Lab to Market

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FY2016 Quarter 3

Overview

Goal Statement

- Increase the economic impact of federally-funded research and development by accelerating and improving the transfer of new technologies from the laboratory to the commercial marketplace.

Urgency

- There is significant potential to increase the return on public investment through innovation, job creation, societal impact, competitiveness, and economic prosperity

Vision

- To significantly accelerate and improve technology transfer by streamlining administrative processes, facilitating partnerships with industry, evaluating impact, and opening federal research and development (R&D) assets as a platform for innovation and economic growth

Context and Framework

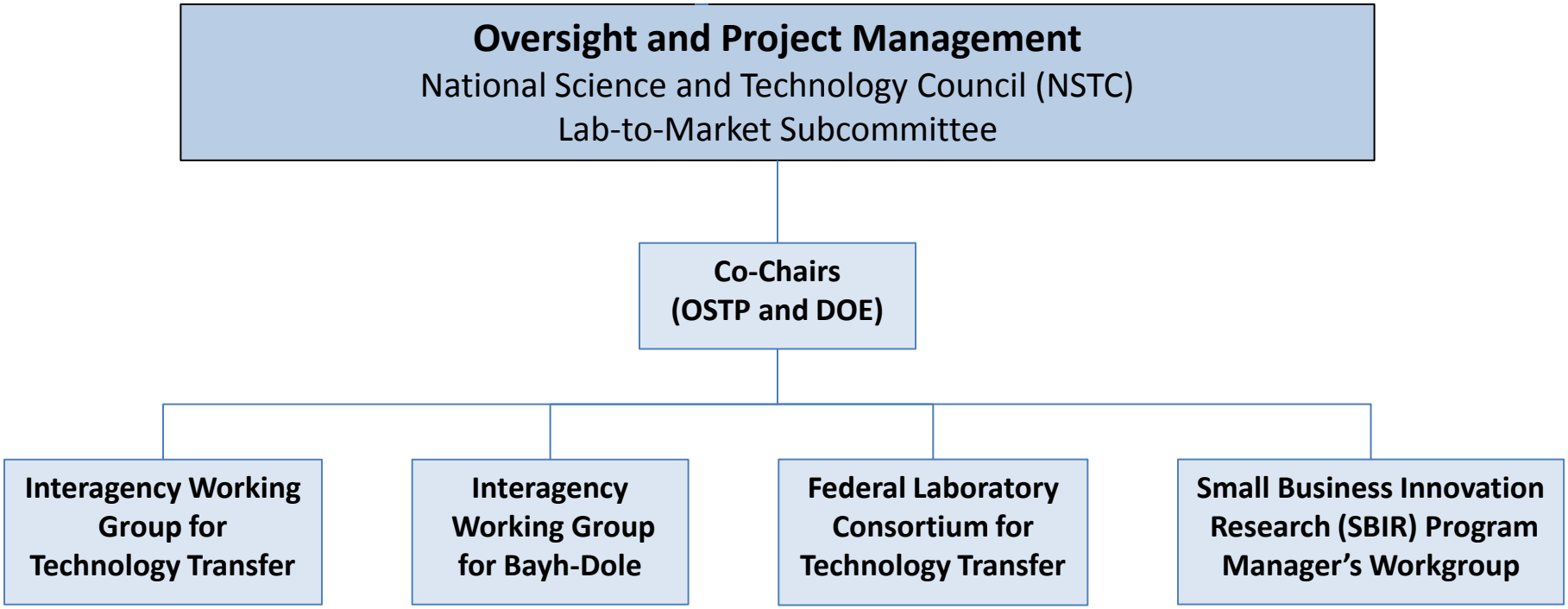
Context

- The Federal Government invested $138 billion on R&D during FY 2015, much of it conducted at universities and federal laboratories. This investment supports fundamental research that expands the frontiers of human knowledge, and yields extraordinary *long-term* economic impact through the creation of new knowledge and ultimately new industries – often in unexpected ways.
- The federal R&D enterprise must continue to support fundamental research that is motivated primarily by our interest in expanding the frontiers of human knowledge, and diffusing this knowledge through open data and publications.
- At the same time, some research discoveries show near-term potential for commercial products and services, and the purpose of this Cross Agency Priority (CAP) Goal is to accelerate these promising technologies from the laboratory to the marketplace.

Implementation framework

- This action plan is a flexible framework, calling on agencies to tailor and prioritize Lab-to-Market activities specific to their missions, capabilities, and authorities. Agencies are likely to have different levels of participation in the elements of this action plan, and may also identify other initiatives that are agency-specific.
- Implementation must be informed by engagement with relevant stakeholders, including small businesses, large companies, technology investors, state economic development organizations, universities, researchers, and federal laboratory contractors.
- Current implementation efforts focus on three main goal areas: Developing Human Capital, Optimizing Effective Collaborations, and Opening R&D Assets.

Goal Team and Governance Plan



See http://www.nist.gov/tpo/lab-to-market.cfm for descriptions of participating groups.
Agency participants: EPA, DOC-NIST, DOC-NOAA, DOC-PTO, DOE, DHHS-CDC, DHHS-NIH, DHS, DOI, DOJ, DOT, GSA, NASA, NSF, SBA, USDA, VA (see page 9 for acronyms list)

Action Plan Summary

Sub-goal*	Major Actions to Achieve Impact	Key Indicators
(1) Developing Human Capital	• Expand the number of individuals with private-sector experience serving in limited-term **technology transfer fellowships** within research agencies • Establish clear ethical and policy guidelines that enable and encourage federal researchers to work outside government for limited periods on **industrial/entrepreneurial detail**, as appropriate • Provide widespread opportunities for **experiential entrepreneurship education** among both students and investigators who work on federally funded R&D projects	• Number of researcher teams successfully completing a rigorous entrepreneurship education curriculum (e.g. NSF I-Corps)
(2) Empowering Effective Collaborations	• Increase the **priority level of R&D commercialization** activities and outcomes at federal laboratories, consistent with agency mission and commercialization strategy • Optimize **technology transfer authorities** and best practices across federal laboratories to remove barriers to collaboration with external entities, as appropriate • Fully utilize existing authority for research agencies to **co-fund projects** between agencies and leverage charitable gifts to advance R&D commercialization.	• Number of small business R&D collaborations executed and in pipeline
(3) Opening R&D Assets	• Make all **relevant data** about both (a) federally funded intellectual property (IP) and (b) federal R&D facilities open and machine-readable • Reduce the time, cost, and complexity of **executing IP licenses** • Increase the **utilization of core facilities**, user facilities, and excess/surplus R&D equipment by external innovators and entrepreneurs, where appropriate and consistent with agency mission	• Develop a single database for available federal technologies to be housed on FLC's website • 3rd Party use of data
(4) Fueling Small Business Innovation	• Make data on all open SBIR/STTR **solicitations** available to third parties in real time • Streamline the SBIR/STTR **application process** • Reduce **undue burdens** on small businesses during the award performance period, wherever appropriate • Publish and share **best practices for Phase III commercialization** from all agencies on a regular basis • Align SBIR/STTR solicitation topics with **multi-agency science and technology priorities**	• Develop a single API for all federal SBIT/STTR solicitations to be housed on SBA's website
(5) Evaluating Impact	• Report on metrics that capture R&D commercialization inputs and outputs • Develop outcome metrics that capture longer-term economic impact , in collaboration with the research community	• Continue to report new metrics in annual tech transfer report**

* Numbers on the next slide indicate milestone alignment in the current sub-goal areas.

** Development of long-term metrics was completed and first reported in the FY13 agency tech transfer report published in 2015; agencies will continue to track and report these metrics in future reports

Milestones met in Q3 of FY 2016

- A total of 786 teams completed the NSF I-Corps immersion course through Q2 FY16, with participation by 7 university nodes. (1)
- I-Corps programs are now being offered in 11 federal agencies. (1)
- The first international collaboration with NSF I-Corps was announced in partnership with Science Foundation Ireland. (1)
- NSF released a new supplement opportunity for the current I-Corps Nodes and Sites to fund advanced partnerships and programs that broaden participation of underrepresented groups in the national innovation network. (1)
- USDA developed internal tech transfer training modules for their scientific staff in 5 subject areas. (1)
- A core set of performance metrics has been proposed for I-Corps and tech transfer collaborations and submitted to OMB leadership for review. (1, 2)
- The NSA implemented a new Custodial CRADA for open source software to allow a private company to become the custodian and subject matter expert of an open source software technology, keeping the software version current, and ensuring a single baseline technology to further commercialization potential, freeing NSA innovators for other mission-related activities. (2)
- USDA implemented a new commercial evaluation license and a new data transfer agreement to improve the transfer of technologies to commercial and academic partners. (2)
- DOT developed a white paper leveraging information created by the Lab to Market group and is sharing it with its stakeholders to increase commercialization awareness and government practices in collaboration with industry. (2)
- DOE announced the first Department-wide round of funding for the Technology Commercialization Fund. Nearly $16M in funding will support 54 projects at 12 national labs involving 58 private-sector partners. (2)
- Eight small businesses from eight states were selected to Participate in the Office of Nuclear Energy Voucher Pilot Program to work with DOE's National Laboratories to accelerate the development and deployment of innovative nuclear technologies. (2)
- DOE signed a Cooperative Agreement with X-energy to solve design and fuel development challenges of next generation nuclear reactors. (2)
- A webinar was held to promote the use of USDA pilot plants to industry. (3)
- SBA coordinated the 2016 National SBIR/STTR Conference in Washington DC in partnership with TechConnect's National Innovation Summit for several thousand attendees. (4)
- The SBIR Road Tour held several events in the southeast US, continuing an outreach effort to provide information on SBIR opportunities to areas of the country that have historically underutilized the program. (4)
- USDA held a webinar in conjunction with the SBA on their SBIR-Tech Transfer program. (4)

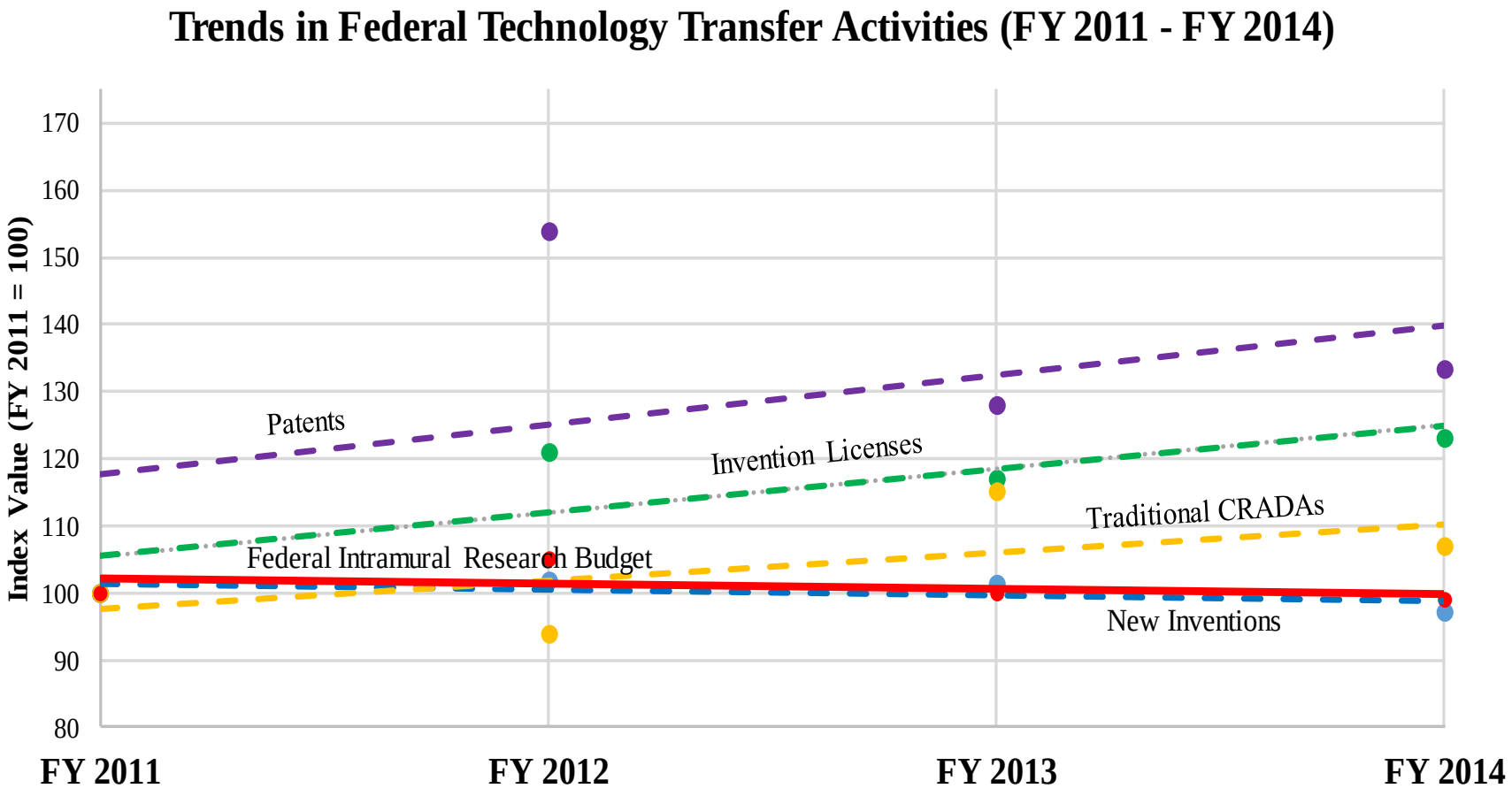
Work plan

2016-2017 Milestone Summary			
Key Milestones	**Milestone Due Date**	**Milestone status**	**Owner**
(1) Developing human capital. Scale up experiential entrepreneurship training for Federally funded scientist teams	Q4 of FY 2016	On Track	Co-Chairs
(1) Developing human capital. Implement final rule authorizing tech transfer personnel exchanges among academia, industry, and Federal labs	Q4 of FY 2016	On Track	NIST / IAWGTT
(2) Empowering effective collaborations. Expand small business R&D collaborations with Federal labs	Q4 of FY 2016	On Track	Co-Chairs
(2) Empowering effective collaborations. Implement final rule updating Bayh-Dole regulations of Federally funded R&D at universities	Q1 of FY 2017	On Track	NIST / IAWGBD
(3) Opening R&D assets. Federal lab intellectual property (IP) data posted in machine-readable format on data.gov	Q4 of FY 2016	On Track	NIST / FLC
(3) Opening R&D assets. Improve validation and use of federal lab facilities data	Q4 of FY 2016	On Track	NIST / FLC
(4) Fueling small business innovation. Continue to improve access to SBIR/STTR solicitation data	Q4 of FY 2016	On Track	SBA/SBIR Program Managers

Key indicators

Key Implementation Data						
Indicator	**Source**	**Baseline**	**Target**	**Frequency**	**Latest data**	**Trend**
(1) Human Capital: Scale up experiential entrepreneurship training for Federally funded scientist teams	NSF and other agencies	332 teams in pipeline for FY16	356 teams in pipeline for FY17	Annual	768 teams completed immersion course to date.	↗
(1) Human Capital: Implement final rule authorizing tech transfer personnel exchanges among academia, industry, and Federal labs	NIST	N/A	Final rule published	Annual	Public Comment period closed; final rule to be published in 2016 Q4.	N/A
(2) Collaborations: Expand small business R&D collaborations with Federal labs	DOE and other Agencies	~100 agreements in pipeline for FY16	115 agreements in pipeline for FY17	Annual	900+ users signed up to use the sbv.org in FY15. 462 applications received; ~200 applicants new to the labs.	→
(2) Collaborations: Implement final rule updating Bayh-Dole regulations of Federally funded R&D at universities	NIST	N/A	Final rule published	Annual	Agency comments received, Federal Register Notice and public meeting to be completed in 2016 Q4.	N/A
(3) Opening R&D Assets: Consolidate Federal lab intellectual property (IP) data and push to data.gov	FLC	1 agency API	1 database for all agencies	Annual	Beta test version demoed in 2016 Q3, final version to be launched in 2016 Q4.	N/A
(3) Opening R&D Assets: Increase use of Available Technologies data by third parties	FLC	N/A	3 use cases	Annual	Three of three use cases identified for Q4 release of database.	↗
(3) Opening R&D Assets: Implement annual validation of current facility data	Agencies	N/A	12 agency validations	Annual		→
(3) Opening R&D Assets: Increase use of Facilities data by third parties	FLC	N/A	3 use cases	Annual	Provided data to National Security Subcommittee and data.gov	↗
(4) Small Business: Development of a single API consolidating all agency SBIR/STTR solicitations via www.sbir.gov	SBIR PM workgroup	11 agency datasets	1 agency API	Annual		N/A

Activity Trends since 2011 Presidential Memorandum



While the Federal Intramural Research Budget and New Invention Reports have been mainly flat since 2011, several metrics of technology transfer have been trending upwards since the 2011 Presidential Memorandum – including the number of Patents, Invention Licenses, and Cooperative Research and Development Agreements (CRADAs). These trends will continue to be measured in future Annual Technology Transfer Reports.

Data.gov Status – Available IP and Facilities

Agency Intellectual Property (IP)

- Eight agencies currently have individual agency IP datasets on Data.gov:
  - DOC-NIST
  - DOC-NOAA
  - DOE
  - DOT
  - EPA
  - HHS-NIH
  - NASA
  - USDA
- A single consolidated database with machine-readable data automatically delivered to Data.gov will be made available in Q4 2016.
- Supplying this consolidated data in a machine-readable format through Data.gov will allow third parties to more readily use the data in their own applications, in addition to improving search functionality.

Agency User Facilities

- The complete agency user facility data set extracted from FLCBusiness is available on Data.gov with data from 12 agencies; two agencies (NOAA and DOJ) do not have user facilities.
- Supplying this data in a machine-readable format through Data.gov will allow third parties to more readily use the data in their own applications, in addition to improving search functionality.

Contributing Programs

Agencies supporting this effort include:

- Department of Homeland Security
- Department of Commerce (National Institute of Standards and Technology, National Oceanic and Atmospheric Administration, US Patent and Trademark Office)
- Department of Defense
- Department of Energy
- Department of Interior
- Department of Justice (Federal Bureau of Investigation)
- Department of Transportation
- Environmental Protection Agency
- Department of Health and Human Services (National Institutes of Health, Centers for Disease Control)
- National Aeronautics and Space Administration
- National Science Foundation
- Department of Agriculture
- Department of Veterans Affairs
- US Small Business Administration

Regulations impacting this effort include:

- 37 CFR 401: Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements
- 37 CFR 404: Licensing of Government-Owned Inventions
- Regulations under 15 USC 3712 for personnel exchanges

Other partners and agency programs include:

- Interagency Working Group for Technology Transfer, Interagency Working Group for Bayh-Dole, Federal Laboratory Consortium for Technology Transfer, agency-specific university partners, NASA Agency Technology and Innovation Program, NSF I-Corps Program, DOE Lab-Corp Program, agency SBIR Programs.

Acronyms

- API: Application Programming Interface
- CAP: Cross Agency Priority
- CDC: Centers for Disease Control and Prevention
- CFR: Code of Federal Regulations
- CRADA: Cooperative Research and Development Agreement
- DHHS: Department of Health and Human Services
- DHS: Department of Homeland Security
- DOC: Department of Commerce
- DOD: Department of Defense
- DOE: Department of Energy
- DOI: Department of the Interior
- DOJ: Department of Justice
- DOT: Department of Transportation
- EPA: Environmental Protection Agency
- FLC: Federal Laboratory Consortium
- FY: Fiscal Year
- GSA: General Services Administration
- HHS: Health and Human Services
- IAWGBD: Interagency Working Group for Bayh-Dole
- IAWGTT: Interagency Working Group for Tech Transfer
- IP: Intellectual Property
- MOU: Memorandum of Understanding
- NASA: National Aeronautics and Space Administration
- NCATS: National Center for Advancing Translational Sciences
- NIH: National Institutes of Health
- NIST: National Institute of Standards and Technology
- NOAA: National Oceanic and Atmospheric Administration
- NSA: National Security Agency
- NSF: National Science Foundation
- NSTEP: NIST Science and Technology Entrepreneurship Program
- OMB: Office of Management and Budget
- OSTP: Office of Science and Technology Policy
- PTO: Patent and Trademark Office
- R&D: Research and Development
- RFI: Request for Information
- SBA: Small Business Administration
- SBIR: Small Business Innovation Research
- SBIR PM WG: Small Business Innovation Research Program Managers Working Group
- STTR: Small Business Tech Transfer Research
- USC: United States Code
- USDA: United States Department of Agriculture
- USPTO: United States Patent and Trademark Office
- VA: Department of Veterans Affairs