

National Institute of Standards and Technology U.S. Department of Commerce

Unleashing American Innovation The Return on Investment (ROI) Initiative and the Future of Technology Transfer

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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

NIST AT A GLANCE Industry's National Laboratory



Programmatic Priorities NIST



National Institute of

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Ecosystems for Manufacturing Innovation NIST



Manufacturing Innovation Ecosystems



R&D Transition

Manufacturing USA and Manufacturing Extension Partnership Complementary national networks supporting the U.S. Manufacturing Ecosystem



Federal R&D Investment



- The Federal government invests over \$150 billion per year in R&D:
 - > ~1/3 at 300+ Federal laboratories
 - > ~2/3 at universities and industry R&D institutions
- 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



NIST and Tech Transfer



- Policy coordination and promulgation of technology transfer regulation
- Lead for Interagency Workgroup for Technology Transfer (11 agencies) and Interagency Workgroup for Bayh-Dole
- Annual reports for the President, the Congress, and OMB on technology transfer across federal agencies
- Lead in Lab-to-Market NSTC Subcommittee



Unleashing American Innovation Symposium, April 19, 2018

NIST has a unique role in promoting and reporting on the overall strength of federal technology transfer efforts

Federal Technology Transfer

- Federal technology transfer policies and procedures, based on landmark 1980s legislation, continue to support U.S. innovation and have been widely emulated by other countries.
- In an increasingly competitive environment, it is important to ask:
 - Whether and how current laws, regulations, policies, and practices could more effectively promote transfer of federally developed technologies, knowledge, and capabilities to productive uses?

21st Century Innovation



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

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

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



Technology Transfer's Future NUST Image: state of the s

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

Evolving paradigms and models of technology transfer and innovation

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

PRESIDENT'S

MANAGEMENT

ENDA



Federal R&D Investment \$150B/year



Technology Transfer System







> Improve Transfer of Federally-Funded Technologies from Lab-to-Market.

- The Lab-to-Market CAP Goal is co-led by the Department of Commerce via NIST and the White House Office of Science & Technology Policy (OSTP).
- NIST, in coordination with OSTP, is advancing 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.



ROI Vision and Goal





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

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

ROI Initiative Objective



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

PRESIDENT'S

MANAGEMENT

AGENDA

- 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 Sources of Information

- Open, inclusive, and collaborative outreach, stakeholder community participation and inputs to inform the Green Paper.
- Four main **Public Forums** totaled 341 registered attendees
- 104 written comments received in response to Request for Information, representing thousands of stakeholders.
- Comments and public forum participation:
 - Broad cross section of stakeholder community, including universities, industry, government agencies, individuals
- Other information 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



Examples of Systemic Challenges



IP terms and indemnification provisions

- Inconsistency across USG
- Unable to copyright software and digital products
- Challenges with trade secrets and know-how
- March-in rights and government use licenses
- Conflicting requirements Federal, state & corporate
- Feds unable to engage in entrepreneurial activity or support
- Conflict of interest provisions challenging for Feds to support technology commercialization
- Need better metrics and methods to evaluate outcomes and impacts arising from R&D investment

Inefficient Interface Conditions



Word Cloud of RFI Responses



Example Responses to RFI

- Preserve the strong foundation of Bayh-Dole
- Provide clarity and certainty for patent processes
- Build common tech transfer focus, processes and culture across federal sector
- Address structural issues of working with federal labs
- Streamline and expand I-Corps, CRADAs, flexible partnerships, SBIR/STTR programs, ...
- Advance institutional proof-of-concept/translational research
- Increase industrial opportunities to participate in federal R&D challenges
- Proactively increase interactions between federal labs and industry
- Create incentives to attract investment and encourage increased industry federal labs university collaborations



ROI Intended Actions \rightarrow CAP Goal Implementation





ROI intended actions will support five 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.



MANAGEMENT'S A G E N D A CAP Goal Coordination & Implementation NIST



Walter Copan

Under Secretary of Commerce for Standards and Technology Director, National Institute of Standards and Technology

Participating Agencies





Michael Kratsios

Deputy Assistant to the President for Technology Policy White House Office of Science and Technology Policy

Interagency Contributors¹

National Science and Technology Council Lab-to-Market Subcommittee

> Interagency Working Group for Technology Transfer

> Interagency Working Group for Bayh-Dole²

Small Business Innovation Research (SBIR) Program Managers Working Group

> Interagency I-Corps Community of Practice

Federal Laboratory Consortium for Technology Transfer

1: See https://www.nist.gov/tpo/lab-market for descriptions of participating working groups and strategy team focus areas.

2: The Interagency Working Group for Bayh-Dole coordinates implementation of the Bayh-Dole Act; see 35 U.S.C. 200 and 37 C.F.R. 401 and 404.







- Developed with support of the Science and Technology Policy Institute (STPI) in affiliation with OSTP
- Carefully considered extensive stakeholder and interagency inputs
- Addressed review comments from NSTC Lab-to-Market Subcommittee & Interagency Work Group for Technology Transfer
- Published as NIST Special Publication 1234
- 15 bold intended actions to remove existing impediments to innovation at the public-private sector interface, and to streamline and accelerate technology transfer



Overview of Intended Actions NIST

- Bold actions to modernize the U.S. system of technology transfer and innovation for the 21st century
 - > 15 budget-neutral actions designed to accelerate transfer of federally funded technologies by overcoming systemic barriers, streamlining federal policies & practices, and implementing new/expanded ways to form agile partnerships
 - Some updates may be made to intended actions based on stakeholder feedback (due January 9, 2019); the updates will be incorporated into the Final Green Paper
- Several actions in the Draft Green Paper require legislative change
 - > 9 suggested legislative changes apply to the Stevenson-Wydler Act; 3 apply to the Bayh-Dole Act
 - A Legislative Package with draft language for each of the Intended Actions requiring legislative changes is being developed; NIST is also available for Technical Drafting Assistance
 - > A cross-walk document that links the Intended Action with the sections in the bills to be modified is available
- Several actions in the Draft Green Paper require regulations to guide implementation
 - Use existing regulatory authority to update regulations under the Bayh-Dole Act; however, new regulatory authority is required to implement regulations under the Stevenson-Wydler Act
 - Regulations under Stevenson-Wydler Act will help implement consistent/streamlined procedures & practices governmentwide to make it easier, faster, and more attractive for the private sector to form partnerships with Federal Laboratories



Highlights of ROI Intended Actions NIST

Regulatory & Administrative Improvements

- Clarify the limited situations in which Government Use Licenses and March-In Rights may be exercised
- Strengthen and streamline Preference for U.S. Manufacturing requirements and waiver processes
- Establish limited Copyright for Software Products resulting from intramural Federal R&D

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- Provide greater consistency in Partnership Agreements via regulatory guidance to Federal Laboratories
- Expand/create Flexible Partnership Authorities to simplify/accelerate collaborations with private sector
- Expand use of Non-Profit Foundations to accelerate technology maturation by Federal Laboratories
- Allow Limited Use of R&D Awards to secure government's right and interest to a patented invention



Highlights of ROI Intended Actions NIST

	Entrepreneurial Workforce	 Strengthen and expand Technology Entrepreneurship Programs by leveraging best practice entrepreneurship and experiential training programs Clarify and update Conflict of Interest Requirements—and better manage conflicts of interest—for those working on federally funded R&D inside and outside government and with the private sector
	Tools & Services	 Collect and provide consistent and easy-to-access federated data on Federal R&D Assets (e.g., IP, knowledge, capabilities, and facilities) Establish a modern, secure, interoperable platform for Reporting Federal IP Data (inventions, copyrights, and utilization metrics) that is easy to access, analyze, and use
		 Complete authoritative analysis of meaningful metrics to capture, assess, and improve Federal R&D Outcomes & Impacts across broad spectrum of applications & the time



- required to realize R&D impacts
- Standardize Metrics Reporting at the Federal Laboratory level to facilitate comparison with universities
- Establish standard government-wide protocol & data collection instrument for Economic **Impact Studies**





Implementation of Intended Actions NIST



Implementation of any of the intended actions that require specific policy, legislative, and/or regulatory actions will be advanced via formal proposals subject to appropriate interagency review, and public comment



Possible interagency coordination efforts include:

AIA implementation R&D Tax Credits Small Business Innovation Research I-Corps[™]



ROI Next Steps



December / January

- Public Release of Draft of ROI Green Paper (12/6)
- Final revisions to *ROI Green Paper*
- Begin final clearance process for *ROI Green Paper*

February(+)

- Publish Final ROI Green Paper
- Initiate broad outreach and dissemination to industry, university, and federal stakeholders

March / Beyond

- Final CAP Goal milestones (announced ~3/22 on performance.gov¹)
- Initiate implementation actions / activities, including:
 - Draft proposed legislation for DOC/OSTP/OMB review & Congressional submission²
 - Draft proposed regulations for interagency review, public comment, and implementation

¹ CAP Goals are reported to Congress under the GPRA Modernization Act.

² A table with the full list of actions identifying the specific actions that require legislative change along with legal citations and page number is available upon request; the Draft Green Paper includes footnotes with suggestions on possible ways to address many of the actions that require legislative change.



ROI Initiative Information





 Federal Register and Press Release Announcement of *RFI* and *Public Forums*
 Video Recording of *Unleashing American Innovation Symposium Slide Decks* from *Public Forum* Presentations

Draft ROI Green Paper, RFI Responses & Press Releases

www.nist.gov/tpo/ROI



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Thank you!

The Bright Future of Technology Transfer



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