Agenda

Monday, October 23, 2017

Session I: NIST Update

    NIST update

    Safety update

Session II: NIST Laboratory Programs Strategic Vision

    Laboratory Programs Strategic Vision Overview

        Working Session on Bioeconomy

        Working Session on AI and Data

        Working Session on Quantum SI

        Working Session on Internet of Things

Tuesday, October 24, 2017

Session III: Closed Session on Security

Session IV: Management Resources Service Delivery

Session V: Next Steps and Adjourn

Are the strategic priorities NIST has identified the right ones?

Are we approaching alignment of support and mission appropriately?

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NIST Update

Kent Rochford

Associate Director for Laboratory Programs
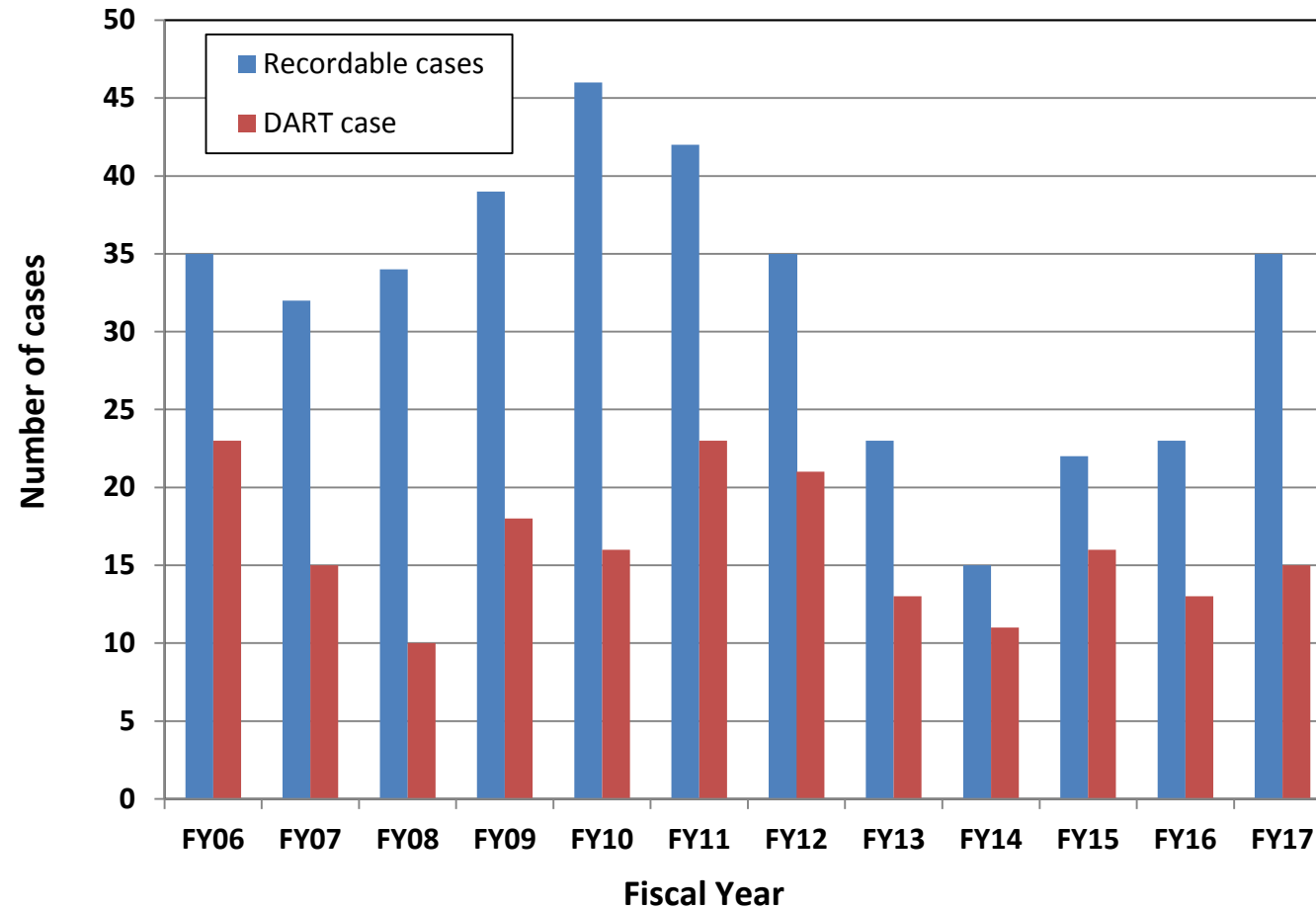
Monday October 23, 2017

Outline

Safety update

Personnel changes

NIST program highlights

Budget and alignment

NIST Safety Incident Metrics

Slips, trips and falls a major driver
- 1/3 of Recordables
- 1/2 of DART cases

Data includes Federal Employees and Associates

Americium / Building 245

- On Aug. 18, NIST radiation safety personnel discovered contamination from americium-241

- Small glass ampoule shattered while inside lead lined container inside larger protective box.

- Stop work order was issued for laboratories that could have a similar hazard.

- Bioassay testing done on several staff with direct access to the contaminated room.

- Survey and mitigation efforts have been completed in the building.

Flame-Sealed Ampoule

Plastic Vial with foam rubber disks

NOT TO SCALE
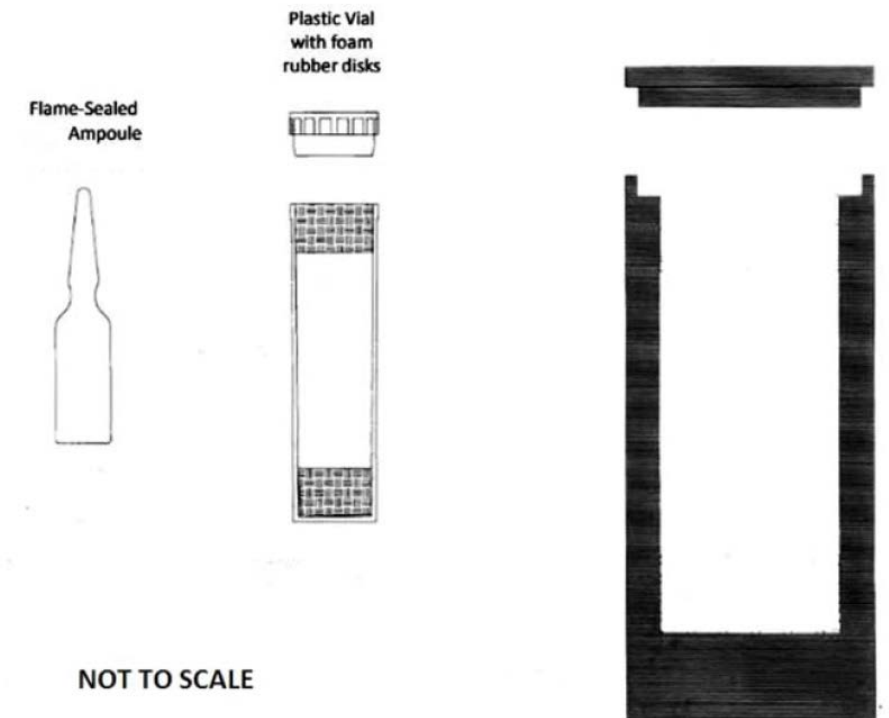
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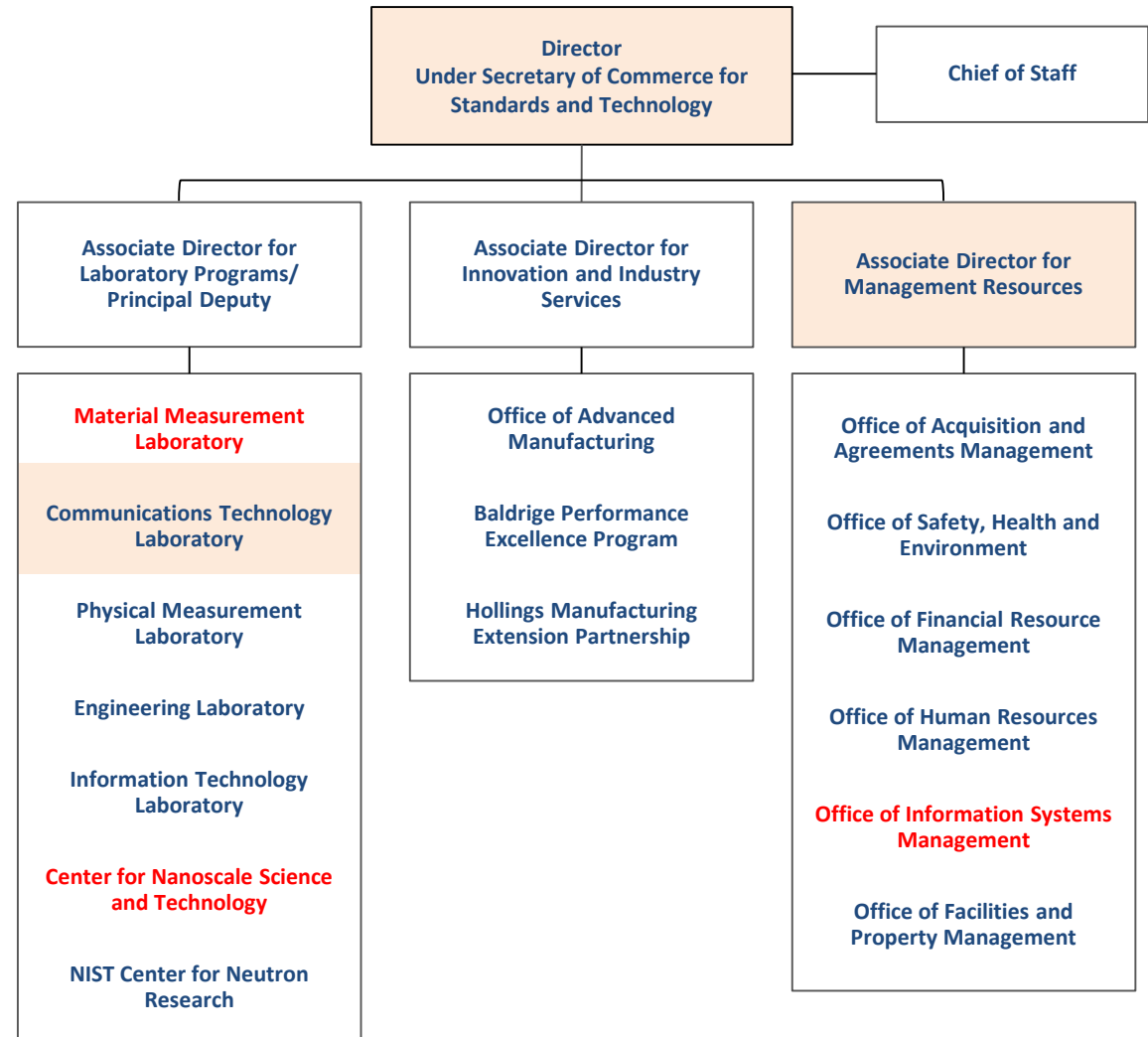
NIST Management Changes

Walter Copan
NIST Director
Under Secretary of Commerce for
Standards and Technology

Del Brockett
Associate Director for
Management Resources

Marla Dowell
Director, Communications
Technology Laboratory

Director
Under Secretary of Commerce for
Standards and Technology

Chief of Staff

Associate Director for
Laboratory Programs/
Principal Deputy

Associate Director for
Innovation and Industry
Services

Associate Director for
Management Resources

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

Office of Advanced
Manufacturing

Baldrige Performance
Excellence Program

Hollings Manufacturing
Extension Partnership

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

Best Wishes to David Wineland

- NIST Staff Scientist from 1975-2017
  - Recipient of National Medal of Science in 2007
  - Recipient of 2012 Nobel Prize in Physics
- Accepted a position at the University of Oregon in Eugene
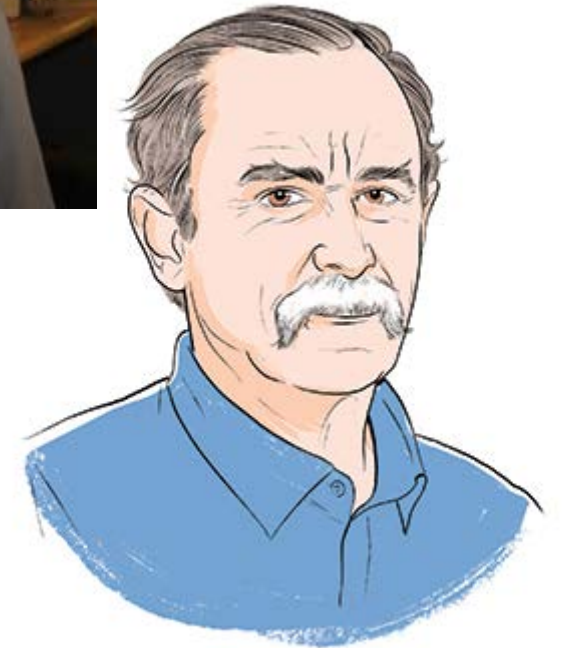
Onboarding

New onboarding program for new employees and associates

- Two-day orientation
- Monthly half-day training events
- Various "New to NIST" follow-up events

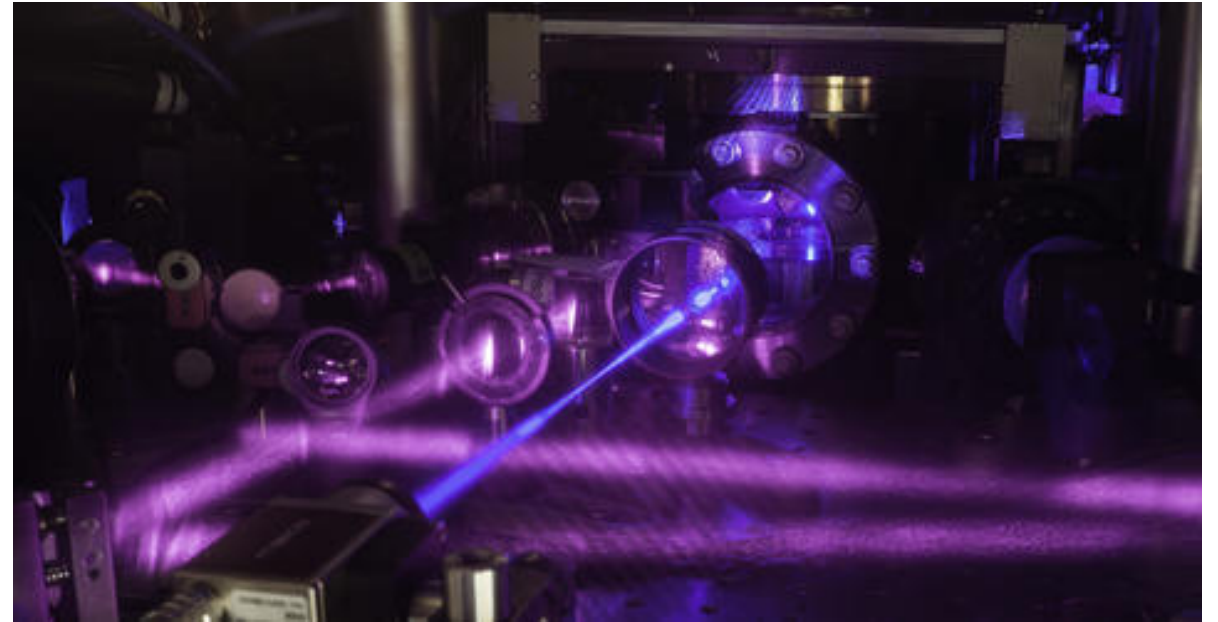Inaugural onboarding class

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Highlight: Science Breakthrough

NIST/JILA Physicists Demonstrate three-dimensional atomic clock

- First atomic clock to reach precision at level of parts per 10^{19}

- More atoms in 3D Fermi gas leads to better clock stability

"We are entering a really exciting time when we can quantum engineer a state of matter for a particular measurement purpose,"

Jun Ye, NIST Physicist/ JILA Fellow

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Head Health III Winner Announced

- To spur the discovery, design, and development of advanced materials to better absorb or mitigate force within helmets, pads and other products that protect against traumatic brain injury.

- Winning Team:
    - Dynamic Research, of Torrance, California, which specializes in applied research, development and consulting in areas such as vehicle safety and biomechanics, including the study of impacts on the human body, and
    - 6D Helmets, of Brea, California, developers of the Omni-Directional Suspension,™ a head-protection technology first commercialized for the action sports community for use in motorcycle and bicycle helmets.
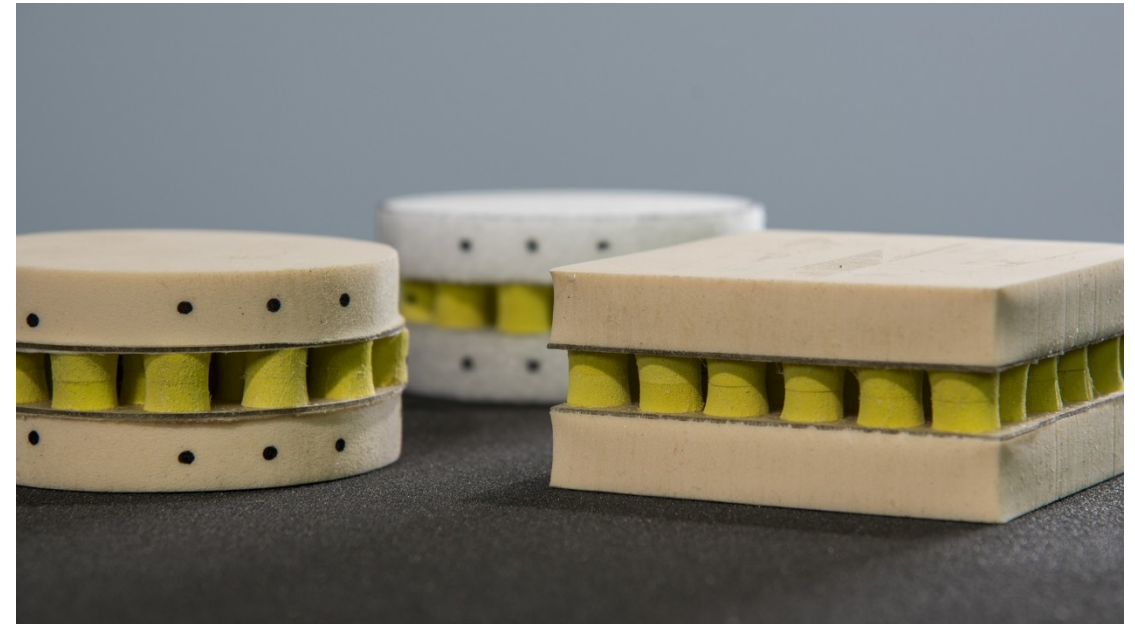
MEP Assistance for Harvey

- To help recovery response to Hurricane Harvey, NIST provided supplemental support to the Texas MEP (TMAC) and Louisiana MEP (MEPoL).

  - 9,800 manufacturers impacted by the storm, representing approx $130 billion of Texas' and Louisiana's total GDP

  - Funds will help connect manufacturers with services to return to operations and get people back to work faster

  - The two-year awards were issued to the hosts of TMAC ($2M) and MEPoL ($1M)
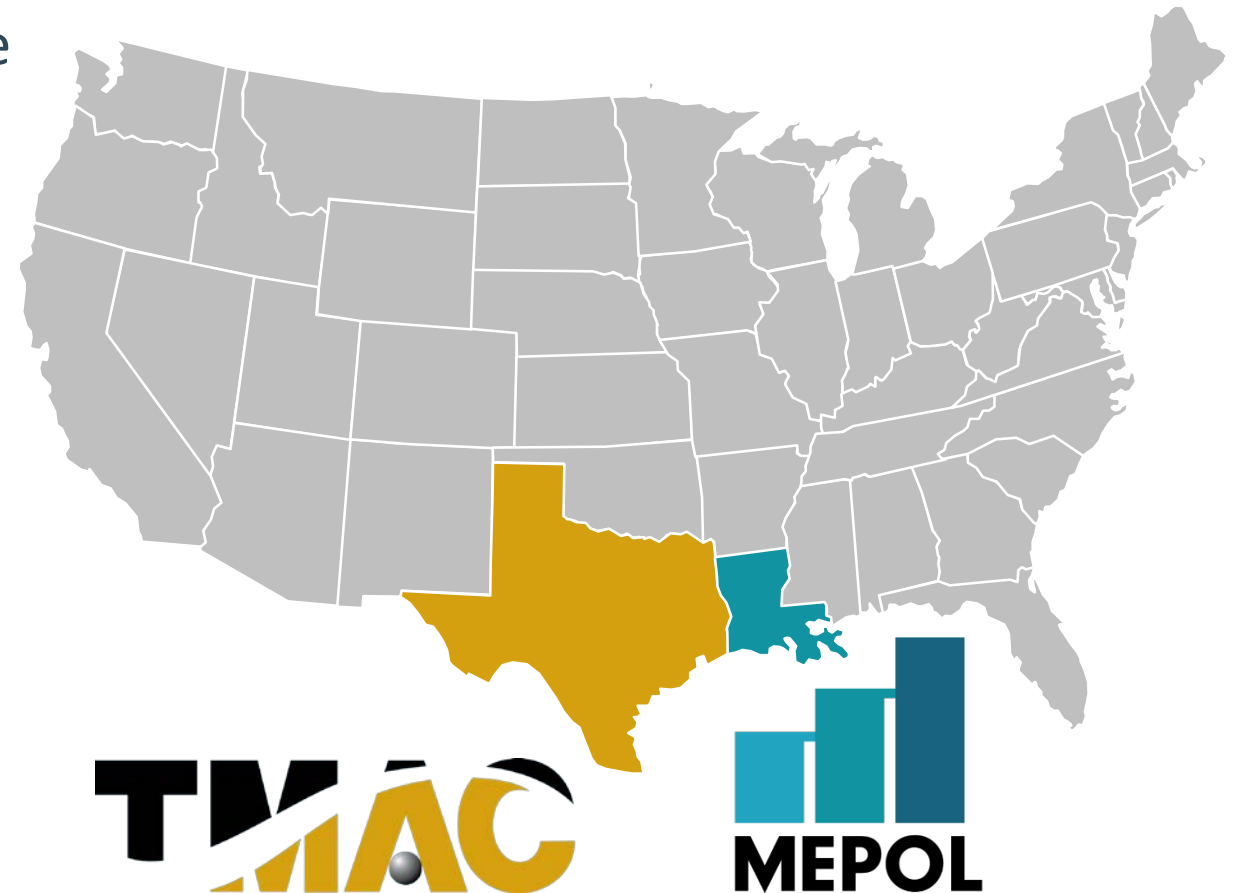
Hurricane Disaster Investigation Team

- NIST deployed Preliminary Reconnaissance Teams to Texas and Florida to document damage from Hurricanes Harvey and Irma

- Deployment was under National Windstorm Impact Reduction Program

Credit: Google

Credit: NIST

Credit: Google

Credit: NIST

Manufacturing and Defense Industrial Base Executive Order

EO 13806, issued July 21, 2017

- **Interagency Task Force on Executive Order**
  - NIST participating via Associate Director for Innovation and Industry Services, MEP
  - Also includes U/S of Commerce for Export Administration, Bureau of Industry and Security, and DHS, DOE, DOL, OMB, and State
- **Assessment led by**
  - Director of WH Office of Trade and Manufacturing Policy
  - U/S of Defense for Acquisition, Technology and Logistics
- **Report due in March 2018**

The White House
Office of the Press Secretary

For Immediate Release   July 21, 2017

Presidential Executive Order on Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States

EXECUTIVE ORDER

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ASSESSING AND STRENGTHENING THE MANUFACTURING AND DEFENSE INDUSTRIAL BASE AND SUPPLY CHAIN RESILIENCY OF THE UNITED STATES

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Policy. A healthy manufacturing and defense industrial base and resilient supply chains are essential to the economic strength and national security of the United States. The ability of the United States to maintain

Cybersecurity Executive Order

Strengthening The Cybersecurity of Federal Networks and Critical Infrastructure
EO 13800, issued May 11, 2017

Cybersecurity of Federal Networks

1.c: Risk Management

Status:

May: NIST issued draft guidance on federal use of the Cybersecurity Framework

August: NIST issued a draft update *Security and Privacy Controls for Information Systems and Organizations*

September: NIST issued a discussion draft update to *Risk Management Framework for Information Systems and Organizations*

Cybersecurity of Critical Infrastructure

2.d: Resilience Against Botnets and Other Automated, Distributed Threats

Status:

July: NIST issued a discussion draft update *Risk Management Framework for Information Systems and Organizations*

Plan:

Preliminary report issued for public comment in January, final report issued to President in May

Cybersecurity for the Nation

3.d: Workforce Development

Status:

NIST issued an RFI (July) and hosted a public workshop (August) to seek public input

Report, *Supporting the Growth and Sustainment of the Nation's Cybersecurity Workforce: Building the Foundation for a More Secure American Future*, in clearance

Cross-NIST Efforts in Cybersecurity Framework Adoption

- **Baldrige Cybersecurity Excellence Builder**
  - self-assessment tool to help organizations better understand effectiveness of their cybersecurity risk management efforts and in the context of their organizational objectives

- **Hollings Manufacturing Extension Partnership**
  - Providing tools to support cybersecurity of small and medium manufacturers
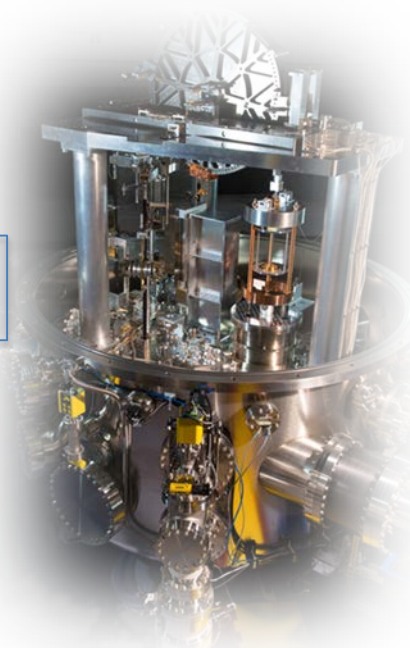
NIST extramural programs support implementation of NIST Cybersecurity Framework

Redefinition of the SI

The world is on schedule for a major redefinition of the International System of Units in the Fall of 2018.

Status of h/N_A measurements shortly before the deadline to calculate a "world-average" number for the four defining constants.

Jul 2017 — NIST led CODATA Task Group for Fundamental Constants

Oct 2017 — CIPM will meet to decide whether to proceed

Mar 2018 — CGPM shares formal proposal with the Treaty Nations

Oct 2018 — CGPM vote agreement goes into effect

May 20, 2019
International Metrology Day
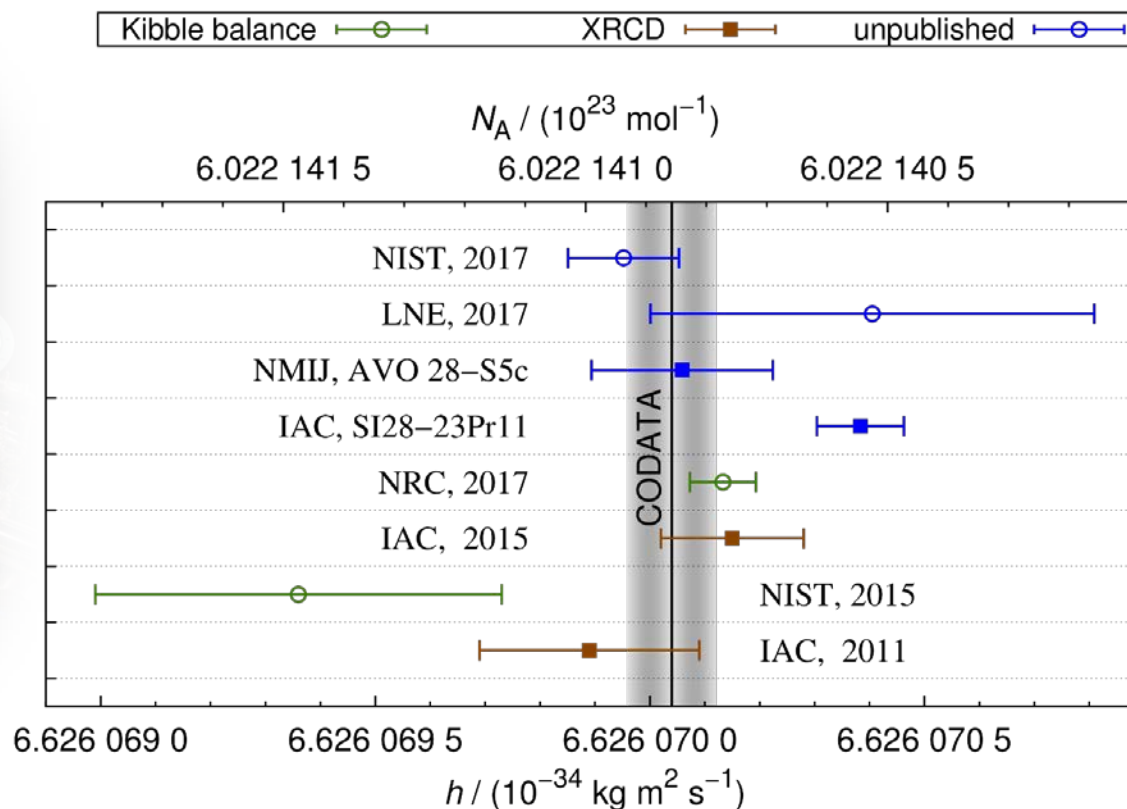
NIST Impacts: Lab Programs

Industry Impacts

As industry's national laboratory, NIST is dedicated to supporting U.S. competitiveness in areas of national importance from communications technology and cybersecurity to advanced manufacturing and disaster resilience. Below is a sampling of ways NIST's work in the areas of measurement science, standards and technology is helping to enhance economic security and improve quality of life.

NIST Impacts: 5G Wireless Communications
The next generation of wireless communications technology will allow many more devices to send information much faster, making possible everything from virtual reality to driverless cars. NIST works with industry and academia to understand how those technologies behave, so next generation wireless networks can be deployed sooner and with a better user experience.

NIST Impacts: Automotive Lightweighting
Automotive companies are increasingly using lightweight materials to improve vehicle fuel economy. However, incorporating those materials into new vehicles is time-consuming and costly. NIST data and models are helping automakers understand and predict how materials behave in the harsh conditions inherent to manufacturing.
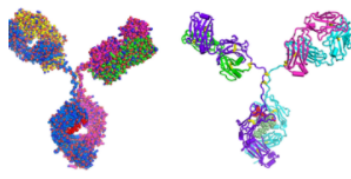
NIST Impacts: Biopharmaceuticals
Protein-based biologic drugs, which are increasingly used to treat cancers, autoimmune disorders and infectious diseases, are hard to produce, store and deliver reliably. Better measurement tools developed by NIST drive innovation and lower costs associated with these drugs.
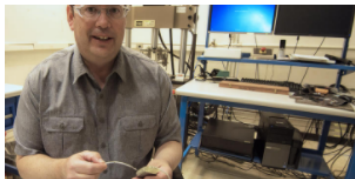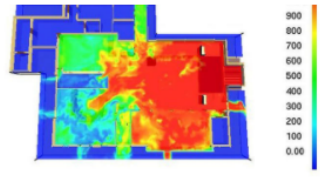
NIST Impacts: Cardiac Devices
In the past decade, hundreds of thousands of patients were affected by two major recalls of

NIST Impacts: Chemical Manufacturing
Chemical plants need access to consistent, reliable

NIST Impacts: Commercial Building Fire Protection
Commercial buildings are over-engineered for fire

5
largest manufacturers of cardiac devices participate in a NIST consortium

In 7 months,
NIST developed a test procedure for cardiac leads that is now an industry-wide standard

3-4 months
development time saved by a major manufacturer by using NIST's data—its new vehicle is 700 lbs. lighter and 50% more fuel efficient

$200 M/yr
estimated cost savings to major U.S.-based automakers if NIST helps reduce their number of trial designs by half

"NIST's technical contributions have been invaluable to our group, resulting in standards that will help American corporations compete in the $4 billion global market for pacemakers and implantable defibrillators"

– Dan Cooke, R&D Senior Fellow, Boston Scientific, and Industry co-chair, AAMI CRMD Device Transvenous Cardiac Leads Working Group

"NIST operates with industry in mind. Their experts take the time to understand what we're trying to accomplish and tailor their response to what we need. They take critical eyes to our approach and make sure we're not wasting our time getting to where we want to go."

-Dr. Katherine Avery Vozar, Ford Research and Innovation Center

https://www.nist.gov/industry-impacts

Telling the NIST story
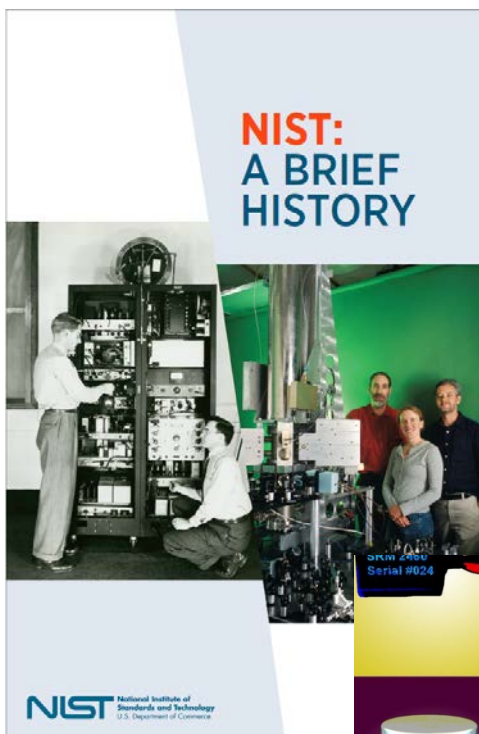
New products to highlight NIST's history and role

Interest from new media sharing NIST's stories with a wider audience
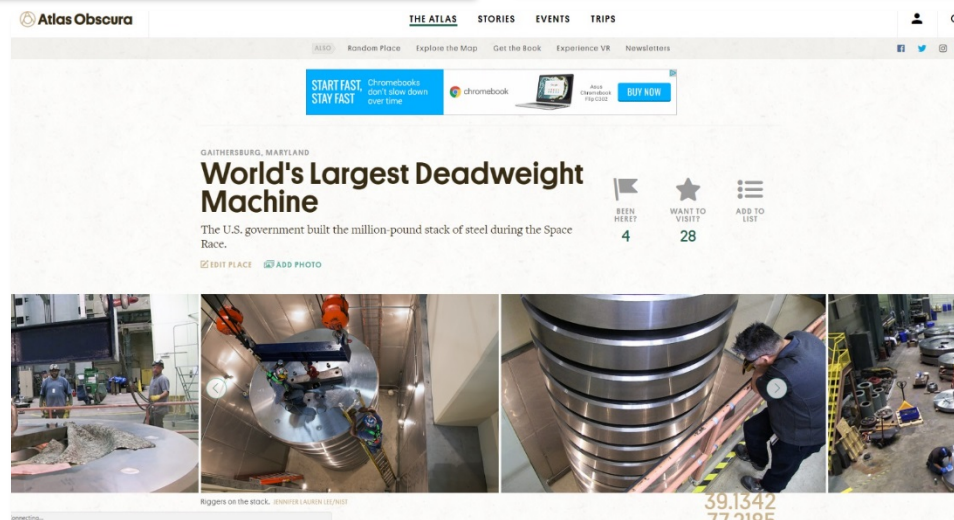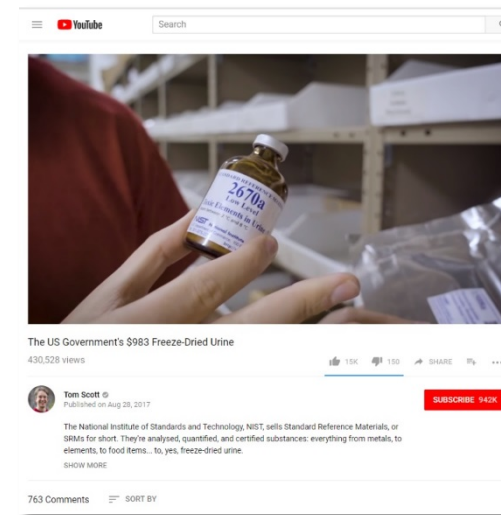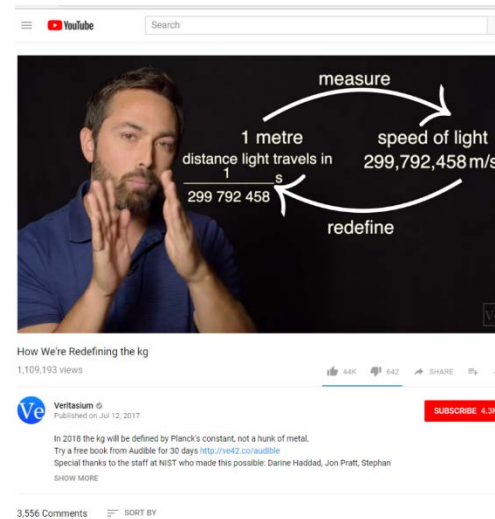
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Budget Update

	FY 2017 Enacted	FY 2018 Request	FY 2018 House Mark	FY 2018 Senate Mark
STRS	**$690.0**	**$600.0**	**$660.0**	**$695.0**
Laboratory Programs	604.7	544.3	TBD	TBD
Corporate Services	17.3	11.3	TBD	TBD
Stds Coord & Special Pgms	68.0	44.4	TBD	TBD
ITS	**$153.0**	**$21.0**	**$105.0**	**$145.0**
Hollings Mfg Ext Partnership	128.0	6.0	100.0	130.0
Manufacturing USA	25.0	15.0	5.0	15.0
CRF	**$109.0**	**$104.0**	**$100.0**	**$104.0**
Construc & Major Renovations	60.0	60.0	60.0	TBD
Saf, Cap, Maint & Maj Repairs	49.0	44.0	40.0	TBD
Total, NIST Discretionary	**952.0**	**725.0**	**865.0**	**944.0**

Under Continuing Resolution through December 8, 2017

FY2019 Administration R&D Priorities

- **R&D Priority Areas**
  - American Military Superiority
  - American Security
  - American Prosperity
  - American Energy Dominance
  - American Health

- **R&D Priority Practices**
  - Increasing Government Accountability and Efficiency
  - Supporting Innovative Early-Stage Research
  - Maximizing Interagency Coordination

- **R&D Workforce and Infrastructure**
  - Developing a Future-Focused Workforce
  - Modernizing and Managing Research Infrastructure

EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C.

August 17, 2017

M-17-30

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: MICK MULVANEY
DIRECTOR, OFFICE OF MANAGEMENT AND BUDGET

MICHAEL KRATSIOS
DEPUTY ASSISTANT TO THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SUBJECT: FY 2019 Administration Research and Development Budget Priorities

American leadership in science and technology is critical to achieving this Administration's highest priorities: national security, economic growth, and job creation. American ingenuity combined with free-market capitalism have driven, and will continue to drive, tremendous technological breakthroughs. American inventions have fundamentally changed the course of human history: the incandescent light bulb, the airplane, satellite navigation, and the internet have improved the lives of millions of Americans and billions around the world. In spurring future advances, Federal funding of research and development (R&D) programs and research infrastructure can play a crucial supporting role.

This memorandum highlights the Administration's R&D priority areas for formulating FY 2019 Budget submissions to the Office of Management and Budget (OMB). These priorities should receive special focus in agency budget requests. This memorandum also provides additional guidance on balancing new priorities with existing demands, encouraging agencies to focus on R&D investments that best serve the American people and are budget neutral.

R&D Priority Areas

American Military Superiority
The American warfighter requires state-of-the-art tools and technologies to defeat a growing number of emerging threats. Agencies should invest in R&D that can support the military of the future, including in technologies related to the development of missile defense capabilities, a

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NIST Alignment with Administration R&D Priorities

NIST has the expertise and role to support R&D priorities through our unique role in measurement science, standards, and technology

- **American Military Superiority**
  - DoD/DoE metrology support, future computing, electromagnetics, nanoelectronics, advanced materials

- **American Security**
  - Cybersecurity, chemical & explosives detection, nuclear forensics, public safety communications, standards for homeland security, biometrics

- **American Prosperity**
  - Emerging technologies including quantum, gene editing, machine learning, manufacturing, advanced communications

- **American Energy Dominance**
  - Fuels standards, Smart Grid, building efficiency, Net Zero Energy Residence

- **American Health**
  - Bioanalysis standards, Fentanyl detection, biopharmaceutical standards, synthetic biology

Program Planning

Identify high-level priorities to best position NIST in 10 years

- Budget situation is uncertain
- NIST will have to make choices to ensure that NIST remains positioned to meet our mission
- We must be purposeful and focused in a landscape of changing funding priorities and evolving technical opportunities

Session II: Lab Programs Strategic Vision

Time	Session
12:30 pm	**Strategic Vision Status Update** Kent Rochford
1:00 pm	**Working Session 1: Bioeconomy**
1:30 pm	**Working Session 2: AI and Data**
2:00 pm	**Working Session 3: Quantum SI**
2:30 pm	**Working Session 4: Internet of Things**
3:00 pm	*Adjourn for Tours*

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Discussion