NIST Update

Walter Copan

Under Secretary of Commerce for Standards and Technology, and

NIST Director

VCAT February 7, 2018

Thank You!

Dr. William Holt

Executive Vice President and Senior Fellow Emeritus,

Intel Corporation's Technology and Manufacturing Group

Term: May 13, 2012 – May 12, 2018
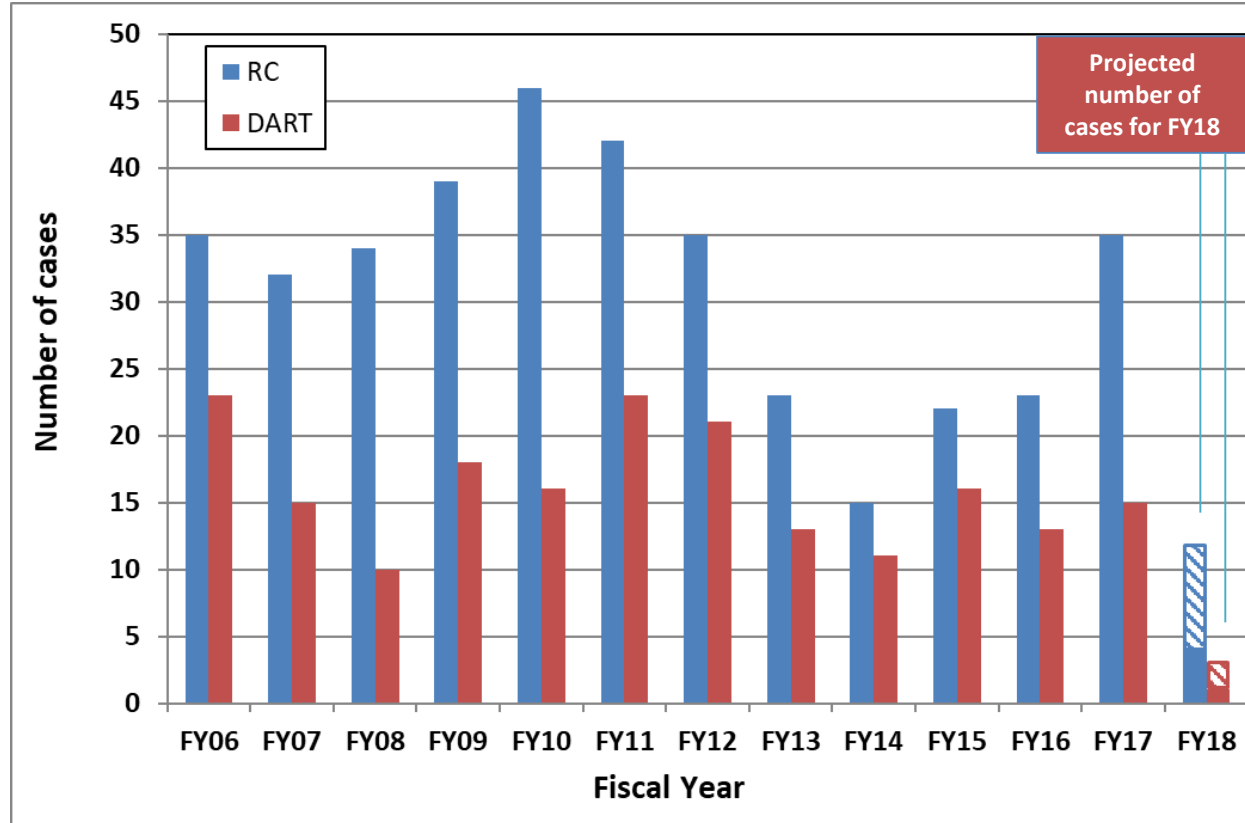
Key VCAT Achievements:

Vice-Chair April 1, 2016 – March 31, 2018

Subcommittees:

- Communications Subcommittee (2017)

- Cybersecurity Subcommittee (2014)

- Manufacturing Subcommittee (2012)

Bill Holt - Thanks for your service with VCAT, on behalf of NIST and the Nation.

NIST Safety Incident Metrics - Progress

- **Data includes Federal Employees and Associates**

Data shown is to February 1, 2018

Goal = Zero

Slips, trips and falls – focus
Safety and Security:
Leadership from the Top
   Situationally aware
   "Always keep our heads in the game"

Recordable case (RC)

- To a first approximation, a work-related injury or illness that results in any of the following: death, days away from work, restricted duty, transfer to another job, medical treatment beyond first aid, loss of consciousness.

DART case

- A work-related injury or illness that results in any of the following: **D**ays **A**way from work, **R**estricted duty, **T**ransfer to another job.

NIST Security Culture

We are systematically instilling a positive security culture at NIST

Culture is both a mindset and mode of operation. We – the leaders of NIST – are leading this change. We have established and communicated the expectations, and will consistently reinforce them. NIST is closely partnered with Department of Commerce Office of Security.

Safety and Security organizations and operations are being integrated.

Communicating NIST's Baseline Security Requirements

- All-hands meetings in Gaithersburg and Boulder
- All managers leading by example
- Article in *NIST Connections*
- Mandatory online training for all employees and associates (5000+ completions)
- Posters
- Signage at prominent building access points
- Frequently Asked Questions
- Physical security webpage
- Physical security in all performance plans
- Security training videos and messages from NIST Director
- Increased on site security presence
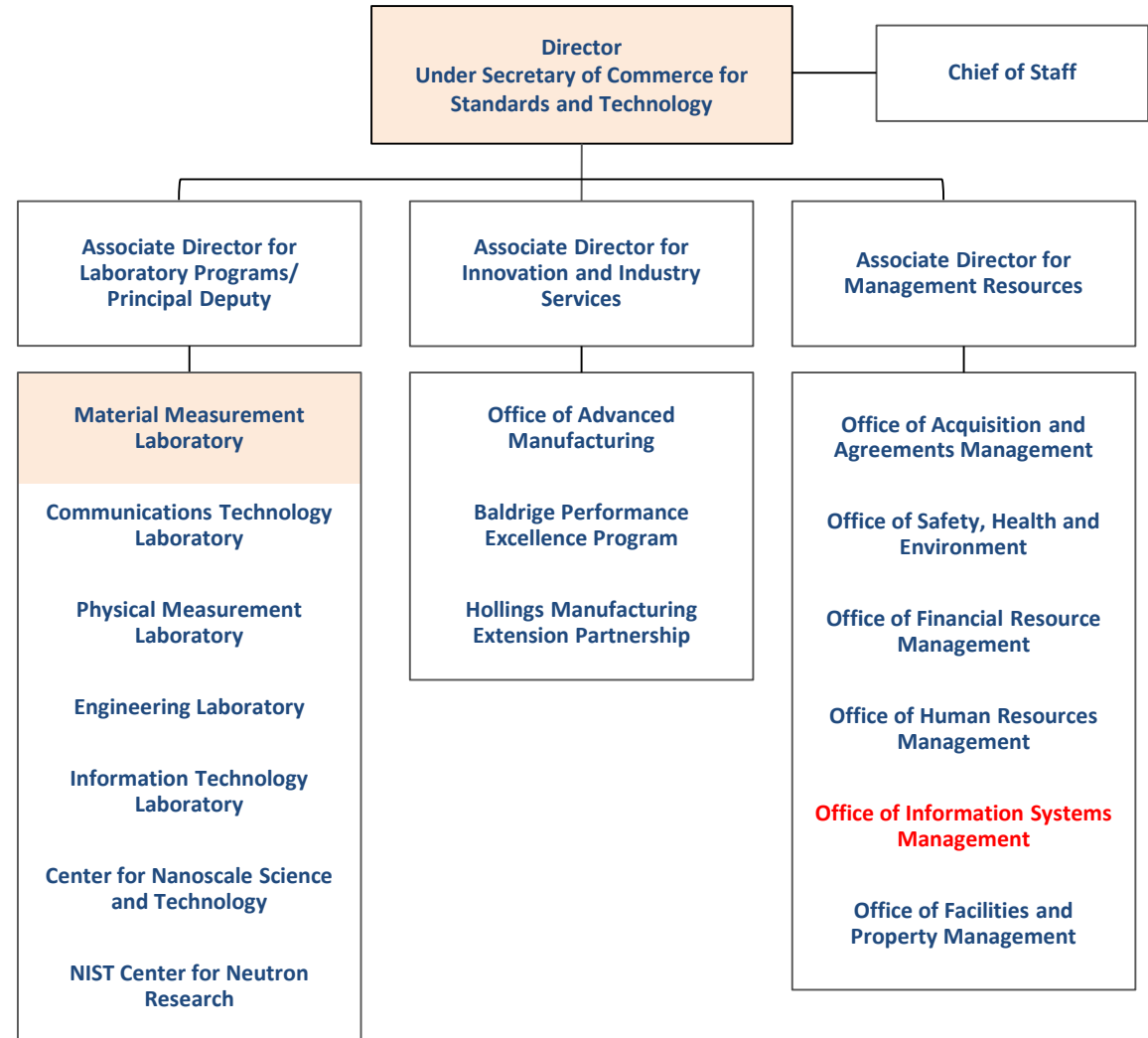- Employees and Associates helping each other with Security awareness

NIST Management Changes

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

Eric Lin
Director
Material Measurement 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

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Administration Priorities

- Emerging technologies prioritized for both national security and economic prosperity
  - data science, encryption, autonomous technologies, gene editing, new materials, nanotechnology, advanced computing technologies, quantum computing, and artificial intelligence/machine learning
- Domestic manufacturing critical for security, prioritizes defense industrial base
- Significant interest in the U.S. quantum strategy
- Federal R&D as a partner to industry, and maximize interagency coordination
- **FY 2019 President's Request to be released February 12, 2018**
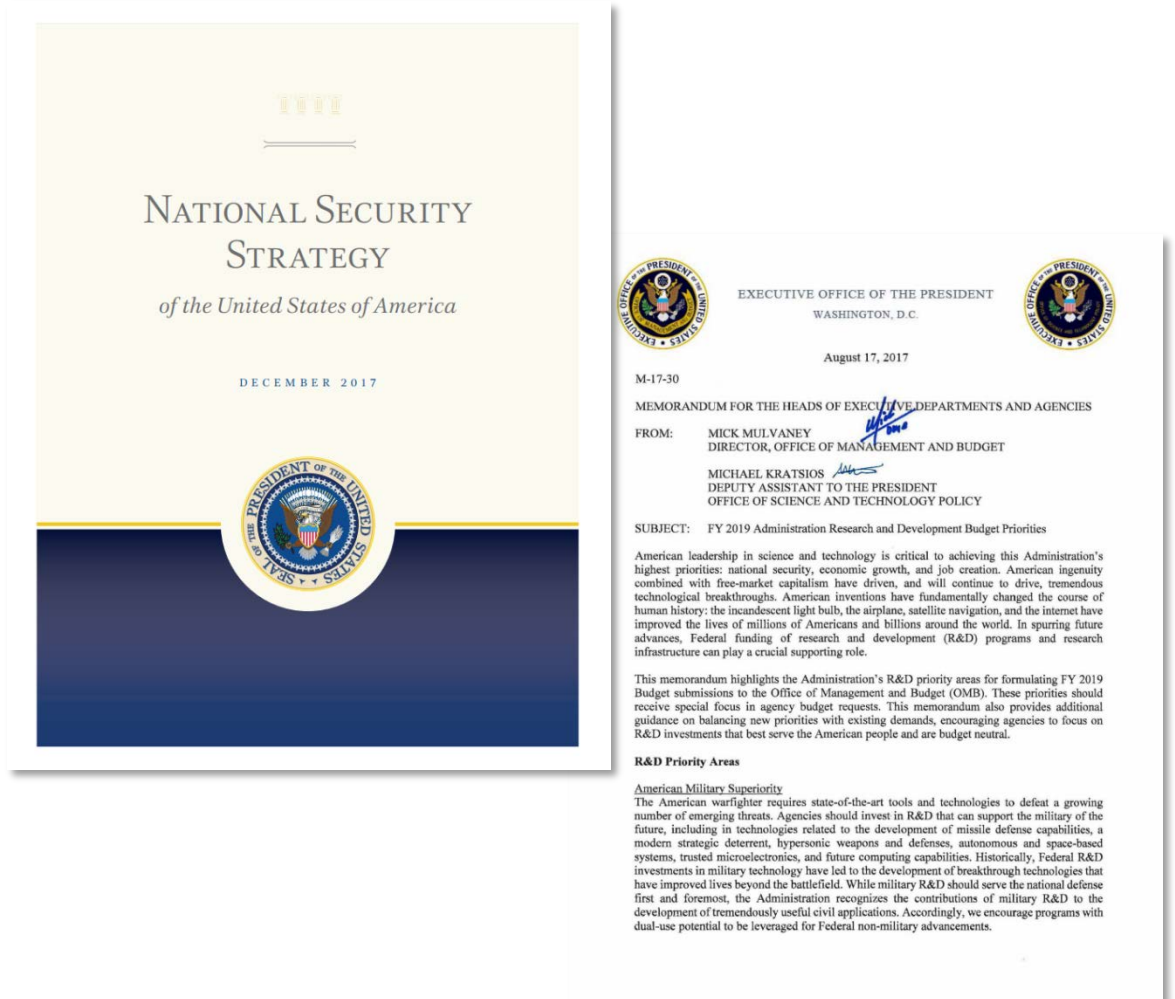
NIST Breakthrough in Quantum Simulation

- Team from the NIST/University of Maryland Joint Quantum Institute (JQI) made 53-atom quantum simulator

- Quantum simulators are specialized quantum computers that can model complex quantum systems
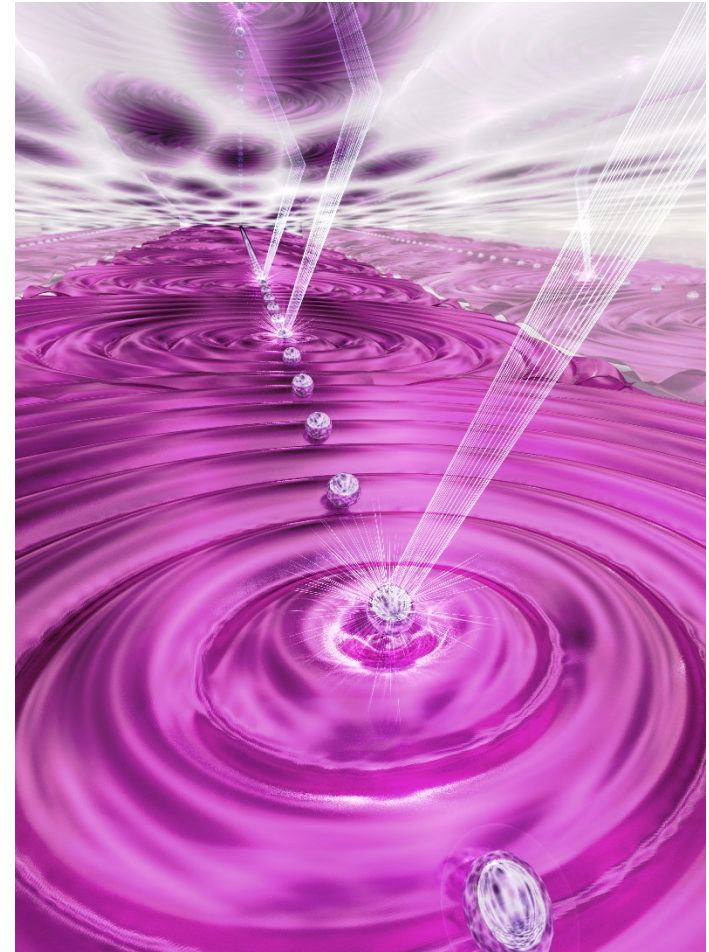
Global City Teams Challenge

NIST's GCTC Program enables local governments, nonprofit organizations, academic institutions, technologists, and corporations from all over the world to form teams to work on groundbreaking Internet of Things (IoT) applications within the city and community environment.

- 2018 co-hosting with DHS the Smart and Secure Cities and Communities Challenge to focus on privacy and cybersecurity

- Kickoff in DC, February 6-8, 2018

2017 Baldrige Award Recipients

- Baldrige celebrated 30th anniversary in 2017
- To date,
  - Nearly 1,700 U.S. organizations have applied for the Baldrige Award,
  - More than 30 independent Baldrige-based state and regional award programs covering nearly all 50 states.
  - There are nearly 80 programs internationally based in whole, or in part, on the Baldrige Program.

- 2017 Winners, to be presented in April 2018
  - Bristol Tennessee Essential Services, Bristol, TN, *small business sector*
  - Stellar Solutions, Palo Alto, CA, *small business sector*
  - City of Fort Collins, Fort Collins, CO, *nonprofit sector*
  - Adventist Health Castle, Kailua, HI, *health care sector*
 - Southcentral Foundation, Anchorage, AK, *health care sector*

"This program is about much more than recognizing successful organizations or winning a single award. The organizations which are given the Baldrige Award embody the competitive spirit which drives the American economy forward."

Wilbur Ross, Commerce Secretary

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NIST post-Hurricane Support

- The Manufacturing Extension Partnership awarded $5M through local MEP centers to help small and medium sized manufacturers in Texax, Louisiana, Georgia, Florida, and Puerto Rico recover from hurricanes
  - $2M to FloridaMakes and $1M to PRiMEX
  - Follows previous $3M award to MEP centers in Texas and Louisiana after Harvey
  - 17,000 manufacturers, employing 330k workers in FL counties affected by Irma
  - 100% of PR's 1,620 manufacturers and 18k workers affected by Maria
- NIST Disaster and Failure Studies program sent Preliminary Reconnaissance Teams to Texas, Florida, and PR

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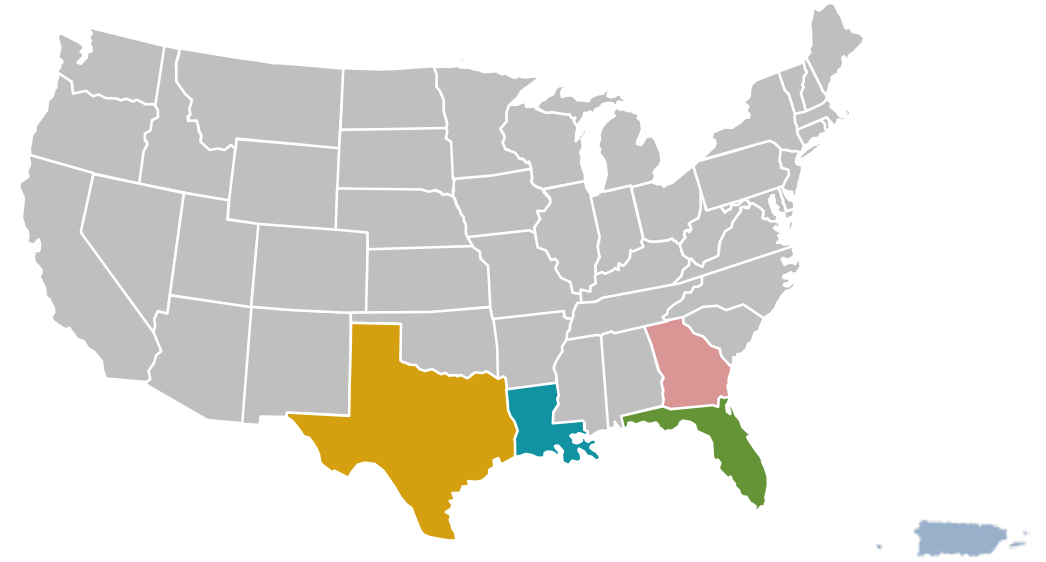
Steam Pipe Failure on Gaithersburg Campus

- Thursday, December 7: Steam pipe leak discovered near Building 245.
  - Bldg 245 staff notified of need for closure
  - Steps taken to prepare for heat shutoff.
- Friday, December 8: Building 245 staff must secure space by noon, building closed for business
- Wednesday, December 20: Repairs complete, Building 245 reopens for business
- Estimated cost to NIST:
  - $140k for repair
  - $2M in lost productivity of research in Bldg 245
  - $10-15k in daily management meetings
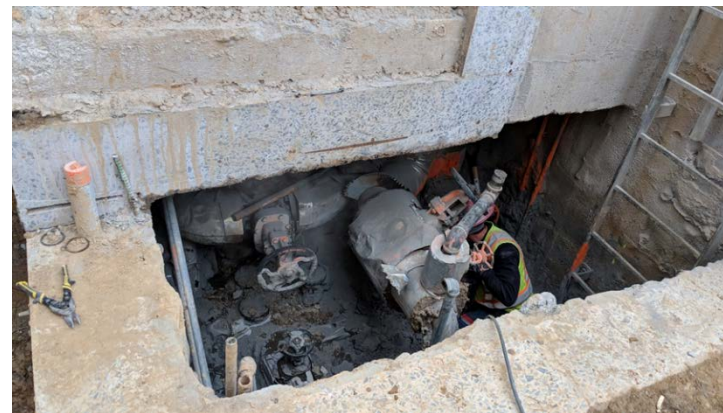
Core Priorities

- Cybersecurity

- Advanced Manufacturing Innovation and Quality

- Return on Investment

- One NIST

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Cybersecurity

- Cybersecurity is central to current and emerging policy issues and technical areas:
  - cryptography,
  - access and identity management and authentication
  - privacy,
  - Internet of Things,
  - Smart Grid,
  - Cloud and mobile device security
- NIST will focus on leveraging its intramural and extramural programs to expand the use of the Cybersecurity Framework and related tools across all U.S. industries.

"America's response to the challenges and opportunities of the cyber era will determine our future prosperity and security."

U.S. National Security Strategy

Advanced Manufacturing Innovation & Quality

- NIST has a proven track record in delivering useful tools and technical assistance to America's manufacturers and start-up companies.

- NIST's technical programs drive advances in
  - precision sensing and process control,
  - advanced computing and communications,
  - the human-device interface (internet of things),
  - autonomous systems
  - advanced materials and product design

- NIST's extramural programs provide ability to work with manufacturers small and large.

- NIST will aggressively advance these unique capabilities, also using enhanced partnership opportunities and other tech transfer mechanisms.

"Support for a vibrant domestic manufacturing sector, a solid defense industrial base, and resilient supply chains is a national priority."

U.S. National Security Strategy

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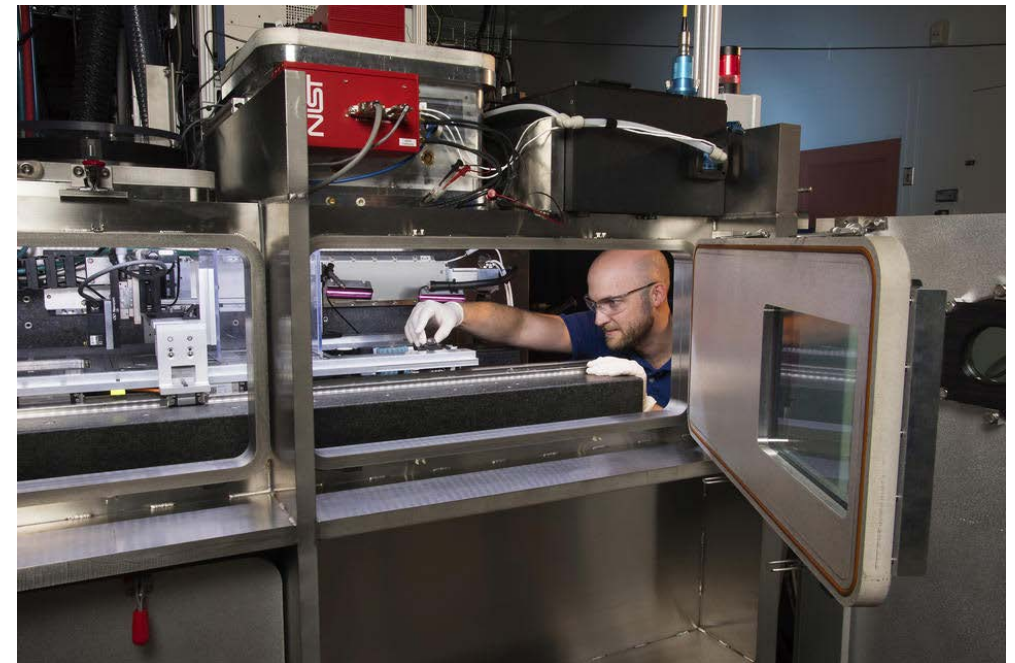
ROI (Return on Investment)

- The role of NIST in federal technology transfer brings with it the obligation to assess and enhance the effectiveness of innovation policies and tools to enable the highest achievable returns on investment from federally funded research.

- NIST will work with stakeholders to the review and prioritization of technology transfer issues and will lead the improvement process.

- NIST will pilot new mechanisms and approaches to enhance U.S. innovation, technology commercialization and partnerships.

"Strong partnerships with the private sector will be critical to maximizing the efficacy of Federal funding."

FY 2019 Administration R&D Budget Priorities
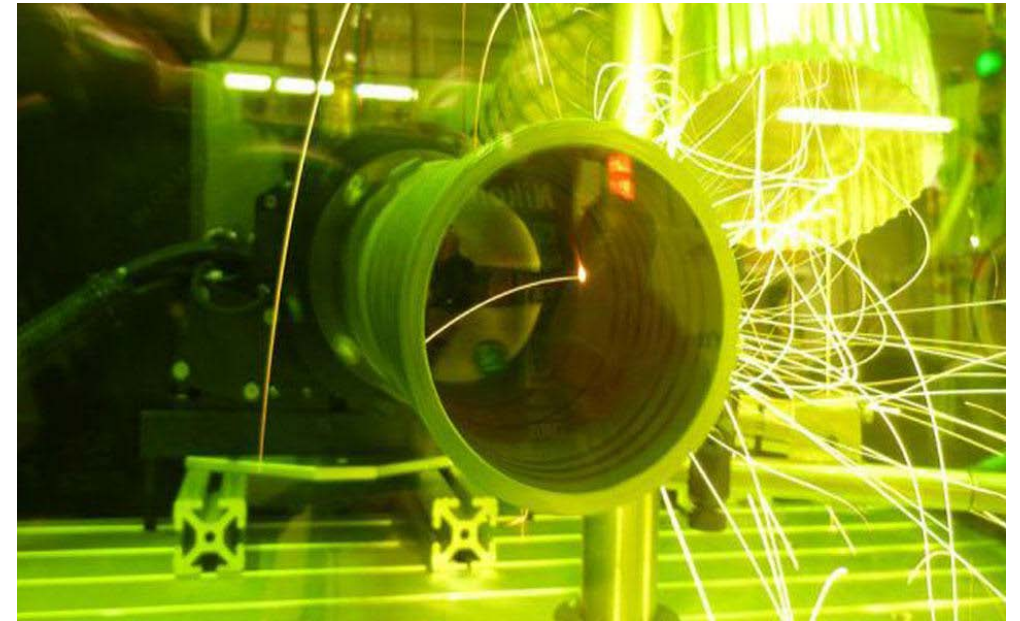
One NIST - All About Executing on Mission

- NIST agility.
  - Relentless pursuit of betterment

- Proud to be NIST:
  - World Class Talents
  - One Mission. One Team.
  - Communicating the NIST Brand
  - No barriers
    - Interdisciplinary. Seek Innovation at the Interfaces
    - Engaged in pursuit of betterment
  - Live true to our values: Perseverance, Integrity, Inclusivity, Excellence

NIST will work seamlessly across its organization, and with government and partners, public & private, to achieve the highest levels of organizational performance and effectiveness while operating at the speeds demanded by the American economy.

Underpinning Priorities

- **We must keep NIST Healthy as we execute on our Mission for the Nation.**
- To continue to improve Safety and Security culture and practices
- To have access to the modern facilities and infrastructure necessary to support NIST's high-tech mission.
- To effectively and clearly communicate NIST roles and impacts with both internal and external stakeholders.
- To ensure that NIST maintains its program integrity, by ensuring the necessary resources (both funding and skills) to sustain its long-term research enterprise that is at the core of its mission.

Strategic Priority: Revolutionizing Commerce with Quantum Science

Leverage NIST's global leadership in basic and applied quantum science research to transform the foundational blocks of commerce:

- Measurements on emerging quantum systems to understand and harness quantum-based technology to transform computing, and communications

- Disruptive new class of reference standards re-thinking traceability through "self-calibrating" sensors – e.g. "NIST-on-a-chip"
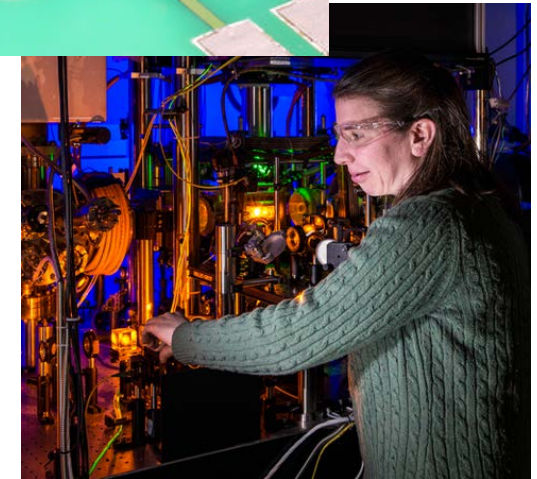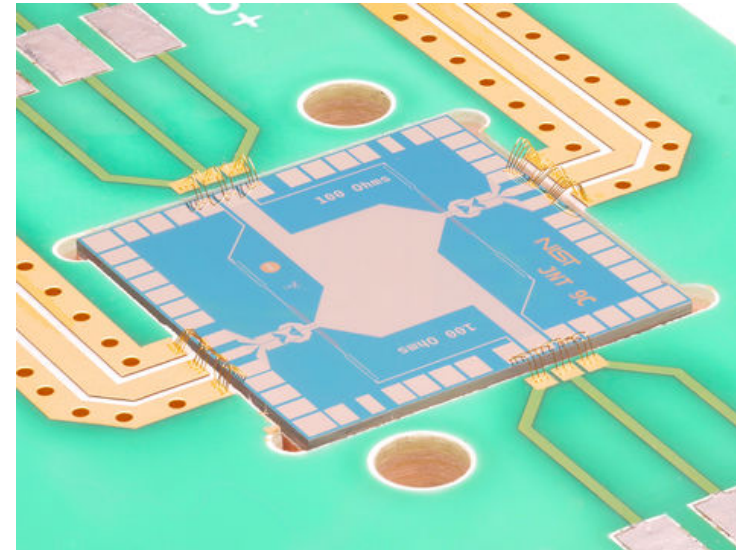
Strategic Priority: Enabling the Future Bioeconomy

Building the foundations of trust in bioscience:

- Measurements, calibrations, and standards ensuring accuracy and efficacy of medical treatments and test procedures.

- Data and measurement infrastructure to support industry's development and manufacture of new biopharmaceuticals

- Measurement science research efforts to support advances in synthetic biology, personalized medicine, and the microbiome

- NIST tools bridge the gap between proof-of-concept efforts and market realization

53 pharmaceutical companies, biomedical instrument businesses and research institutions bought NISTmAb in first 3 months of sales
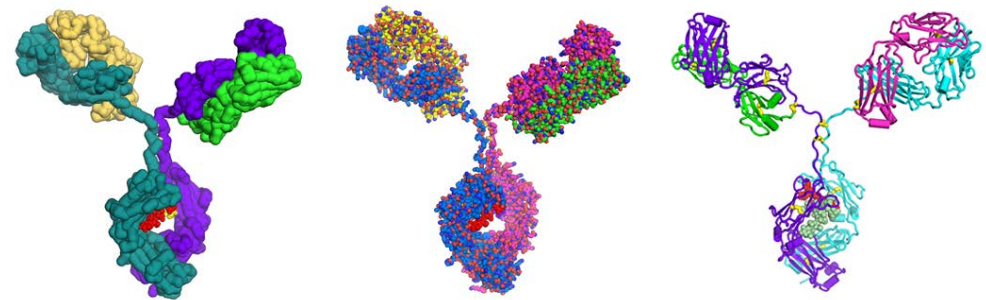
# Strategic Priority: Connected, Secure and Interoperable IoT

IoT impact: $4 - $11 T per year by 2025

Keys to realizing this potential:
- Cybersecurity
- Reliable connectivity
- Interoperability

NIST's expertise:
- Applying Cybersecurity Framework principles for IoT cybersecurity
  - advanced manufacturing, connected vehicles, medical devices, etc.
- Advanced Communications
  - Spectrum sharing, wireless co-existence, next- gen communication systems, etc.
- Interoperability test beds - Standards and conformance suites
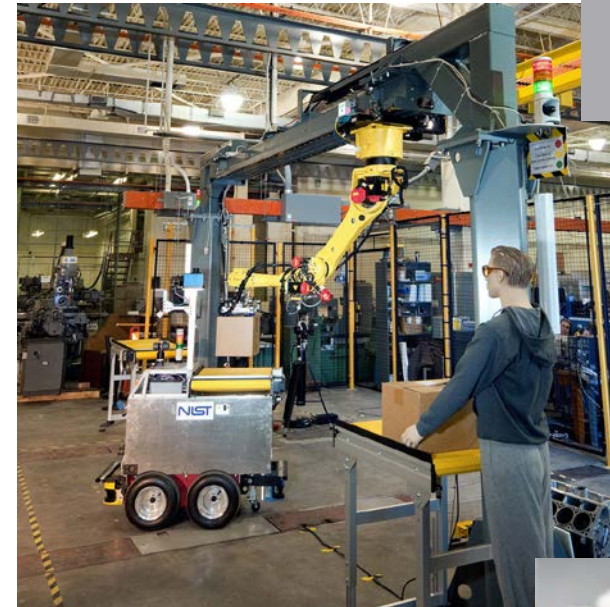
# Strategic Priority: Trusted Data and Analytics

New insights in data science needed for confidence in Artificial Intelligence and Machine Learning (AI/ML)

Data science to help address concerns about:
- Bias
- Unintended/emergent behavior
- Malicious AI/ML implementations

NIST will build upon existing expertise and develop new skills for measurement tools and standards:
- Apply AI/ML and advanced learning algorithms for big data problems
- Data science to model AI behavior
- Understand training influence

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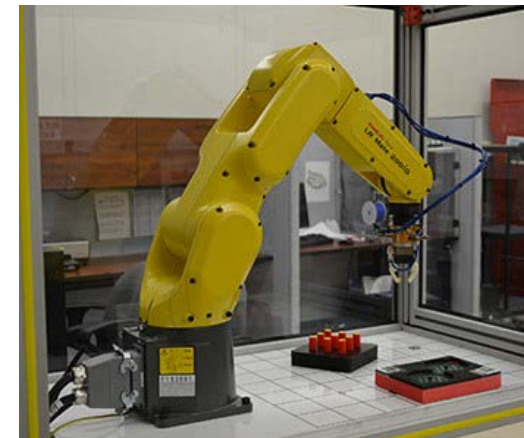
Agenda

	Finalize 2017 VCAT Report. Hold Elections.	
Session II: Return on Investment (ROI) from Federal Research	Federal Law and Policy in Tech Transfer, and Related NIST Authorities	Paul Zielinski, Director, Technology Partnerships Office
	Benefits and Limitations of Current Technology Transfer Policy	Moderator: Phil Singerman, Associate Director for Innovation and Industry Services Panelists: • Stephen Auvil, Senior Vice President, Technology Transfer & Commercialiation, Maryland Technology Development Corporation (TEDCO) • Rochelle Blaustein, Deputy Director, Office of Technology Transitions, US Department of Energy • Gayatri Varma, Director, Collaborations Partnering & Strategy Washington D.C. Metro Area Biotechnology MedImmune
	Plan and Vision for NIST Efforts in Federal Technology Transfer Policy	Walter Copan
	Lunch	
Session III: NIST Roles in Cybersecurity	Update on NIST Cybersecurity Programs, Current Mandates, and Calls for Expanded NIST Roles in Cybersecurity	Donna Dodson, Chief Cybersecurity Advisor, Information Technology Laboratory & Director of the National Cybersecurity Center of Excellence
	NIST's Role in Cybersecurity – a view from the private sector	Matthew Eggers, Executive Director, Cybersecurity Policy, U.S. Chamber of Commerce
	Path forward to support adoption of Cyber Security Framework	Matt Barrett, Program Manager for the NIST Cybersecurity Framework
	Meeting Wrap up and Discussion of Future Agenda Items	
	Adjourn for tours of National Cybersecurity Center of Excellence	

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