacturing USA (fka NNMI)
  - Presidential cyber commission
  - GPS coexistence
- NIST values

Welcome to new VCAT Members

Credit: MedImmune

Gail Folena-Wasserman, Ph.D.

Senior Vice President, Biopharmaceutical Development, MedImmune

- Oversees all analytical, process, formulation and drug product development including delivery and devices; and clinical manufacturing and quality control for clinical products.
- Joined MedImmune in 1991 as director, development, and was promoted to vice president, development, in October 1995. In 2010, she was appointed head of vaccines and biologics development.
- PharmaVOICE selected Dr. Folena-Wasserman as one of the 100 Most Inspiring People in 2011.

Credit: IoT Talent Consortium

David Vasko

Director, Advanced Technology, Strategic Development, Rockwell Automation

- Responsible for applied R&D and Global Product Standards an Regulations within Rockwell.
- Previously at Rockwell, he managed the Distributed Control Research lab and the Architecture Development group.
- On the boards of the Smart Manufacturing Leadership Coalition, the IoT Talent Consortium, and the Milwaukee Institute.

Farewell to two VCAT Members

Dr. Roberto Padovani

Executive Vice President and Fellow

Qualcomm Technologies, Inc.

Term: May 1, 2011 – April 30, 2017

Dr. Karen E. Kerr

Senior Managing Director, Advanced Manufacturing

GE Ventures, General Electric

Term: June 1, 2011 - May 31, 2017

NIST Management Changes

Laurie Locascio
Acting Associate Director for Laboratory Programs

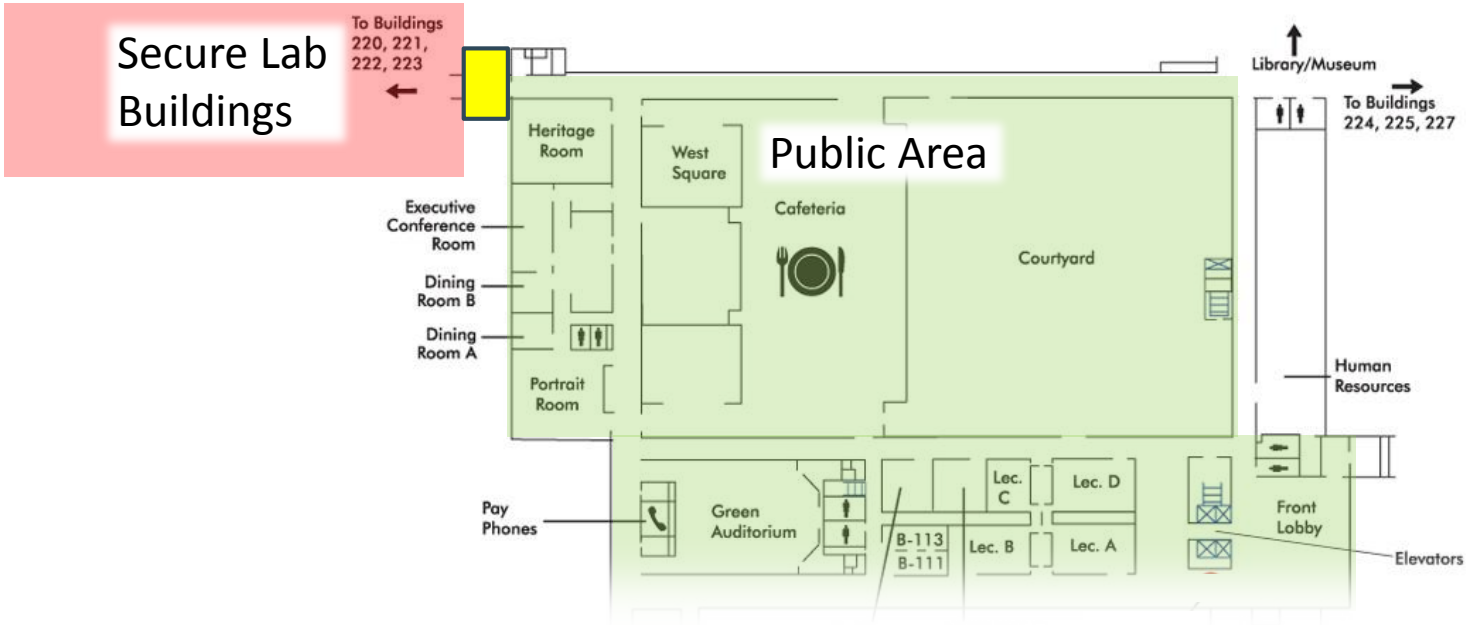
Mike Fasolka,
Acting Director, Material Measurement Laboratory

- **Director**
  Under Secretary of Commerce for Standards and Technology
  - **Chief of Staff**
  - **Associate Director for Laboratory Programs/ Principal Deputy**
    - **Material Measurement Laboratory**
    - **Communications Technology Laboratory**
    - **Physical Measurement Laboratory**
    - **Engineering Laboratory**
    - **Information Technology Laboratory**
    - **Center for Nanoscale Science and Technology**
    - **NIST Center for Neutron Research**
  - **Associate Director for Innovation and Industry Services**
    - **Baldrige Performance Excellence Program**
    - **Hollings Manufacturing Extension Partnership**
  - **Associate Director for Management Resources**
    - **Office of Acquisition and Agreements Management**
    - **Office of Safety, Health and Environment**
    - **Office of Financial Resource Management**
    - **Office of Human Resources Management**
    - **Office of Information Systems Management**
    - **Office of Facilities and Property Management**

Del Brockett
Acting Associate Director for Management Resources

Skip Vaughn
Chief Facilities Management Officer

Safety Update: Controlling Access to Labs



March 2016

July 2016

October 2016

January 2017

Turnstiles activated

Review commissioned

Recommendations authorized

Review delivered and endorsed, Turnstiles deactivated

Turnstiles reactivated

Turnstiles deactivated

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

Safety Update: Controlling Access to Labs

Recommendations implemented:

- The turnstiles will allow one-way traffic only.
- Sensors engaged to prevent doors from closing on people.
- The turnstile doors are now smaller and lighter.
- Security guard posted at the turnstiles during business hours.

New fault mode discovered by Safety Office

- Turnstiles deactivated
- Study group reconvened

Lesson: Must learn to better balance safety and security

Security plan “sprint”

Numerous NIST actions since recent security failures

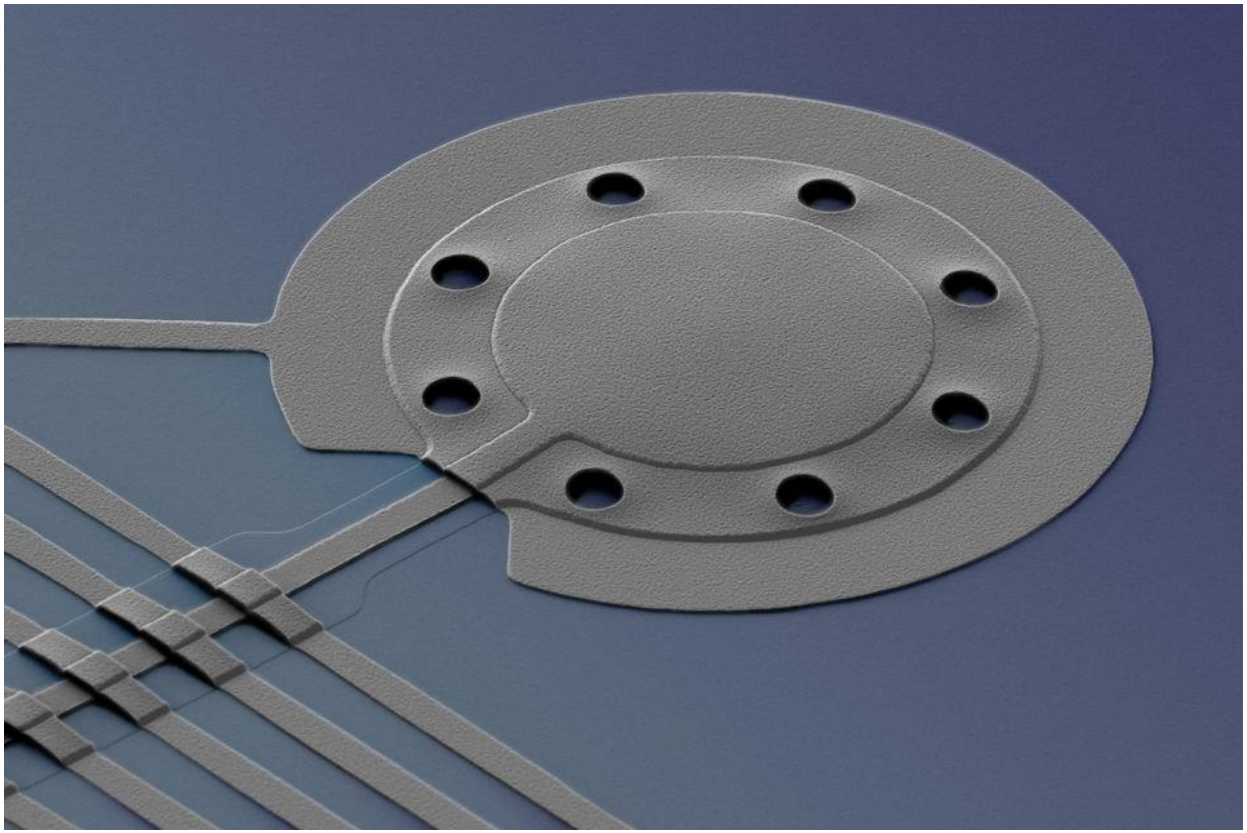
- Received advice from 3 independent experts
- Increase security staffing / improved procedures
- Addressed immediate access issues
- Several additional separate improvement activities underway

Next steps: Time for a holistic security plan

- See a clear analogy to safety at NIST – Rich Kayser to lead 30-day sprint
- Plan for security with the NIST mission– How to maintain a *secure and collaborative research environment* to most effectively innovate
- Broadly prioritize security threats to mission execution / prioritize corresponding countermeasures
- VCAT will be briefed on plan and activities

News: Science Breakthrough

NIST researchers cooled mechanical object below the "quantum limit" – colder than previously believed possible.



"The colder you can get the drum, the better it is for any application. Sensors would become more sensitive. You can store information longer. If you were using it in a quantum computer, then you would compute without distortion, and you would actually get the answer you want."

- John Teufel, NIST physicist

J.B. Clark, F. Lecocq, R.W. Simmonds, J. Aumentado and J.D. Teufel. 2017. Sideband Cooling Beyond the Quantum Backaction Limit with Squeezed Light. January 12, 2017. *Nature*.
DOI: 10.1038/nature20604

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American Innovation and Competitiveness Act

- NIST Director the President's principal advisor on standards policy
- Hollings Manufacturing Extension Partnership Program cost share now 1:1
- Requires NIST Strategic Plan that expands
  - Interactions with academia, international researchers, and industry
  - Commercial and industrial applications
- Provides several limited process flexibilities, including for workshops and purchasing

NIST Reauthorization

S. 3084

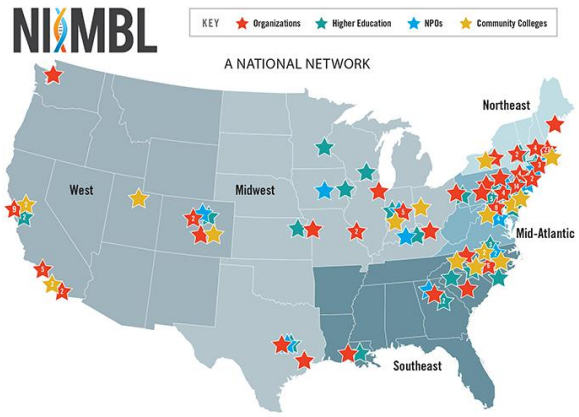
- Sponsored by Sen Corey Gardner (R, CO)
- Passed Congress Dec. 16, 2016
- Signed into law Jan. 06, 2017

Manufacturing USA

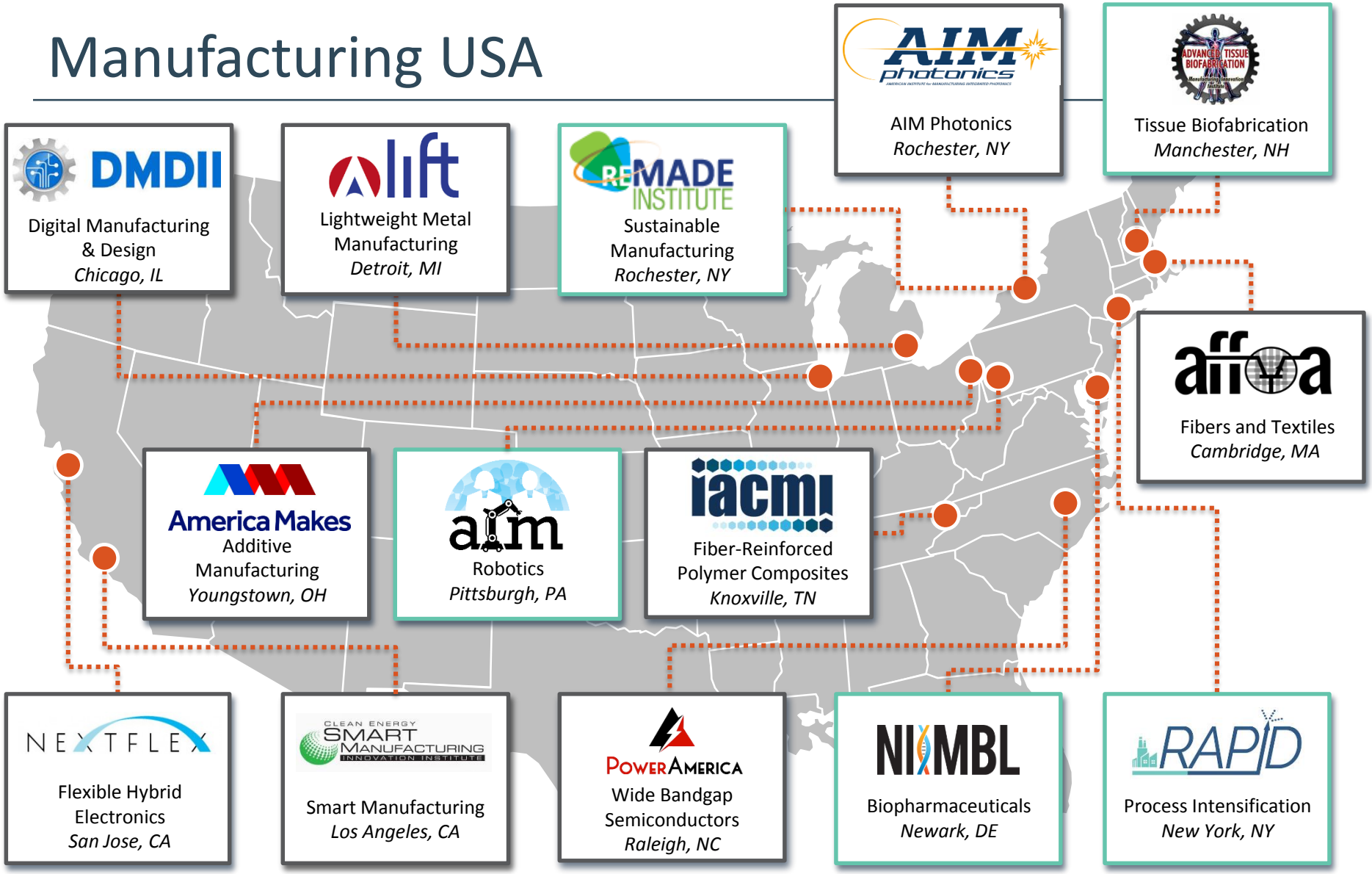
First DoC institute announced Dec. 16

First institute with focus area proposed by industry

- National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)
  - process innovations to enable “continuous manufacturing“ for existing biotherapeutics
  - development of standards and analytics for manufacturing new cell-based treatments
- 150 members over 25 states
- Funding over 5 years:
  - $70M Federal
  - $100M non-Fed
  - $80M in-kind



Manufacturing USA



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Commission on Enhancing National Cybersecurity

Established in response to Feb 2016 Executive Order 13718

> *To enhance cybersecurity awareness and protections at all levels of Government, business, and society, to protect privacy, to ensure public safety and economic and national security, and to empower Americans to take better control of their digital security*

- Convened five public meetings, opened input solicitations, hosted R&D working groups, developed working papers and drafts

- Report delivered by December due date

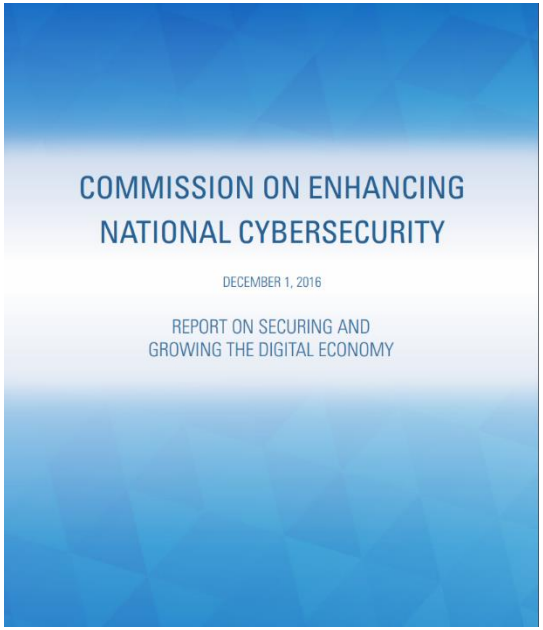
Commissioners:

- Thomas Donilon (*chair)*
- Samuel Palmisano (*Vice Chair)*
- Keith Alexander
- Annie Anton
- Ajay Banga
- Steven Chabinsky
- Pat Gallagher
- Peter Lee
- Herbert Lin
- Heather Murren
- Joseph Sullivan
- Maggie Wilderotter

Commission on Enhancing National Cybersecurity

- Six Imperatives
  - Protect, Defend, and Secure Today's Information Infrastructure and Digital Networks
  - Innovate and Accelerate Investment for the Security and Growth of Digital Networks and the Digital Economy
  - Prepare Consumers to Thrive in a Digital Age
  - Build Cybersecurity Workforce Capabilities
  - Better Equip Government to Function Effectively and Securely in the Digital Age
  - Ensure an Open, Fair, Competitive, and Secure Global Digital Economy
- Several requests of NIST

Report Delivered Dec. 1, 2016



National Advanced Spectrum and Communications Test Network

Est. March 2015

Created to **develop independent test methodologies and providing trusted test data** for complex evaluations of spectrum-sharing technologies

- NASCTN led by a formal partnership with NTIA (Institute for Telecommunications Sciences)

NASCTN
National Advanced Spectrum and Communications Test Network

NIST

NTIA

GPS Coexistence Project

Ligado Networks approached NASCTN to investigate the effect of LTE signals on GPS receivers operating in an adjacent frequency band.

- CTL developed best practices in experimental design, data analysis and uncertainty analysis
- **NIST methodology is already gaining acceptance by spectrum regulators.**

In less than a year, NASTCN:

- developed a public test plan
- performed complex radiated measurements - 1200 hours of data over 20 devices
- developed an uncertainty analysis, and
- publishing report, raw measurement data, and analysis tools

NIST Values

NIST is an organization with strong values, reflected both in our history and our current work. NIST leadership and staff will uphold these values to ensure a high performing environment that is safe and respectful of all.

Perseverance
We take the long view, planning the future with scientific knowledge and imagination to ensure continued impact and relevance for our stakeholders.

Integrity
We are ethical, honest, independent, and provide an objective perspective.

Inclusivity
We work collaboratively to harness the diversity of people and ideas, both inside and outside of NIST, to attain the best solutions to multidisciplinary challenges.

Excellence
We apply rigor and critical thinking to achieve world-class results and continuous improvement in everything we do.


A humble request

Thank You

Measurement science
Standards
Technology