NIST Visiting Committee on Advanced Technology (VCAT)

Dr. Laurie Locascio
Under Secretary of Commerce for Standards and Technology and Director of NIST
Meeting Agenda

February 8, 2023

Session I: Programmatic & Operational Updates

Session II: NIST Safety Committee Update

Session III: Findings of the National Academies of Science, Engineering and Medicine Assessment of NIST Facilities

Session IV: CHIPS Updates

Session V: NIST Community Building Efforts

Session VI: Subcommittee Recommendations

February 9, 2023

Session VII: VCAT Annual Report Drafting Session
I. Programmatic Updates – continued progress on our priorities
Grateful Recognition

Dr. Robert M. Dimeo
Director, NIST Center for Neutron Research
Departing NIST March 2023

Dr. James M. Adams
Special Advisor for Nuclear Operations (detailed)
Acting NCNR Director (transition in March)
Dr. James Olthoff
NIST Chief Metrologist
Director’s Office
NIST Leadership Changes

Dr. Charles H. Romine
Associate Director for Laboratory Programs (transition in late Feb)

Mr. James A. St Pierre
Acting Director, Information Technology Laboratory (transition in late Feb)
NIST Leadership Changes

Dr. Marla L. Dowell
Metrology Program Director,
CHIPS R&D
Boulder Site Director
(transition soon)

Mr. Dereck Orr
Acting Director,
Communications Technology Laboratory
(transition soon)
NIST Director's Priorities

- Critical & Emerging Technology Leadership
- Standards Leadership
- NIST Community
- Mission Delivery Enhancement
- Manufacturing Leadership
Artificial Intelligence (AI) Update

Rollout of the NIST AI Risk Management Framework (AI RMF) 1.0 & AI RMF Playbook 1.0

In-person launch with Deputy Secretary Graves and Federal, industry leaders

January 26, 2023

3rd U.S./EU Trade & Technology Council (TTC) ministerial at Univ. of Maryland College Park

Joint Roadmap on Evaluation and Measurement Tools for Trustworthy AI and Risk Management

December 5, 2022

Working on the global scale to promote trustworthy AI
NIST CSF 2.0 Concept Paper: Potential Significant Updates to the Cybersecurity Framework

- Released for public comment, 1/19/22
- Public workshops on 2/15/23 (virtual) and 2/22-23/23 (in-person)
- Comments due by 3/3/23

Creating the tools for the world to use to promote secure and trusted digital access
Advanced Communications Update

NIST Joins O-RAN Alliance (Nov. 2022)
Global consortium of carriers, vendors, and research institutions working to standardize the parts of the RAN and the interfaces that connect them

Collaboration Between NIST & AIM Photonics (Dec. 2022)

- AIM Photonics focus on manufacturing photonic chips
- NIST will design “calibration structures” to measure and test the performance of photonic chips at speed of up to 110 GHz

Advancing the next generation of wireless technologies
Quantum Information Sciences Update

Superconducting nanowire single photon detector for dark matter

Photonic integrated circuit for quantum computing

The time-programmable frequency comb and its use in quantum-limited ranging

Nature Communications, Dec 2022

Phys. Rev. D Dec 2022

Shaping the quantum future
NIST and Post-Quantum Cryptography

4th NIST PQC Standardization Conference
November 29 - December 1, 2022

- Introduced technical specifics for upcoming standards and received feedback from stakeholders
- Drafts of standards anticipated in summer 2023
Executive Order on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy

Promoting innovation in biomanufacturing and accuracy and precision in biological measurements
Energy, Climate, Environment

FY2023 Appropriations (+$11.5M)

• Climate and Energy Measurement, Tools, and Testbeds
• Direct Air Capture and Carbon Dioxide Removal and Sequestration
• Center of Excellence in Climate Change Measurement
• Forward-Looking Building Standards
• GHG-Urban Dome
• Wildfires and the Wildland-Urban Interface
Technology Transfer Activities

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Exclusive License to Wavsens

- Mapping probe can create a map of a structural entity, e.g., a three-dimensional (3D) environment such as a room, a building, a city, etc.
- The final product will function like a camera that can see through walls.

United States Patent
Holloway et al.

- Patent No.: US 11,435,386 B2
- Date of Patent: Sep. 6, 2022
- Field of Classification Search: CPC: G01R 29/0885; G01R 29/0892; G01R 21/01

United States Patent
Bharti et al.

- Patent No.: US 11,531,844 B2
- Date of Patent: Dec. 20, 2022
- Field of Classification Search: CPC: G06K 9/025 (2013.01); G06J 7/0012 (2013.01); G06F 28/89 (2022.01);
USG Standards Leadership

- NIST is working closely with the administration on developing a strategic approach to public-private cooperation in U.S. international standards development activity.

- NIST will lead the interagency implementation plan.

- Stakeholder “listening sessions” to be announced soon.

“To ensure these investments support positive technological outcomes, we will partner with industry and governments in shaping technological standards that ensure quality, consumer safety, and global interoperability, and to advance the open and transparent standards process that has enabled innovation, growth, and interconnectivity for decades.”
International Engagement in Standards

U.S.-EU Trade and Technology Council

Quad

OECD

Ottawa 5

IPEF

U.S.-UK Comprehensive Dialogue on Technology and Data
Manufacturing Program Updates

 MEP Updates

- $175M (+$17M over FY2022)
- Additional $13M in funding as part of the Disaster Supplemental “to help implement the Research and Development, Competition, and Innovation Act.”

 Manufacturing USA Updates

- NIST asked for public input on development of up to three new institutes focused on semiconductor manufacturing
- Public report expected in March
CHIPS Update

• Full funding announcement for Manufacturing Incentives coming in February 2023
• White Paper on the National Semiconductor Technology Center coming soon
• Rapidly hiring team members
• Industrial Advisory Committee met yesterday, February 7

More to come in this afternoon's session
NIST Disaster Investigations

Hurricane Fiona
• Understand impacts of power and water infrastructure damage to mitigation activities
• Examine compounding effects of Hurricane Maria on recovery of schools, hospitals, businesses, supply chains

Hurricane Ian
• Investigate storm surge damage to improve building codes and standards
• Study emergency communications and evacuation actions to improve emergency preparedness and response practices

Champlain Towers South
• Secure primary evidence warehouse
• Draft final report with recommendations for changes to codes, standards, and practices
NCNR Update

• NRC has completed the Technical Evaluation Report (TER) and is now in concurrence at NRC
• NRC will hold public meeting this month to inform public of basis for restart decision
• NRC then to issue TER report to NIST with restart authorization decision

Reactor Operational Readiness

Reactor Upgrades

• Operate for 4-5 cycles (~1 year) then shut down for upgrades
  o Double the data rates in the cold neutron guide hall
  o Additional 2 to 9 times gain for other instrumentation

NCNR Leadership

• Dr. Rob Dimeo departing NIST in March
• NCNR Director vacancy to be posted
• Dr. Jim Adams will become Acting NCNR Director in interim
Expanding Our Reach (Visibility)

Veritasium Segments on You Tube

How to measure the tiniest forces in the universe: 3.5M views

The world depends on a collection of strange items: 6.3M views
DEIA Strategic Plan

NIST DEIA AT A GLANCE

- 38.9% Women
- 27.9% People of Color
- 9% Individuals with Disabilities
- 8.1% Military Members

Supporting a place where everyone is welcome and included
Return to Campus Update

Rebuilding our on-campus community with intention
Discussion