

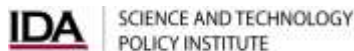
Technology Transfer and Commercialization Landscape of Federal Laboratory Technologies in the 21st Century

Mary Beth Hughes

Federal Laboratories Consortium for Technology Transfer

Far West Meeting

August 30, 2011



Background and Rationale

**EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL ECONOMIC COUNCIL
OFFICE OF SCIENCE AND TECHNOLOGY POLICY**

**A STRATEGY FOR AMERICAN INNOVATION:
DRIVING TOWARDS SUSTAINABLE GROWTH AND QUALITY JOBS**

History should be our guide. The United States led the world's economy in the 20th century because we led the world in innovation. Today, the competition is keener; the challenge is tougher; and that is why innovation is more important than ever for the 21st century. That's how we will meet the challenges of the 21st century. With these initiatives...

Commerce Secretary Locke Announces New Commerce Initiatives to Foster Innovation and Entrepreneurship

Submitted on September 24, 2009 - 1:30pm
Categories: Press Releases, Business, Jobs, Development, Entrepreneurship, Government, Growth, Innovation, Jobs, Issues, National, Science, Products, Research, Technology, Trade Policy, Office of the Secretary, Secretary of Commerce, Gary Locke

FOR IMMEDIATE RELEASE
Thursday, September 24, 2009
CONTACT OFFICE OF PUBLIC AFFAIRS
202-482-4883

Commerce Secretary Locke Announces New Commerce Initiatives to Foster Innovation and Entrepreneurship

U.S. Commerce Secretary Gary Locke announced today his plans to create a new Office of Innovation and Entrepreneurship within the Department of Commerce and launch a National Advisory Council on Innovation and Entrepreneurship. Both substantial new initiatives will help leverage the entire federal government on behalf of promoting entrepreneurship in America. The new office is expected to announce additional initiatives in the coming months.

<http://www.forbes.com/sites/brianwingfield/2011/01/25/obamas-innovation-agenda/>

Why Another Study?

- Most academic studies have focused on a single agency or lab, or on a single tech transfer mechanism
- Although frequent studies in 90s (specifically on repurposing labs post Cold War), very few studies since 2000

Need for a study of the federal lab ecosystem under current economic and public policy conditions; looking at *both* the diversity of labs and the diversity of technology transfer strategies and mechanisms.

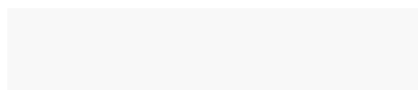
Study Objectives

1. Describe the **diversity** of the laboratories.
2. Describe **factors** that appear to affect the speed and extent of dissemination of technologies transferred from laboratories.
3. Describe how a diverse set of laboratories and agencies currently **promote** and **measure** technology transfer and commercialization.
4. Highlight areas that may benefit from **further study**.

Study is descriptive, not evaluative.

Approach and Methodology

- Literature review
- Semi-structured interviews with agency and laboratory technology transfer professionals
- Laboratories selected to represent a diversity in: agency, contractor type, geographic location, S&E focus, budget, and size
 - 12 agencies and sub-agencies
 - 27 laboratories
- Interviews with 8 partnership intermediary groups
- Interviews with stakeholders from government, academia, industry
- Analysis of metrics



Defining Technology Transfer

Network Pathway

Commercialization Assistance Program

- Entrepreneur-in-residence programs

Graphene at NIST

April 1, 2008

As a national research agency, NIST is often found in typical university settings. NIST's graphene project, an agency-wide effort, is based on this unique and promising material.

Remembering a honeycomb or chicken-wire structure, single-atom-thick layers of carbon atoms, when stacked, form graphite. Graphene, the single layer of carbon atoms, is the thinnest material ever made. Scientists have been able to produce it on a suitable surface (silicon chips).

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Factors Affecting Technology Transfer

1. L
2. L



Department of Energy Secretary Steven Chu announced today that Dr. Karina Edmonds will join the new Technology Transfer Coordinator. Dr. Edmonds will be responsible for working with the

Some differences between GOGOs and GOCOs:

- Limit on royalties
- FOIA of licenses
- Consideration
- Consulting
- Copyright
- Exclusive licenses published in Federal Register

Over the past 29 years, Dr. Wittrout has contributed as a scientist and leader to the Center for Cancer Research by supporting the infrastructure necessary to ensure continued, new and creative collaborations that result in successful technology development and transfer to the Center's industrial partners. Last year, the CCR had over 275 active clinical trials, more than 126 active Cooperative Research and Development

Dr. Wittrout has perused the employees of the CCR matters relating to technology transfer, staff scientist, students are required to complete technology transfer. In addition, he has

2009 Federal Register
56th Annual Reg

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U.S. Department of Energy

Strategies – A Few Examples

- Using SBIR funds for transferring technologies
- Partnering with universities for spinning-out technologies
- Using partnership intermediaries to facilitate government-industry interactions
- Promoting a culture of celebration of entrepreneurship
- Incentivizing researchers to engage in technology transfer through awards, performance evaluations, and royalties

Definitions and Measures of Success

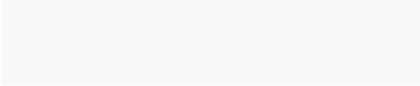
- Many examples of successful TT&C
- Unclear how *effective* labs have been because many **lack a measurable definition** of what TT&C success means to their program
- Success will not be measured uniformly across all labs because it is dependent upon lab characteristics
- Current required metrics are insufficient

Possible Additional Metrics

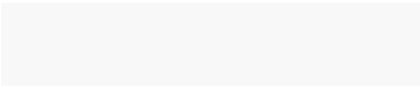
- Activity metrics
 - Researchers/Industry partners who contact or are contacted by ORTA
 - Technology showcases
- Process efficiency metrics
- Output and outcome metrics
 - Start-up companies
 - Revenues of companies licensing technologies
- Broader impact measures

Beware of measurement overhead

Areas for Further Study

- Validation of factors found in this study
 - Perspective of researchers, laboratory directors, and others within laboratories and agencies
 - Perspective of industry
 - Review of technology transfer legal authorities
 - Analysis of legal agreement language
 - Development of measures at laboratory level
 - Analysis of economic development programs
- 

Conclusions

- Federal laboratories have adopted many innovative strategies and streamlined processes with the goal that industry will know that they are “open for business”
 - Barriers to technology transfer and commercialization remain
 - Fuller understanding requires knowing the perspective of others
 - Several new metrics could be developed and implemented
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Thank You!

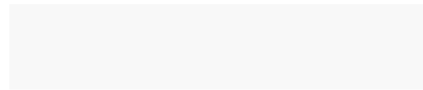
- Agency and laboratory-level ORTA staff at laboratories interviewed
- Stakeholders from government, industry, academia
- Study Advisory Group
- Federal Laboratory Consortium for Technology Transfer

Questions?

The screenshot shows a webpage from the NIST Office of the Director. The main heading is "Study Highlights Diversity in Agency Technology Transfer Approaches" with a sub-heading "For Immediate Release: June 30, 2011". The contact information is "Contact: Gail Patten, 301-975-2000". The text describes a report by the U.S. Commerce Department (DOC) on the results of a study of federal laboratories' technology transfer approaches. It mentions that the study found that the objectives, missions, management strategies, and resources of federal laboratories are key factors determining an agency's approach to commercialization. The study was conducted by the JCS Science and Technology Policy Institute in collaboration with the National Institute of Standards and Technology (NIST). A photo shows a scientist in a lab coat working with equipment. A quote from NIST Director Robert Gallegos is included: "The study documents the great variety in mission and organization for hundreds of federal research institutions, under such agencies as DOE, HHS, DOI and USDA and provides a baseline for further action by the Administration to strengthen both transfer efforts..."

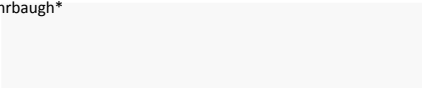
Report available at: <http://www.eda.gov/commrfi>
 Email: mhughes.ipa@ida.org

Back Up Slides

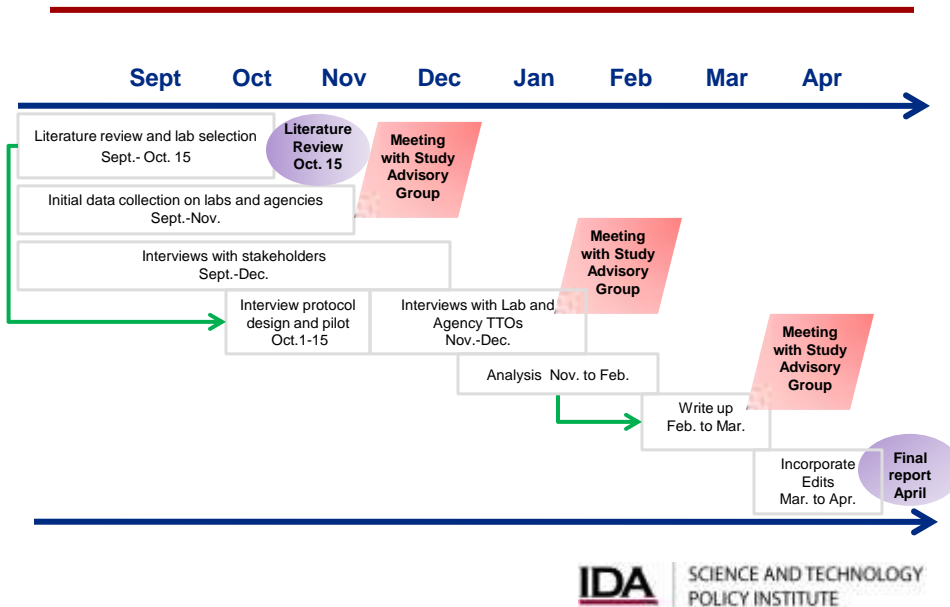


Acknowledgments

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Rick Brenner*	Inrani Gracyzk	David Nicholson	Steven Wach
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Vic Chavez	Bob Hamilton	Mike Paulus	Mary Weiss
Nona Cheeks	Ann Hammersla	Deborah Payne	Susan White
Cheryl Cejka	Bonny Harbinger	Gail Poulos	Henry Wixon*
Amy Centanni	John Karasek	Jim Poulos	Debora Wolfenbarger
Jim Clinch	Kevin Keleher	Dee Dee Rinaldo	Kelly Wright
Geoff Cooper	Robert Kern	Damon Richardson	
Barry Datlof	Luis Maal	Richard Rodriguez	
		Mark Rohrbaugh*	



Timeline

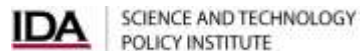


Literature Review: Barriers Identified

- Diversity and scope of laboratory missions
- Lack of agency and laboratory support
- Researchers' inability or inexperience
- Lack of outreach to industry
- Underutilization of market analyses
- Government requirements
- Lengths of negotiation times
- Unfunded mandate
- Lack of technology maturation funds

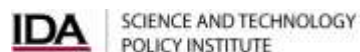
Factors that Affect the Speed of Disseminating Technologies from the Lab (1)

- *Laboratory mission.* Technology transfer varies across laboratories due to the diversity and scope of their missions.
- *Laboratory management.* GOCO laboratory leadership is often explicitly tasked to perform technology transfer and commercialization, while GOGO laboratories must comply with government regulations.
- *Congressional support and oversight* can have the unintended consequence of encouraging a risk-averse culture or a see-sawing effect when congressional priorities shift.
- *Agency leadership and laboratory director support* may result in resources, flexibility, and creative license to technology transfer offices.



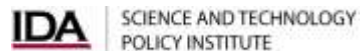
Factors that Affect the Speed of Disseminating Technologies from the Lab (2)

- *The centralization/decentralization of technology transfer and commercialization offices* at the agency and laboratory levels affects:
 - the speed of implementation of technology transfer actions,
 - the consistency of policies, and
 - the ability to share best practices.
- *Offices of Research and Technology Applications operations* that affect technology transfer and commercialization include:
 - the responsibilities of the office;
 - the science, technology, and business expertise of the staff; the processes of the office; and
 - the legal authorities available and how they are interpreted.



Factors that Affect the Speed of Disseminating Technologies from the Lab (3)

- *Researchers are critical to the technology transfer and commercialization processes.* Involving researchers in the process requires training, incentives, and time.
- *Government-Industry interactions.* Federal laboratories are not visible and accessible to industry, and certain regulations make it difficult for federal laboratories and industry to interact efficiently.
- *Resources* devoted to technology transfer and commercialization vary across laboratories and agencies.



IDA Science & Technology Policy Institute

- Chartered by Congress in 1991
- Mission: to provide rigorous objective advice and analysis to the Office of Science and Technology Policy (OSTP) and other Executive Branch agencies, offices, and councils
- Funding administered by the National Science Foundation
- IDA has managed STPI since 2003

