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Phillip A. Singerman,
Associate Director for Innovation and Industry Services
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, MD 20899

Dear Dr. Singerman:

Thank you for this opportunity to provide information to NIST regarding "Federal Technology Transfer Authorities and Processes." This letter represents the perspective of state, local and nonprofit organizations focused on supporting regional innovation economies through technology-based economic development. We welcome NIST's interest in considering how federal policy can further leverage innovation to strengthen American security and economic opportunity.

What are the core Federal technology transfer principles and practices that should be protected, and those which should be adapted or changed?

The *Stevenson-Wydler Technology Innovation Act of 1980*[1] provides a clear and powerful statement of the potential importance of technology transfer to the "economic, environmental, and social well-being of citizens of the United States."[2] The principles behind this original legislation and its many amendments over the years continue to stand today.

We commend the federal agencies and laboratories for their diligent work in balancing the furtherance of impactful R&D with the mission to convert discoveries into usable technologies and innovations. In our roles as state science and innovation policy leaders, we appreciate the difficulties of this balance.

Several specific federal technology transfer practices in recent years stand out as particularly commendable. Among these are:

- the development of innovative engagement models, such as Agreements for Commercializing Technology, which have facilitated numerous collaborations;

[1] 15 U.S. Code, Chapter 63
[2] *Ibid.*, §3701.1.

- NASA's testing of trial licenses, which provides a logical approach to facilitating small businesses' use of federal IP; and,
- the participation of federal labs in public-private regional partnerships focused on innovation within specific industries.

These efforts clearly point toward a principle that encourage federal labs to work more efficiently with businesses to advance R&D, which should continue to serve as a guide for practice.

In order to further ensure that federal technology transfer authorities and practice can achieve greater efficiency and efficacy, we strongly encourage NIST to consider three further principles.

- *Clear prioritization of technology transfer within federal R&D processes.* Rational actors tend to act in accordance with their incentives. If technology transfer is to be a priority outcome for federal R&D, then the policies, regulations and initiatives that comprise the R&D enterprise must provide clear incentives for technology transfer.

  For example, investigators that are "encouraged" to recognize the economic value of their research are unlikely to do so unless technology transfer outcomes are given adequate weight in performance reviews.[3] Some institutions consider these outcomes, but not all. Similarly, programs intended to promote transfer or commercialization should be evaluated based on economic outcomes—business formation, capital investment, job creation or sales activity—rather than process-focused metrics alone. In the absence of evaluations emphasizing technology transfer, the entities involved in federal R&D processes can easily, and understandably, treat the transformation of their research into products and services as no more than ancillary to their goals.

  Federal policies and practices conforming to this principle could include: (a) elevating technology transfer offices within the hierarchy of the labs, (b) utilizing existing authorities to promote staff according to transfer outcomes and to allow commercialization sabbaticals, and (c) holding contractors, partners and staff responsible for reporting license sales, spin-out investment and similar output metrics.

- *Sufficient resources for technology transfer operations.* Policy authority is a necessary but *in*sufficient condition to technology transfer outcomes. Staff—particularly trained and experienced staff, communications, services and partners are all key components of an effective transfer office.

  Offices with limited staff often attempt to commercialize only the innovations identified as potentially meaningful by their investigators, which can mean the difference between a lab advanced one or two technologies per year and a half-dozen or more. Staff with limited training may add delays to the transfer process and fail to capitalize on the full

[3] *Ibid.*, §3710

array of available transfer mechanisms. The market can fill some federal resource gaps, but private capital is often focused too far downstream to immediately advance even the plurality of federal R&D with commercial or mission potential.

To fulfill the federal government's interest in greater technology transfer efficiency and efficacy, then a greater investment in associated resources is required. Specific concerns should include: (a) adequate staffing and training for technology transfer offices and (b) resources for partnering with experienced entities to help provide outreach and business development services beyond the lab staff's expertise.

- *Emphasis on collaborations with regional organizations*. Hundreds of technology transfer and commercialization organizations throughout the country, including many state-funded or -operated initiatives, stand ready to work with the federal government to support the conversion of federal R&D to new products and services. These "off-campus" partners often have more commercial expertise, flexibility in their authorities and contacts with private corporations and capital than can be contained within federal research centers. Such collaborations can therefore improve the efficiency of outcomes for the federal government, while strengthening the regional innovation economy.

  Several authorities already leverage such collaborations: many labs use partner intermediary authority networks[4] to supplement transfer staff and access market expertise; NIH used part of a pilot program that had been authorized within SBIR[5] to facilitate technology transfer by working with entrepreneurs-in-residence; and, the Department of Commerce's Regional Innovation Strategies program[6] can provide funding to organizations working to facilitate transfer and commercialization, often within a specific industry cluster.

  This collaborative approach—and the continuation of these authorities specifically—is critical to effective federal technology transfer policy. Federal laboratories should be encouraged to leverage regional partners, including institutions of higher education but also state science and technology offices, research alliances and venture development organizations.

These principles and practices are, to a large degree, already operating in at least some federal agencies and labs. To the extent possible, more uniform adoption of technology transfer prioritization, resources and collaborations would greatly facilitate the overall federal R&D enterprise's ability to advance "economic, environmental, and social well-being of citizens of the United States." We know from experience that many of our businesses and other stakeholders are all too often confused and frustrated by the inconsistency they experience when attempting

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[4] Authorized under 15 U.S. Code §3715. For example, NSWC Crane utilizes this authority to work with a number of organizations and has received multiple awards for the lab's partnership work from the Federal Laboratory Consortium for Technology Transfer.

[5] The SBIR pilot is authorized under 15 U.S. Code §638(mm).

[6] Authorized under 15 U.S. Code §3722.

to work with multiple labs—or that they refuse to attempt to work with any lab if they have a negative experience with a first. We appreciate that the different missions and structures of federal laboratories complicates our request for a more uniform service approach, but we nonetheless strongly encourage NIST to consider this point as strongly as possible.

What are other ways to significantly improve the 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?

We believe that a national program to establish and support regional technology transfer and commercialization service providers would greatly improve the efficacy of federal efforts in this space. Many agencies, including the National Institutes of Health and the Department of Defense, have set up pilot initiatives or utilized other authorities to leverage outside commercial expertise. A national approach to address this need would seem to be more efficient for both the individual agencies and for the businesses who want to know who to approach for assistance—and do not want to work with a separate partner for each agency.

Specifically, we would suggest that NIST operate a program, such as the grants to accelerate commercialization proposed in the *Startup Act*[7] of 2017, to leverage experienced venture development organizations and institutions of higher education to transform science and innovations into stronger regional economies and national security. The partners would work with startups and other potential licensees to identify non-federal customers, acquire needed operational skills, improve production processes and other needed business development services. The program would be evaluated based on federal and non-federal sales, jobs created and wages paid due to the technology transfer activity.

Many within our community support similar partnerships within our regions, and we see clear value in adapting this model to advance federal technology transfer.

Closing Comments

NIST's interest in assessing federal technology transfer rightly emphasizes the need to focus Congressional and Administration attention on improving the mechanisms available for moving the results of federal R&D to productive use. At the same time, we wish to reinforce our belief in the important reasons for the federal government to conduct R&D within the confines of a federal laboratory system. Federal labs are uniquely able to focus, without commercial or other ancillary motivations, on advancing America's national security, such as from physical threats and climate-driven resource scarcity, and American's health and well-being. The Administration can and should identify and maximize opportunities to translate federal R&D into the market,

[7] The *Startup Act*, S.1877, was introduced in 2017 by Senators Jerry Moran (R-KS), Mark Warner (D-VA), Roy Blunt (R-MO) and Amy Klobuchar (D-MN).

but the system must also remain committed to mission-driven R&D in order to maximize the country's potential economic and national security.

Thank you again for your careful consideration of federal technology transfer authorities and processes and for your attention to our comments on the matter. We stand ready to work with you on this critical issue going forward.

On behalf of SSTI and the following organizations,

Daniel R. Berglund
President & CEO
SSTI

Arizona Technology Council
Phoenix, Arizona

Arkansas Research Alliance
Conway, Arkansas

Autonomous and Unmanned Systems Cluster
Alamogordo, New Mexico

Ben Franklin Technology Partners Corp.
Harrisburg, Pennsylvania

BioHealth Innovations
Rockville, Maryland

BioSTL
Clayton, Missouri

Center for Advanced Engineering and Research
Forest, Virginia

Enterprise Center in Johnson County
Fairway, Kansas

Fourth Economy Consulting
Pittsburgh, Pennsylvania

Georgia Research Alliance
Atlanta, Georgia

Hawaii Technology Development Corp.
Honolulu, Hawai'i

Illinois Science & Technology Coalition
Chicago, Illinois

JumpStart, Inc.
Cleveland, Ohio

Launch NY
Buffalo, New York

Launch Tennessee
Nashville, Tennessee

Lorain County Community College
Lorain, Ohio

New Jersey Innovation Institute
Newark, New Jersey

Office of Technology Commercialization and Ventures, University of Massachusetts
Boston, Massachusetts

Oklahoma Center for the Advancement of Science and Technology
Oklahoma City, Oklahoma

Oregon Business Development Department
Portland, Oregon

Research Park Corporation
Baton Rouge, Louisiana

Rev1 Ventures
Columbus, Ohio

Ron Flavin, Inc.
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Team Northeast Ohio
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TechConnect West Virginia
South Charleston, West Virginia

TechTown Detroit
Detroit, Michigan

The Launch Place
Danville, Virginia

The Water Council
Milwaukee, Wisconsin

University of Michigan Economic Growth Institute
Ann Arbor, Michigan

Utah Science Technology and Research Initiative (USTAR)
Salt Lake City, Utah

VertueLab
Portland, Oregon