

Unleashing American Innovation

*NIST, U.S. Manufacturing and
Return on Investment*

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Under Secretary of Commerce for Standards and Technology &
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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.



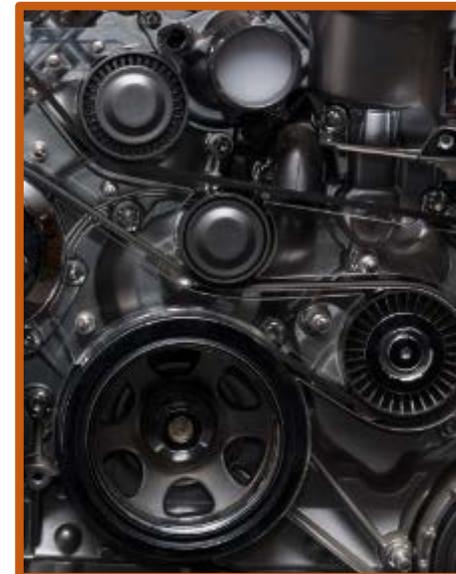
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World-Leading Scientific and Engineering Research



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Advanced Manufacturing National Programs



© Shutterstock/SergeyKohl

Technology Transfer and U.S. Innovation

NIST AT A GLANCE

Industry's National Laboratory



3,400+
FEDERAL
EMPLOYEES



5
NOBEL PRIZES



2 CAMPUSES
GAITHERSBURG, MD [HQ]
BOULDER, CO



3,900+
ASSOCIATES



11
COLLABORATIVE
INSTITUTES



thousands
of BUSINESSES USING
NIST FACILITIES



14
COORDINATING
NETWORK OF MFG
INSTITUTES

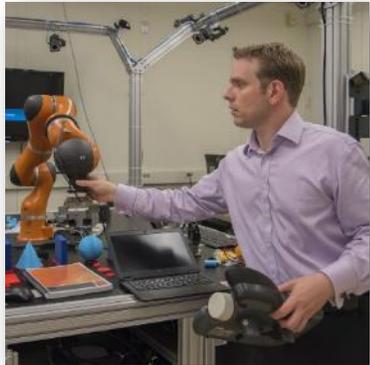


51
MANUFACTURING
EXTENSION
PARTNERSHIP CENTERS



U.S. BALDRIGE
PERFORMANCE
EXCELLENCE PROGRAM

NIST Addresses National Priorities



© F. Webber/NIST

Advanced
Manufacturing



Shutterstock/Kentoh

Cybersecurity &
Privacy



© FEMA

Disaster
Resilience



© Matt DeLorme

Engineering
Biology



Credit: Chesky/fotolia.com

Internet of
Things



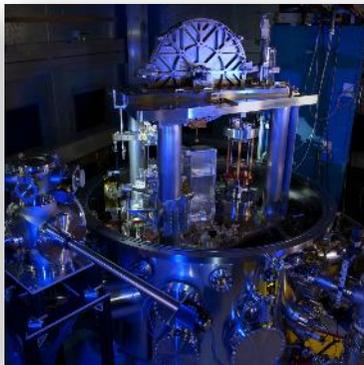
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Documentary
Standards



Shutterstock/anueling

Technology
Transfer



J. Lee/NIST

Measurement
Dissemination



E. Edwards/JQI

Quantum
Science



N. Hanacek/NIST

Artificial
Intelligence

NIST Extramural Programs



Public-private
partnerships
strengthening
America's
manufacturing core
and organizational
performance



Hollings
Manufacturing
Extension
Partnership

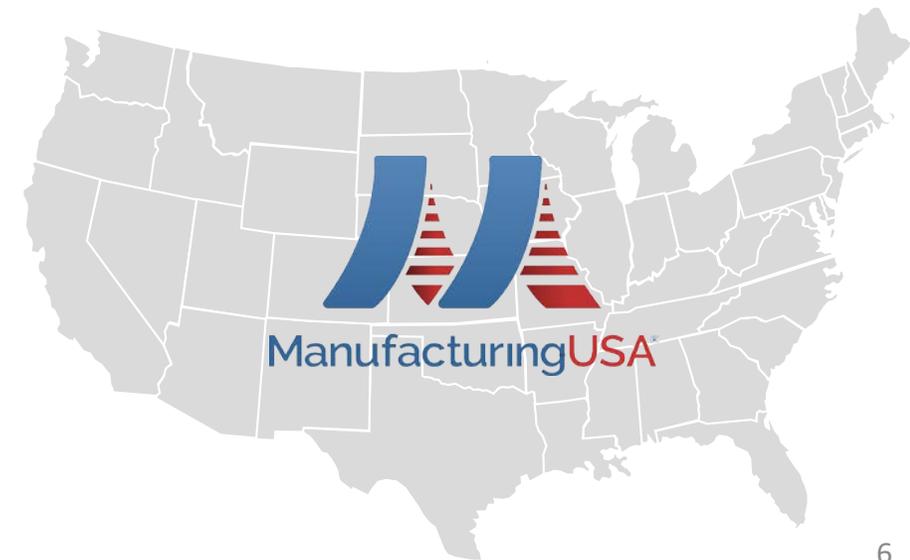


Manufacturing
USA®



Baldridge
Performance
Excellence
Program

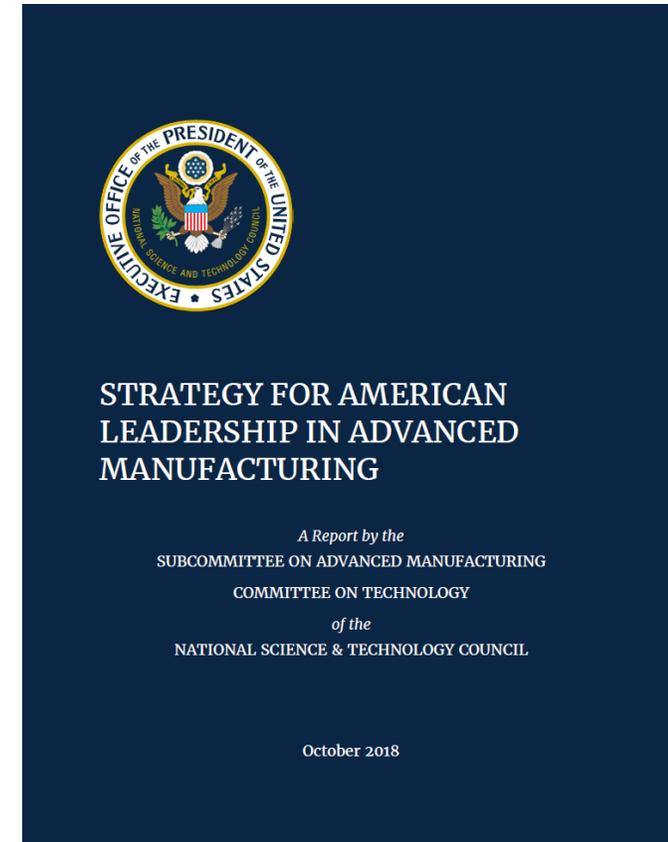
- In the face of intense global competition, **strong action is needed to defend the economy**, expand manufacturing workforce, ensure a strong manufacturing and defense industrial base, and resilient supply chain.
- The U.S. needed a clear and comprehensive strategic plan, as requested by Congress, for **American leadership in advanced manufacturing**



Vision: American leadership in advanced manufacturing across industrial sectors to ensure national security and economic prosperity

Goals

1. Develop and transition new manufacturing technologies – **5 Objectives with 15 priorities**
2. Educate, train, and connect the manufacturing workforce – **4 Objectives with 9 priorities**
3. Expand the capabilities of the domestic manufacturing supply chain – **4 Objectives with 11 priorities**



Manufacturing USA

NIST

Mission: Connecting people, ideas, and technology to solve industry-relevant advanced manufacturing challenges, thereby enhancing industrial competitiveness and economic growth and strengthening our national security.

Vision: U.S. global leadership in advanced manufacturing



Image Courtesy of LIFT institute



Manufacturing USA Institutes

Public-private partnership creating a neutral convening space for U.S. industry and academia to collaborate

Market Failure in Pre-Competitive Applied Manufacturing R&D

Funding/
Investment

High

Government and
Universities

GAP

Private Sector

Low

Manufacturing-Innovation Process



Manufacturing Readiness Levels (1-10)

Manufacturing USA Institutes

NIST



NEXT FLEX
Flexible Hybrid Electronics
San Jose, CA



CESMII
THE SMART MANUFACTURING INSTITUTE
Smart Sensors and Digital Process Control
Los Angeles, CA



MxD
Digital Manufacturing
Chicago, IL



REMADE INSTITUTE
Sustainable Manufacturing
Rochester, NY



AIM photonics
Integrated Photonics
Albany, NY
Rochester, NY



biofabusa
Regenerative Manufacturing
Manchester, NH



affova
Advanced Fibers and Textiles
Cambridge, MA



RAPID
Transforming Process Industries
Modular Chemical Process Intensification
New York, NY



NIMBL
The National Institute for Innovation in Manufacturing Biopharmaceuticals
Bio-pharmaceutical Manufacturing
Newark, DE



lift
Lightweight Metals
Detroit, MI



America Makes
Additive Manufacturing
Youngstown, OH
El Paso, TX



THE COMPOSITES INSTITUTE
Advanced Composites
Knoxville, TN
Detroit, MI



ARM
Advanced Robotics
Pittsburgh, PA

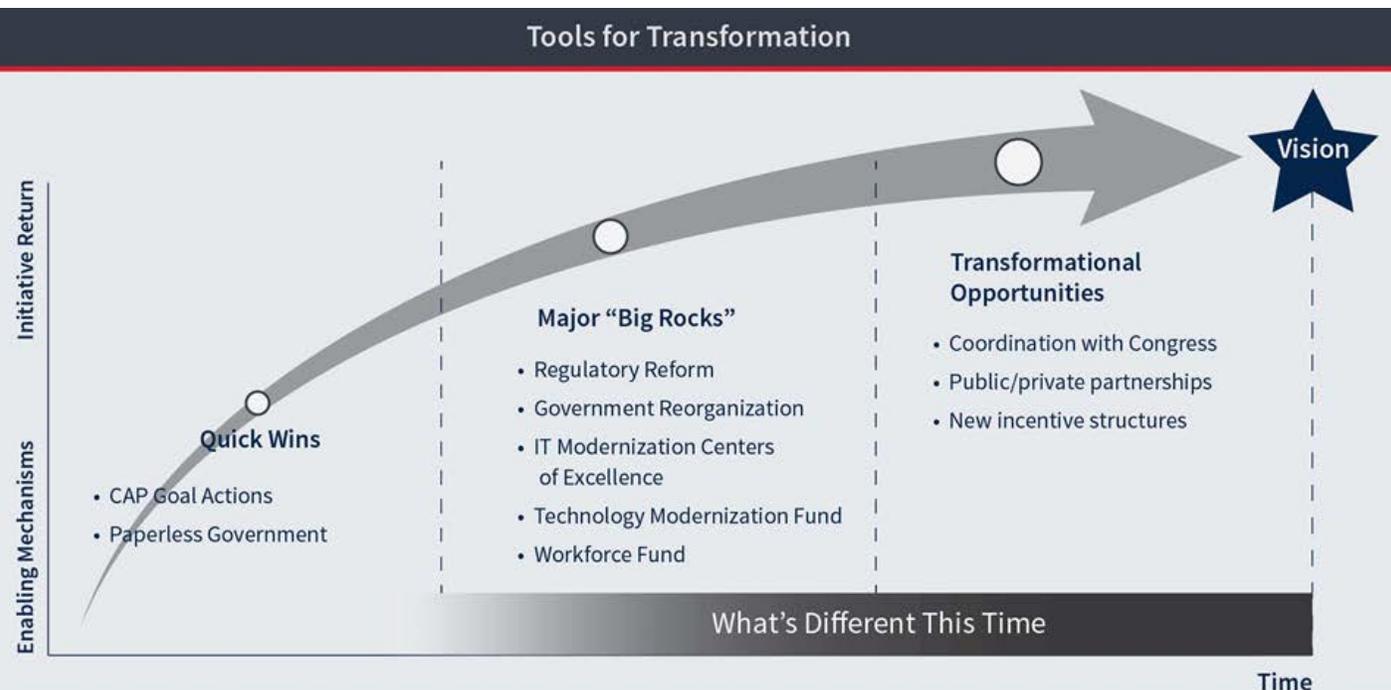


POWER AMERICA
Wide Bandgap Semiconductors
Raleigh, NC

R&D Transition – the ROI Initiative

ROI Initiative designed to be responsive to PMA's long-term vision for modernizing the Federal Government for the 21st Century:

- Enable the Federal Government to **adapt to changing needs** over time
- Pursue **deep-seated transformation** rather than short-term fixes



Root cause challenges

- Regulatory Burden
- Structural Issues
- Decision-Making and Processes
- Leadership and Culture
- Capabilities and Competencies

Public Sector R&D: Creating Seed Corn

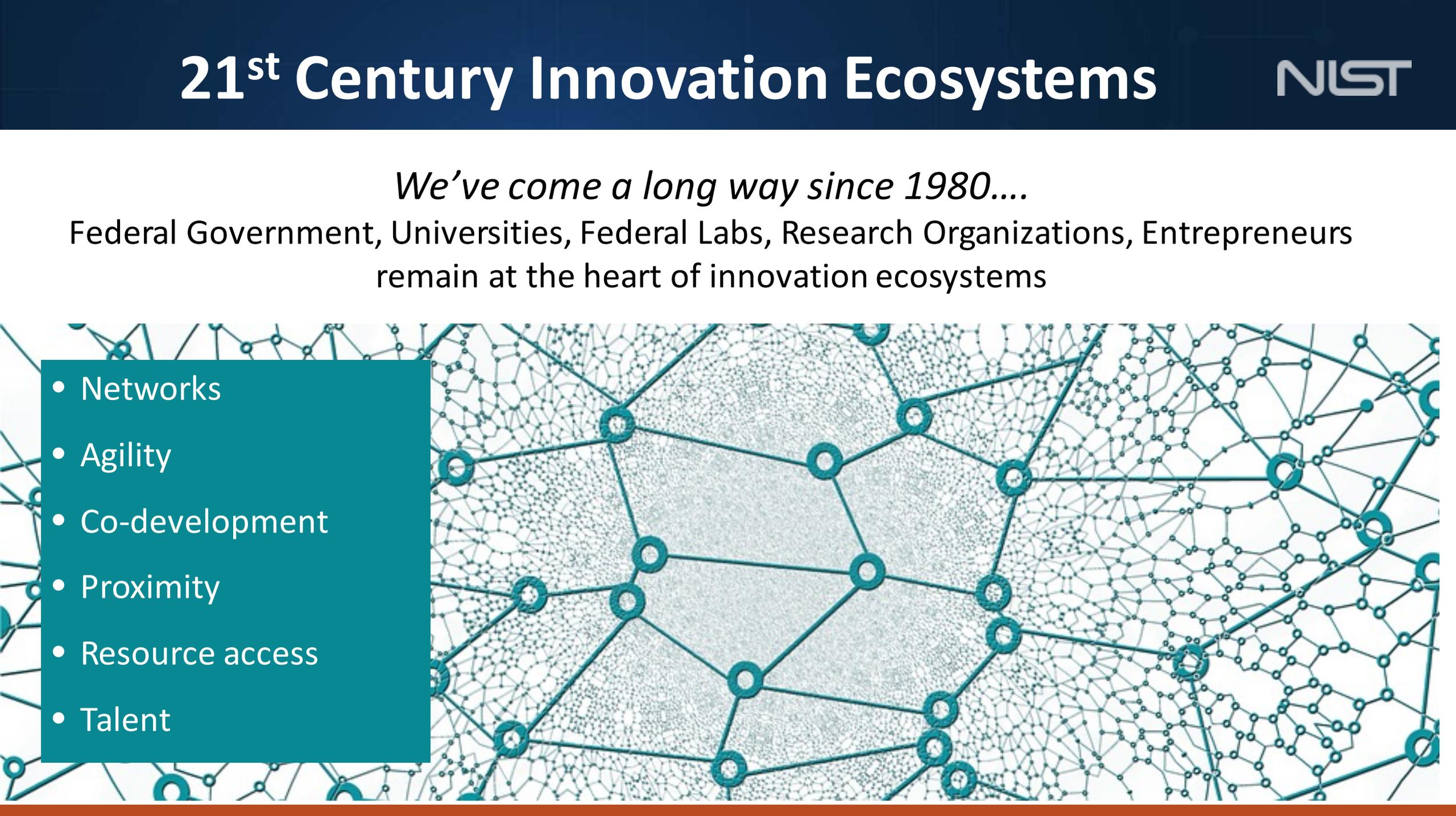
- The **Federal government invests over \$150 billion per year in R&D:**
 - **~1/3** at 300+ Federal laboratories
 - **~2/3** at universities, R&D institutes, industry
- For economic vitality, competitiveness and national security, the results of this investment must be put to **increasingly productive use** through:
 - **applied research and services to the public**
 - **maturation and transfer to companies to create new products and services**



21st Century Innovation Ecosystems

We've come a long way since 1980....

Federal Government, Universities, Federal Labs, Research Organizations, Entrepreneurs remain at the heart of innovation ecosystems

- 
- Networks
 - Agility
 - Co-development
 - Proximity
 - Resource access
 - Talent

Cross Agency Priority Goal 14: Improve Transfer of Federally Funded Technologies from Lab-to-Market

Goal Leads

NIST



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Participating Agencies



Interagency Contributors

National Science and Technology Council
Lab-to-Market Subcommittee

Interagency Working Group for
Technology Transfer

Interagency Working Group for
Bayh-Dole

Small Business Innovation Research (SBIR)
Program Managers Working Group

Interagency I-Corps
Community of Practice

Federal Laboratory Consortium for
Technology Transfer

Open, inclusive, and collaborative outreach

- Four main **Public Forums** totaled 341 registered attendees
- Responses to **Request for Information** represented thousands of stakeholders.
- Broad cross section of **stakeholder community**, including universities, industry, government agencies, individuals
- Other sources:
 - **Unleashing American Innovation Symposium** (D.C. – April 19, 2018)
 - **Maryland Technology Transfer Summit** (NIST – April 20, 2018)
 - Multiple **stakeholder engagement sessions nationwide**
 - Extensive review of **prior reports and studies**
 - **International benchmarking** underway



Credit NIST

RETURN ON INVESTMENT INITIATIVE

TO ADVANCE
THE PRESIDENT'S
MANAGEMENT
AGENDA

DRAFT GREEN PAPER
DECEMBER 2018



- Developed with support of the Science and Technology Policy Institute (STPI) and with White House Office of Science and Technology Policy
- Carefully considered extensive stakeholder inputs
- Addressed review with interagency working groups
- Published as **NIST Special Publication 1234**

5 strategies and 15 findings that may help streamline and accelerate innovation at the public-private sector interface, moving technologies from lab to market

ROI Actions to support 5 Lab-to-Market 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



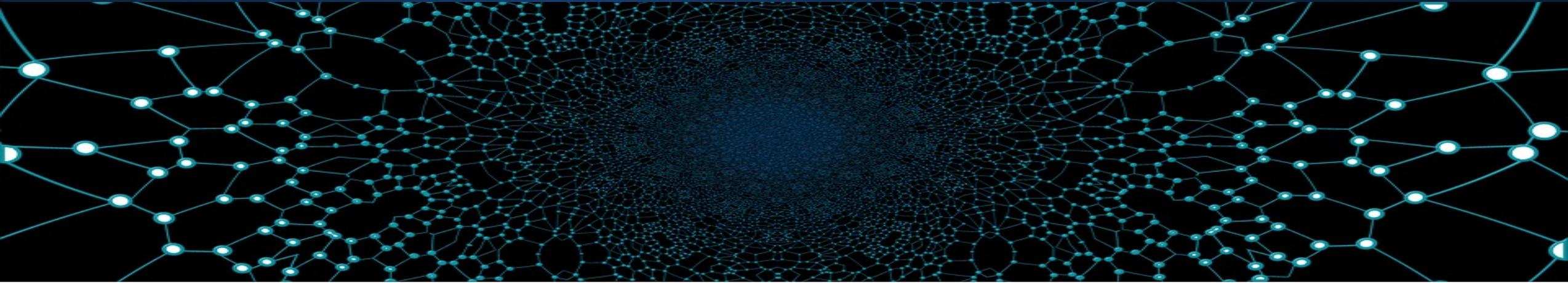
Build a more entrepreneurial R&D workforce



Support innovative tools and services for technology transfer



Improve understanding of global science and technology trends and benchmarks.



Technology transfer - processes by which knowledge, facilities and capabilities developed under Federal research and development (R&D) funding are used to fulfill public and private need

Enable evolving paradigms and models of technology transfer and U.S. innovation

Thank you!

Please stay in Touch...



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