

# Unleashing American Innovation

Update: Return on Investment (ROI) Initiative  
Lab-to-Market Cross Agency Priority (CAP) Goal

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Director, National Institute of Standards and Technology (NIST)

Council on Government Relations  
June 7, 2018

# NIST Mission

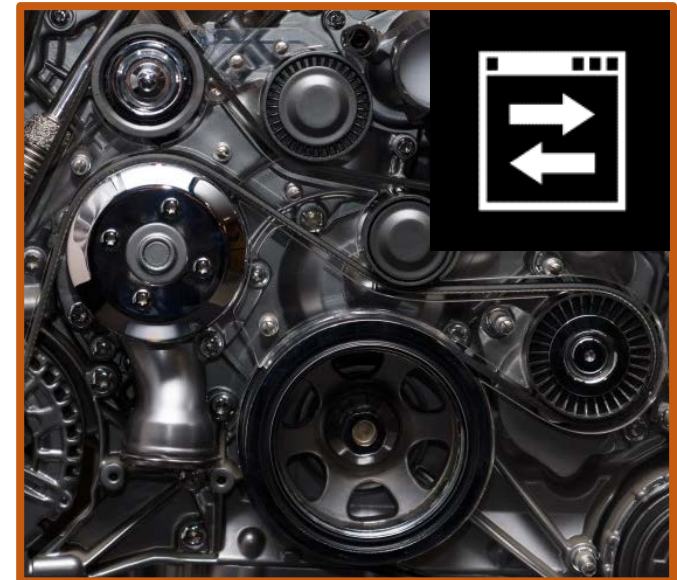
To promote U.S. innovation and industrial competitiveness by advancing **measurement science**, **standards**, and **technology** in ways that enhance economic security and improve our quality of life.



World-Leading Scientific and Engineering Research



Advanced Manufacturing National Programs



Technology Transfer and U.S. Innovation

# Metrology, Technology & Standards

## *Important to commerce*



“Uniformity in the currency, weights, and measures of the United States is an object of great importance, and will, I am persuaded, be duly attended to.”

*George Washington, State of the Union Address, January 8, 1790*

## *Important to innovation*



“If you can not measure it, you can not improve it.”

*Lord Kelvin, Lecture to the Institution of Civil Engineers, 3 May 1883*

## *Important to international trade*

Up to 92% of U.S. Exports affected by standards/technical regulations

NIST Illustrated, <https://youtu.be/2j9BGVKbzS4>





# NIST AT A GLANCE

## Industry's National Laboratory



**3,400+**

FEDERAL  
EMPLOYEES



**5**

NOBEL PRIZES



**2 CAMPUSES**

GAITHERSBURG, MD [HQ]  
BOULDER, CO



**3,500+**

ASSOCIATES



**10**

COLLABORATIVE  
INSTITUTES



**400+**

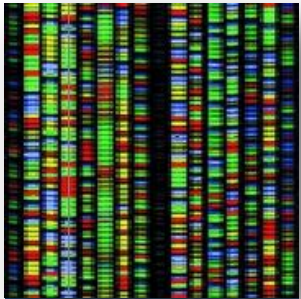
BUSINESSES USING  
NIST FACILITIES

**14** Advanced Manufacturing Technology Collaborative Institutes: **Manufacturing USA**

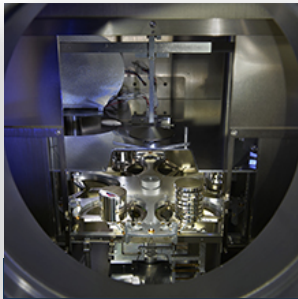
**51** Nationwide Manufacturing Extension Partnership (MEP) Programs

U.S. **Baldrige** Performance Excellence Program

# NIST Laboratory Programs



**Material  
Measurement  
Laboratory**



**Physical  
Measurement  
Laboratory**



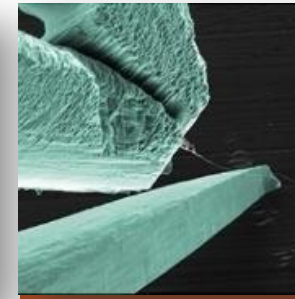
**Engineering  
Laboratory**



**Information  
Technology  
Laboratory**



**Communication  
Technology  
Laboratory**

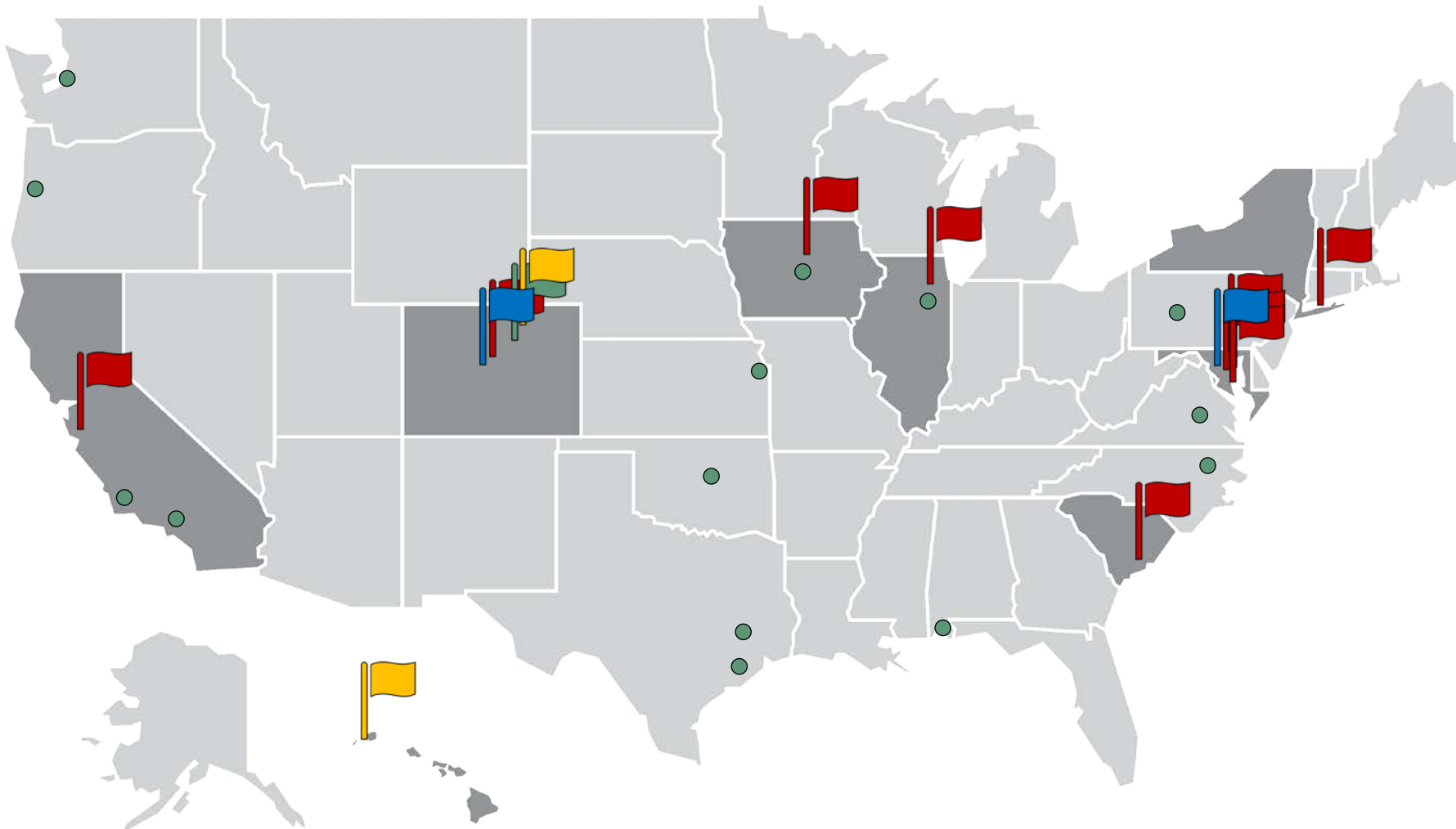


**Center for  
Nanoscale  
Science and  
Technology**



**NIST Center  
for Neutron  
Research**

# NIST and Joint Institute Locations



## NIST Main Campuses

- Gaithersburg, MD
- Boulder, CO



## Joint Institutes and Centers

- National Cybersecurity Center of Excellence
- Institute for Bioscience & Biotechnology Research
- Joint Quantum Institute
- Joint Center for Quantum Information & Computer Science
- JILA
- Hollings Marine Lab
- Brookhaven National Lab
- Joint Initiative for Metrology in Biology



## Atomic Clock Signal Stations

- NIST Ft. Collins CO WWV
- NIST Kauai HI WWVH



## NIST Centers of Excellence

- Forensic Science
- Disaster Resilience
- Advanced Materials



NIST Collaborative Research Centers ●

# NIST Extramural Programs



Public-private  
partnerships  
improving U.S.  
economic  
competitiveness



**Hollings  
Manufacturing  
Extension  
Partnership**



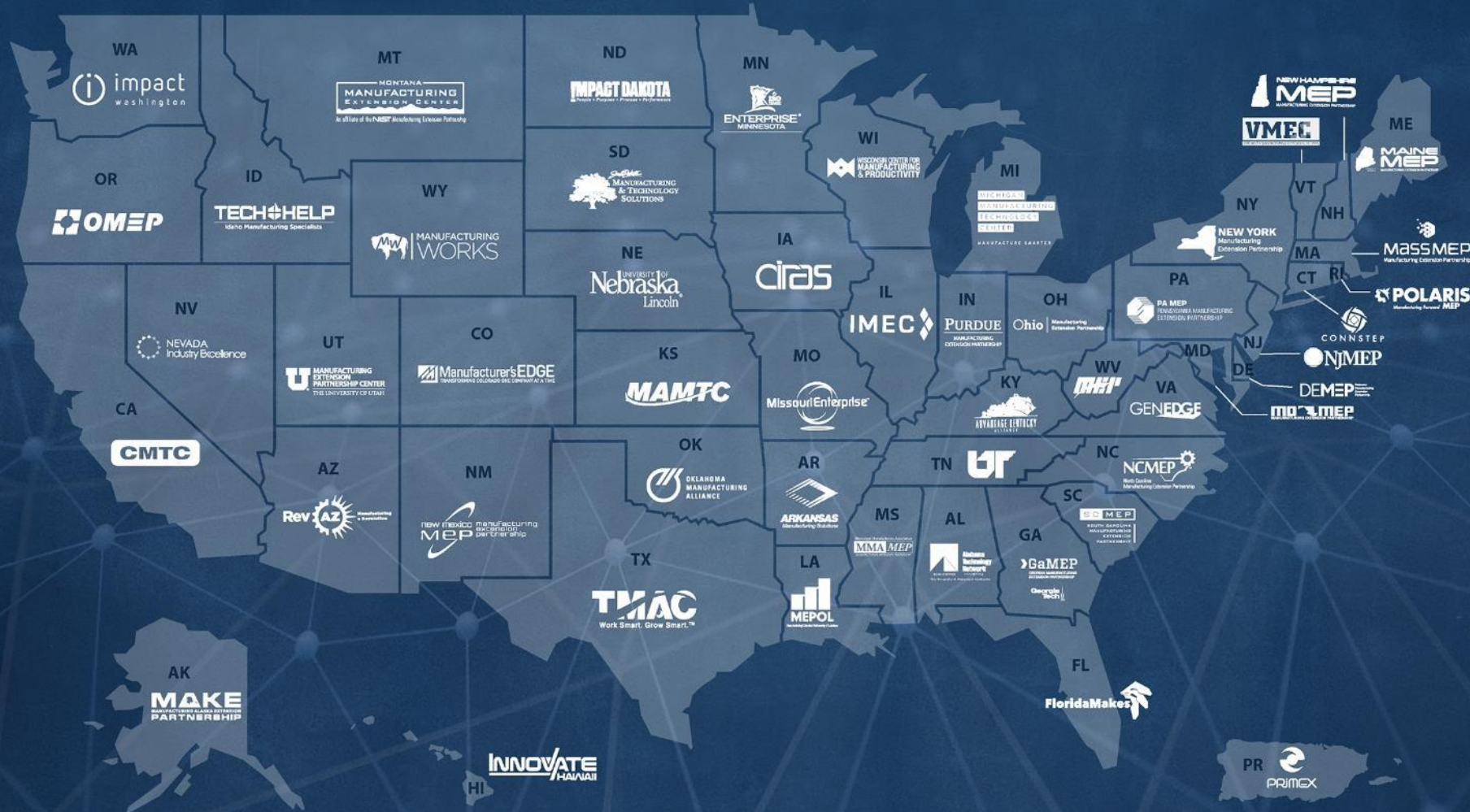
**Manufacturing  
USA**



**Baldridge  
Performance  
Excellence  
Program**



## NLST

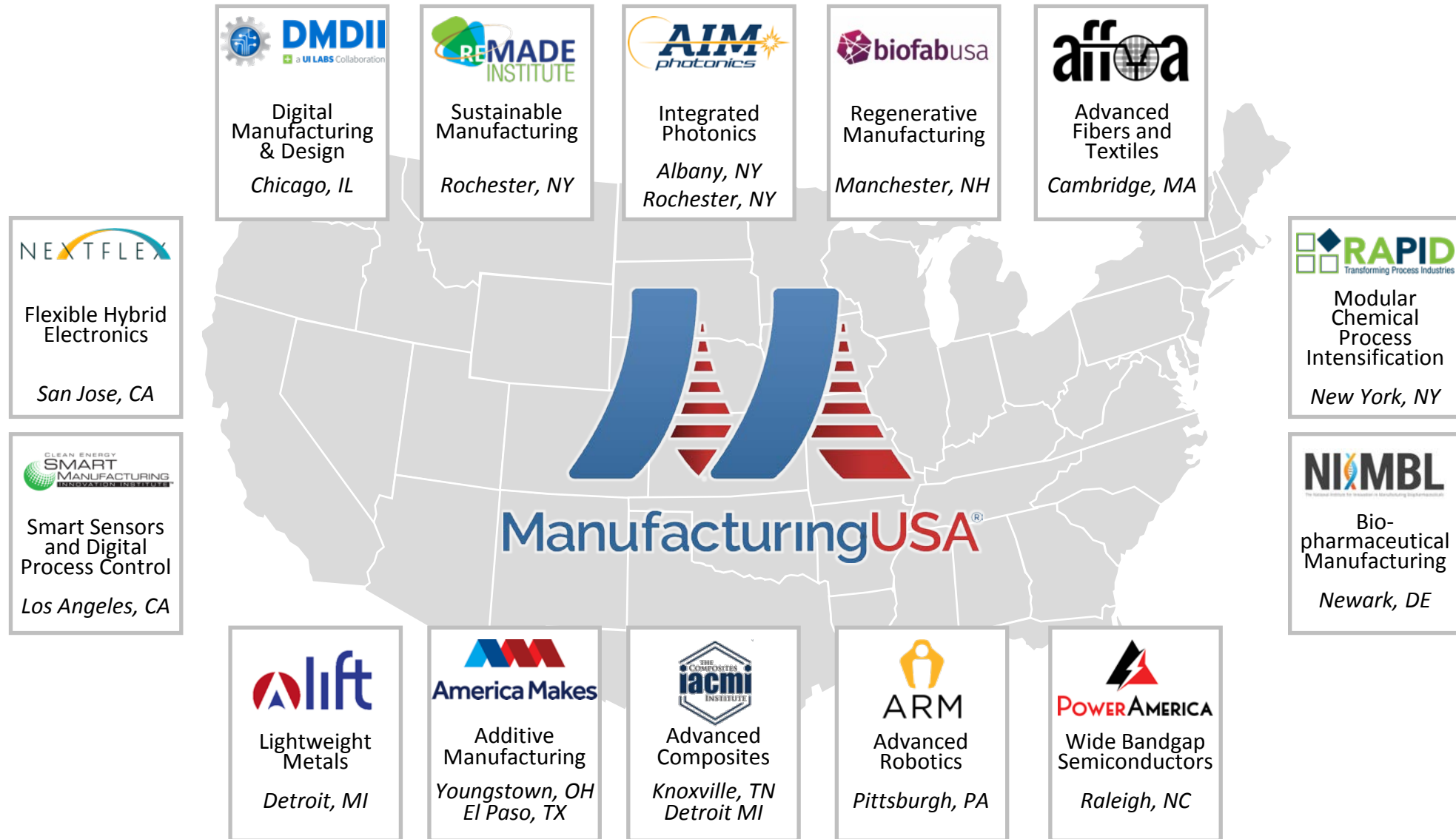


In 2017:

- Connected to 26,000+ manufacturers
- \$12.6 B in sales
- \$1.7 B in cost savings
- \$3.5 B in new client investments
- 100,000+ jobs created and retained

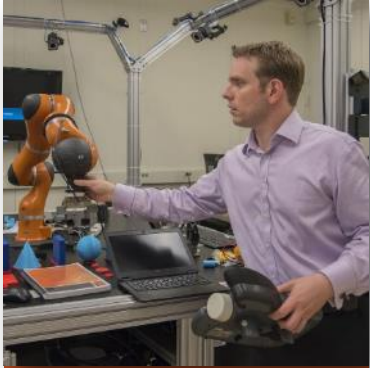


# Manufacturing USA Network



# NIST Programmatic Priorities

NIST



Advanced  
Manufacturing



Cybersecurity



Disaster  
Resilience



© Matt DeLorme

Engineering  
Biology



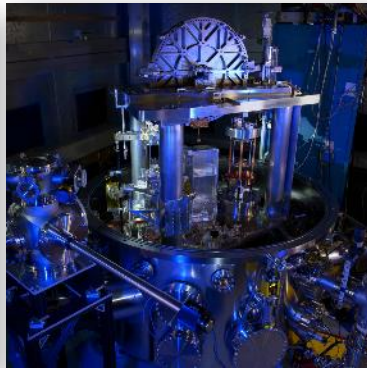
Internet of  
Things



Documentary  
Standards



Technology  
Transfer



Measurement  
Dissemination



Quantum  
Science



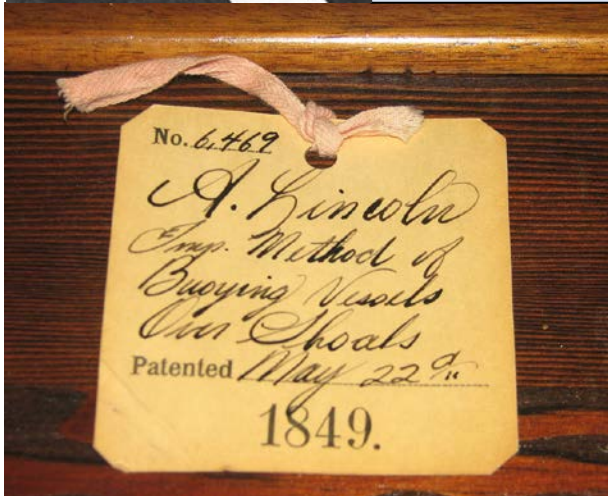
Artificial  
Intelligence

# IP and Innovation



[The U.S. patent system] “adds the fuel of interest to the fire of genius in the discovery and production of new and useful things.”

*Abraham Lincoln*



**U.S. Patent No. 6469**



... “I can not forbear intimating to you the expediency of giving effectual encouragement as well to the introduction of **new and useful inventions** from abroad as to the exertions of skill and genius in producing them at home”....

*George Washington, State of the Union Address, January 8, 1790*



# Federal R&D Investment

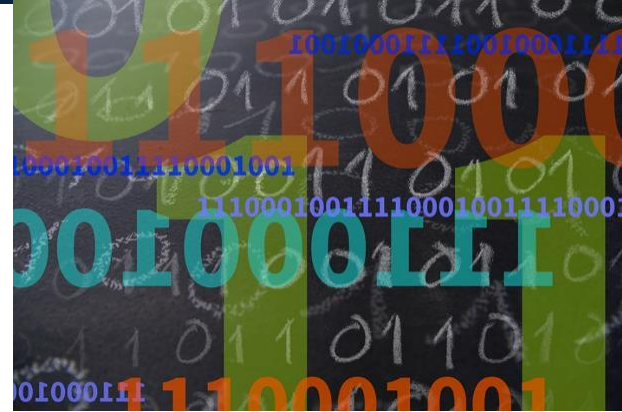
- The **Federal government invests approximately \$150 billion per year in R&D:**
  - **~1/3** invested at over 300 Federal laboratories
  - **~2/3** invested at universities and industry R&D institutions
- To produce economic gain and maintain a strong national security innovation base, the results of this investment must be put to **productive use** through:
  - ***applied research*** and ***services to the public***
  - ***transfer to private companies to create new products and services***



# NIST and Technology Transfer



- Policy coordination and promulgation of technology transfer regulation
- Interagency Workgroup for Technology Transfer (11 Federal agencies)
- Interagency Workgroup for Bayh-Dole
- Annual technology transfer reports to the President, Congress, and OMB
- Co-Chair NSTC Science & Technology Enterprise Committee with NSF and DOE
- Co-Lead NSTC Lab-to-Market Subcommittee with OSTP and DOE
- “Host Agency” for Federal Laboratory Consortium for Technology Transfer



By statute, the Department of Commerce via NIST provides Federal leadership for promoting and reporting on technology transfer policies, practices, regulations.

DOC/NIST focus: *Advance Federal technology transfer to promote innovation and industrial competitiveness.*

# Return on Investment (ROI) Initiative

NIST

As part of the President's Management Agenda, the U.S. seeks to enable even greater return on the Federal government's investment in R&D



Federal R&D Investment  
\$150B/year



Technology Transfer  
System



New IP, licensing, products, processes,  
services and companies return value  
via economic growth and enhanced  
national security



# Lab-to-Market CAP Goal



- Lab-to-Market: cross agency priority (CAP) goal of **President's Management Agenda** to modernize government for the 21st century.
  - *Improve Transfer of Federally-Funded Technologies from Lab-to-Market.*
- **Lab-to-Market CAP Goal** co-led by Department of Commerce via NIST and the White House Office of Science & Technology Policy (OSTP).
- NIST, in coordination with OSTP, will advance the President's Management Agenda and its Lab-to-Market CAP Goal through the **ROI Initiative**.
- The **National Science and Technology Council Lab-to-Market Subcommittee** will coordinate, review, and implement interagency priorities for this CAP Goal.

# National Science & Technology Council



## Committee on Science

Food and Agriculture

Open Science

Quantum Information Science

Physical Sciences

Opioid FTAC

## Committee on Technology

Advanced Manufacturing

Material Genome Initiative

Machine Learning/AI

Advanced Transportation

Nanotechnology

## Committee on Homeland and National Security

Bio Defense R&D

Space Weather

Critical Minerals

Cybersecurity

Nuclear Defense R&D

Disaster Reduction

DAMIEN

Critical Infrastructure

## Committee on Environment

Polar Research

Global Change

Water Availability and Quality

Earth Observations

Ocean Science

## Committee on STEM Education

FC-STEM

## Committee on S&T Enterprise

### Lab 2 Market

Networking IT R&D

Research Business Models

Scientific Collections

R&D Infrastructure

Open Data

International S&T Coordination

# ROI Vision and Goal

**VISION:** Unleash the innovation power of America into our economy

**GOAL:** Maximize the transfer of federal investments in science and technology into value for America

- **meet current and future economic and national security needs** in a rapidly shifting technology marketplace and enhance U.S. competitiveness globally
- **attract greater private sector investment** to create innovative products, processes, services, as well as new businesses and industries



Credit: Peter Cutts

Unleashing American Innovation Symposium, April 19, 2018



# Unleashing American Innovation



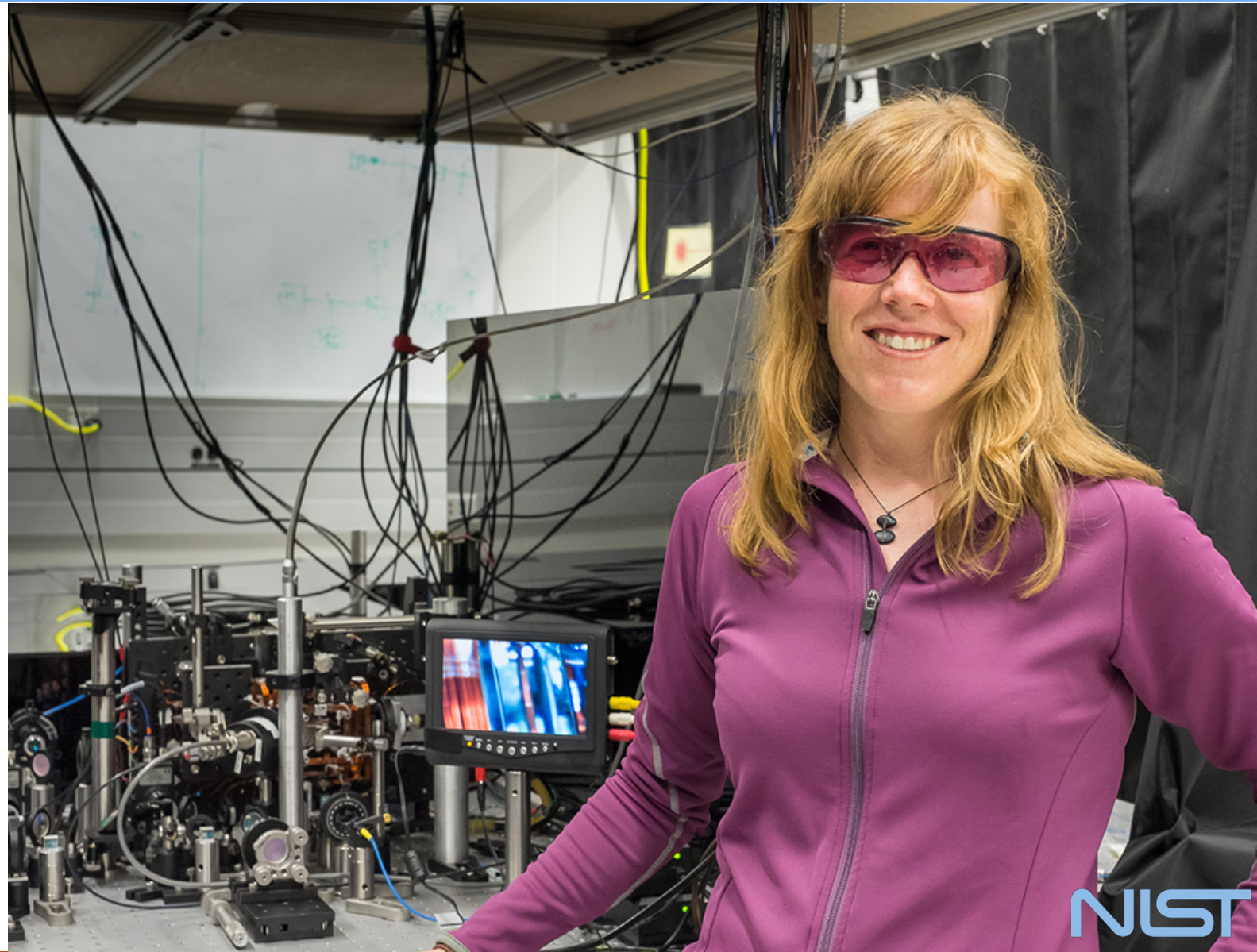
Photo courtesy of  
NIST / Peter Cutts

(L to R): Michael Kratsios – WH/OSTP, Walter Copan – U/S NIST, Wilbur Ross – Commerce Secretary,  
Margaret Weichert - Deputy Director OMB, Andrei Iancu – U/S USPTO

# ROI Initiative Objective

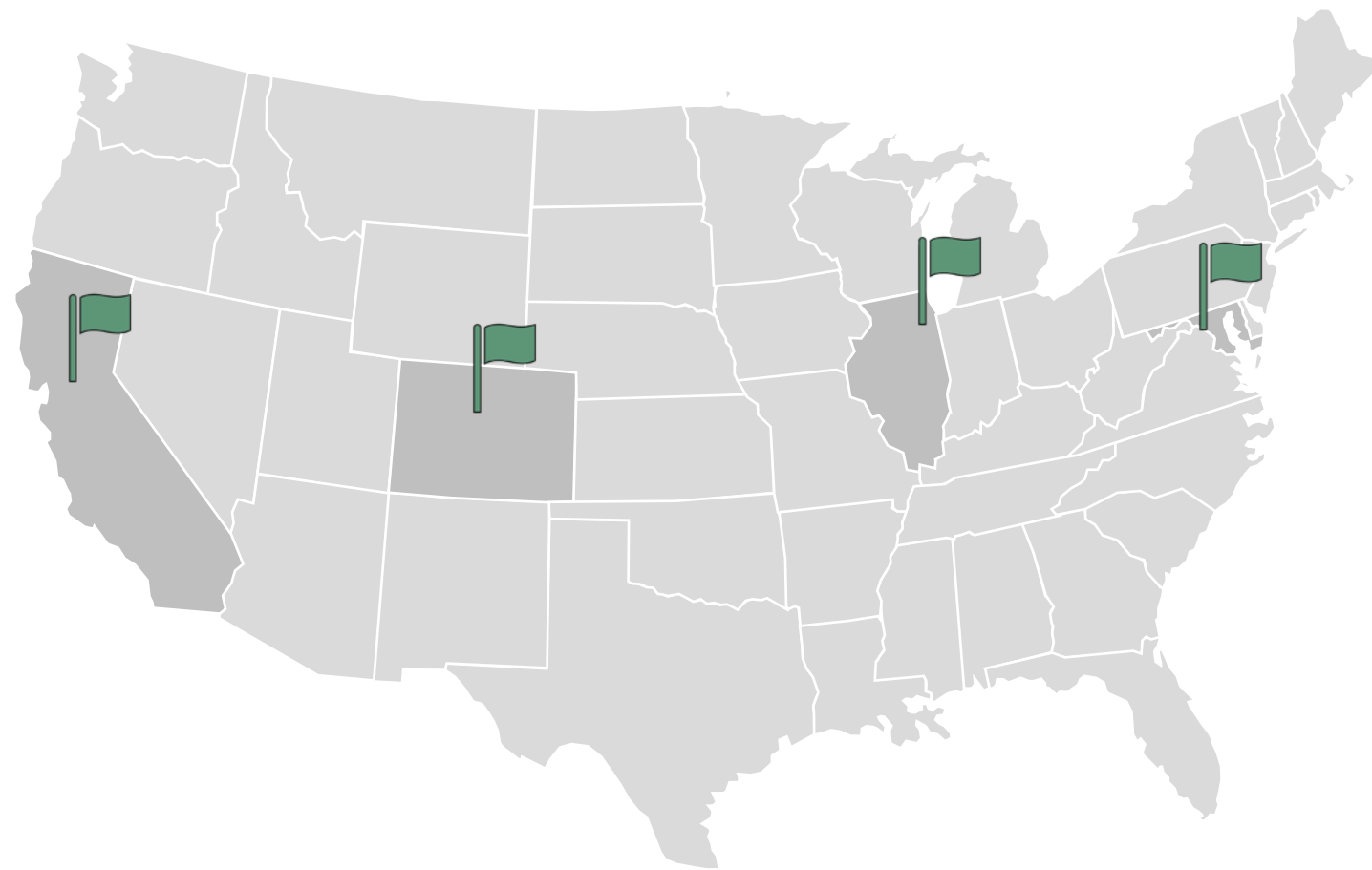
Assess, streamline, and accelerate the transfer of technology from Lab-to-Market:

- Identify **critically needed improvements** to Federal technology transfer policies, practices, and efforts
- Seek **broad input** from Federal R&D, intellectual property and technology transfer stakeholders





# ROI Initiative - Outreach



## Unleashing American Innovation Symposium

April 19, Washington, DC

## Request for Information

May 1 – July 30

### ROI Public Meetings

May 17 – San Jose, CA

May 21 – Denver, CO

May 31 – Chicago, IL

**June 14 – Gaithersburg, MD**



# ROI Recommended Actions → CAP Goal Implementation

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ROI recommended actions will support five CAP goal strategies:



Identify regulatory impediments and administrative improvements in Federal technology transfer policies and practices



Increase engagement with private sector technology development experts and investors



Build a more entrepreneurial R&D workforce



Support innovative tools and services for technology transfer



Improve understanding of global science and technology trends and benchmarks.

# ROI Request for Information

1. What are the **core Federal technology transfer principles and practices** that should be **protected**, and those which should be **adapted or changed**?
2. What are the **issues that pose systemic challenges** to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D?
3. What is the **proposed solution for each issue that poses a systemic challenge** to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D?
4. What are **other ways to significantly improve transfer of technology, knowledge, and capabilities** resulting from Federal R&D to benefit U.S. innovation and the economy?
  - *What changes would these proposed improvements require to Federal technology transfer practices, policies, regulations, and legislation?*

# ROI RFI Responses

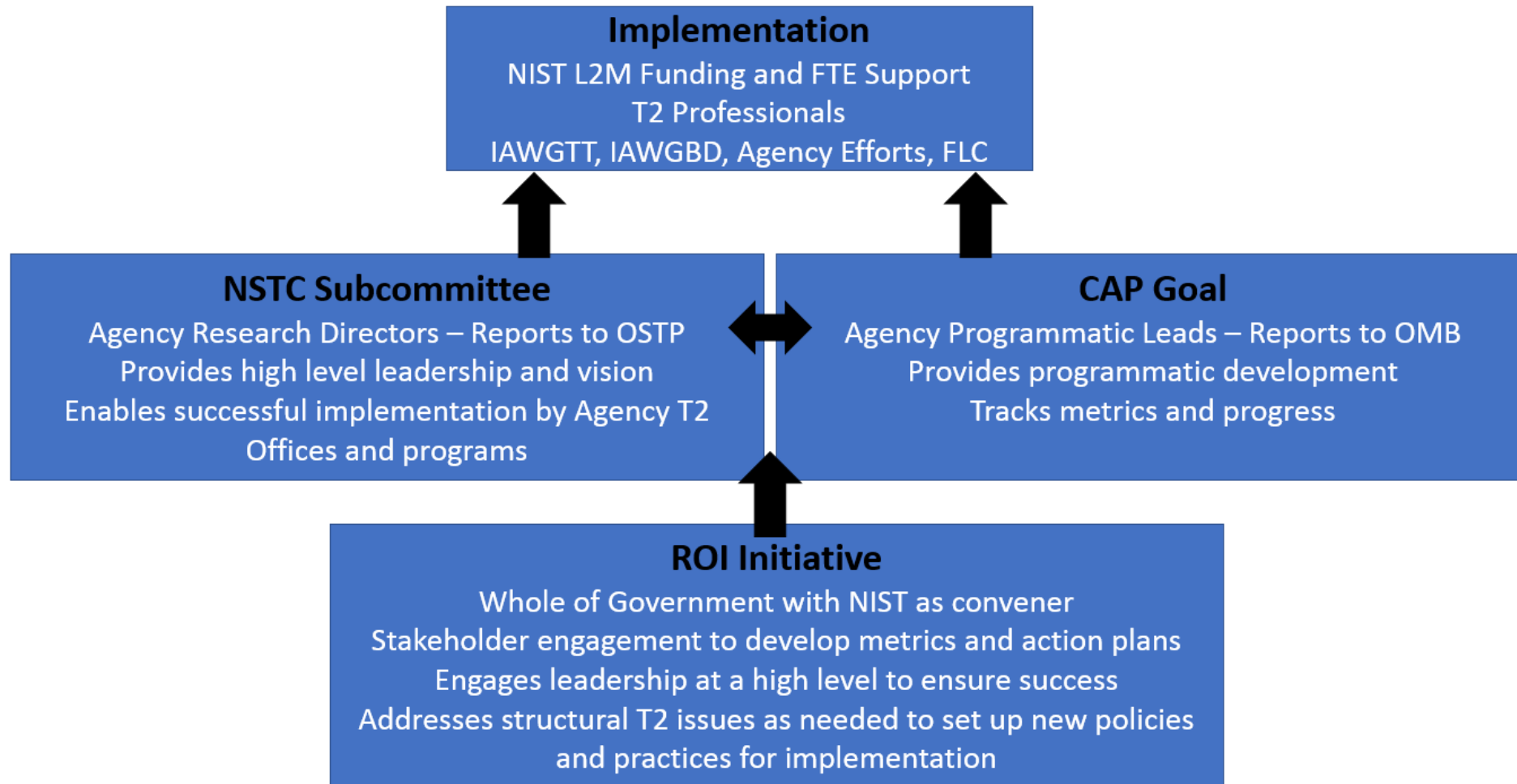
Submit written responses by **5:00 pm Eastern Time on July 30, 2018** using either of the following methods:

- Agency Website: <https://www.nist.gov/tpo/roi-rfi-response>.
  - *Follow the instructions for sending comments on the agency website.*
- E-mail: [roi@nist.gov](mailto:roi@nist.gov).
  - *Include “RFI Response: Federal Technology Transfer Authorities and Processes” in the subject line of the message.*



# ROI + CAP Goal + NSTC = Implementation

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# ROI Timeline and Milestones

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February / March / April

- President's Management Agenda released with Lab-to-Market CAP Goal
- Initial key stakeholder meetings to engage industry, university, and federal stakeholders
- NIST website with ROI information and updates

April / May / **June** / July

- Unleashing American Innovation Symposium Launch Event (April 19, 2018)
- **Request for Information** (closes 7/30) published in *Federal Register* (May 1, 2018)
- Public Forums announced in *Federal Register* (May 1, 2018)

August / September / October / November

- Analysis of inputs/studies
- Interagency review
- Recommendations (best practices, policies, regulatory, legislative-if appropriate)
- Initiate implementation of action plan

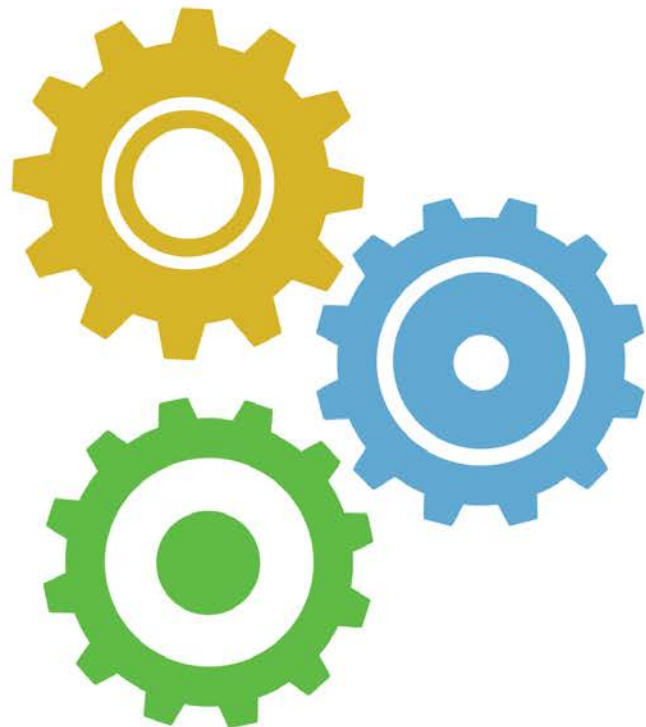
# Examples of Systemic Challenges



- Difficulty negotiating IP terms and indemnification provisions
- Inconsistent practices and interpretation of authorities across USG
- Inability to effectively copyright and protect software and digital products developed by USG-operated labs
- Challenges in protecting trade secrets when collaborating with Federal laboratories
- Concerns about march-in rights and government use license
- Conflict of interest provisions limit entrepreneurship & restrict access to resources needed to commercialize technology
- Need for local control of agreement negotiation and execution
- Inconsistent interpretation of tech transfer legislation
- Challenges in creating consortium agreements
- Lack access to maturation funding to advance promising technologies



# ROI Initiative Information



*Federal Register* and *Press Release* Announcement  
of *RFI* and *Public Forums*

Video Recording of *Unleashing American Innovation Symposium*

[www.nist.gov/tpo/ROI](http://www.nist.gov/tpo/ROI)