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Subject: SBTC RFI Response: Federal Technology Transfer Authorities and Processes

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Dear Dr. Silverthorn:

The Small Business Technology Council (www.SBTC.org) is writing to express our comments on the subject NIST Request for Information published in 83 Federal Register 19052, Docket Number: 180220199-819-01

The Small Business Technology Council (SBTC) is the nation's largest association of small, technology-based companies in diverse fields. SBTC is a council of the National Small Business Association (www.NSBA.biz) which is the nation's first small-business advocacy organization. NSBA is a staunchly nonpartisan organization with 65,000 members in every state and every industry in the U.S. SBTC advocates on behalf of the 6000 firms who participate in the Small Business Innovation Research (SBIR) program and its sister Small Business Technology Transfer (STTR) program. These two programs receive a very small portion of the Federal R&D budget, but their impact on Federal technology transition is outsized. With less than 1.7% percent of Federal R&D, SBIR/STTR firms have created over 20 percent of America's major innovations, and about as many patents as all universities combined,¹ plus we are creating sustainable manufacturing and service jobs in the U.S. By these programs' design, they unleash the ingenuity, energies and entrepreneurship of American small business, and comprise a remarkably powerful Federal program in transitioning Federal R&D to the American economy. The Federal government should implement policies to remove current Federal barriers to greater success while boosting the overall effort of this successful innovation program.

¹ Innovation Development Institute LLC., Swampscot, MA, <https://www.innovation.com/sbir/analytics>



Introduction

Certain facts about innovation and job creation are generally recognized:

1. Small business is the innovation and job creating engine for the US economy.
2. The Government is not doing enough for small business and restrains its effectiveness, especially in R&D and innovation.
3. Other countries are now investing far more than the US in small business support for R&D.
4. Improvements in innovation and job creation will come if small business is given more support and if government barriers are reduced.
5. The SBIR program works. It funds research that ends up creating innovations that go to the marketplace and create jobs.
6. SBIR is the only R&D program with a proven economic impact of at least 17 to 1.²

America is falling behind on innovation

1. EU spends more than 4 times as much money, over 20% of their R&D budget, with small business than the US does at less than 5%.³
2. R&D funding as a percent of the total Federal budget has declined by more than 75 percent in the last 54 years, 11.7% in 1965 to 2.9% in 2017.⁴
3. While venture capital is recently increasing in the US, most of the money is going into a few gigantic deals, and the number of venture capital seed deals continues to plummet. In 2Q 2018, 792 seed deals were closed, down 22% from 2Q 2017 (1022 deals). This is all part of the downward trend for smaller companies and startups. This follows declines for number of VC seed deals 2Q in 2017 and 2016 of 11% and 23% respectively. Software dominates VC investment with 42% of the deals, leaving little for other industries and for US strategic priorities. VCs invest half (49%) their money in 4 metro areas: San Francisco Bay, New York, Boston, and Los Angeles, leaving most of the other 362 metro areas without.⁵

² Swearingen, Will, and Peterson, Jeffrey, *National Economic Impacts from the Air Force and Navy SBIR/STTR Programs, 2000-2013* (Techlink, 2018)

³ Horizon 2020 in full swing, three years on, Key Facts and Figure 2014-2016, https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/h2020_threeyearson_a4_horizontal_2018_web.pdf

⁴ American Association for the Advancement of Science, <https://www.aaas.org/page/historical-trends-federal-rd>

⁵ PitchBook, National Venture Capital Association, Venture Monitor, 2Q 2018, <https://nvca.org/research/venture-monitor/>



4. SBIR, the most successful innovation program in US, has been copied by 10 other countries including Germany, England and China, allowing them to catch up to the US.⁶
5. The US Government spends 70% of its R&D in areas that have no funds for transition to the marketplace. Civilian federal R&D spends no money on transitioning the R&D to the marketplace. Most Federal Research is never transitioned to into commerce, it usually does not get out of the Laboratory or university.
6. When university research is published it often results in commercialization and jobs being created overseas.
7. According to one report by Bloomberg News, the US has fallen to 11th in a world Innovation Index.⁷ Another report by the US Chamber of Commerce has the US falling to #12 in patent rights.⁸ The World Intellectual Property Association, an agency of the United Nations, reports that the US has fallen from number 4 in 2017 to number 6 in 2018 in the world in Innovation, and the Chinese have risen from #22 to #17.⁹
- 8.

SBTC answers to NIST RFI questions

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

SBTC Response: Small business is the engine that drives American innovation.

Federal rules that impact on small business technology commercialization should be streamlined to remove barriers to effective transition to commercial application, with new supports put in place to encourage more effective transfer. Small business innovation must be protected for federal technology transfer to play a role in the innovation ecosystem.

1. Small businesses are a critical driver for innovation in the economy.
2. 70% of all university technology licenses go to small business.¹⁰
3. Small Business is far better at getting R&D funding to the marketplace than Universities and Federal Labs. Less than 1% of university licenses have revenue

⁶ Wessner CW, ed, *An Assessment of the SBIR Program*, (National Academies Press, 2008)

⁷ The U.S. Drops Out of the Top 10 in Innovation Ranking, Michelle Jamrisko and Wei Lu January 23, 2018, <https://www.bloomberg.com/news/articles/2018-01-22/south-korea-tops-global-innovation-ranking-again-as-u-s-falls>.

⁸ *Create*, US Chamber International IP Index, Sixth Edition, February 2018, Figure XI: Scores, Category 1: Patents, Related Rights, and Limitations. <https://www.uschamber.com/report/us-chamber-international-ip-index>

⁹ World Intellectual Property Organization, *Global Innovation Index 2018*, http://www.wipo.int/pressroom/en/articles/2018/article_0005.html#rankings.

¹⁰ American University of Technology Managers, *FY2016 AUTM US Licensing Activity Survey*, (AUTM, 2018)



greater than one million dollars. Despite legislation and strong efforts, Laboratories still do not commercialize as well as small business.

4. 60% of SBIR Phase IIs create jobs and have sales in excess of one million dollars (versus the 1% of university licenses).¹¹
5. 20% of all key innovations come from the SBIR Program.¹²
6. Economic impact of SBIR is \$17 to every dollar spent.¹³
7. SBIR returns over \$2.00 in tax revenue for every dollar spent.¹⁴
8. No other federal research program has been as successful at transitioning technology to the marketplace and creating jobs.

Despite the importance of small business, the Agencies and most of the policies of the Federal Government do not invest in what gives the Government the highest return on investment, small business. See our answer to Question #3 for SBTC's recommendations for improving federal technology transfer.

- (2) What are the issues that pose systemic challenges to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D? Please consider those identified in the RFI as well as others that may have inhibited collaborations with Federal laboratories, access to other federally funded R&D, or commercialization of technologies resulting from Federal R&D.

SBTC Response: There remains a strong bias in the agencies against funding small business. Awarding many small contracts is viewed as a burden on overworked contracting officers. SBIR is frequently seen as a tax on other university or big company research. Funding for small business, as a percent of the budget or as a percent of R&D, has historically been low (compared to other countries, e.g.: 1/4 of the percentage of their budget that European countries spend). Cost sharing and other regulatory burdens dissuade small businesses from conducting Federal R&D and commercializing Federally-funded research, stifling innovation. Federal regulations and contracting guidelines have not been updated this decade. Laws promoting small business contracting have not been promulgated as regulations and program and contracting officers have not been trained in the current law (e.g: 2012 NDAA, passed in December of 2011). Every new rule or regulation should evaluate the impact on small business. Small business lending must be encouraged. Dodd Frank has made it more difficult for community banks to loan to smaller firms. Finally, the patent laws and regulations are strangling small businesses, clouding title to patents, and making it almost impossible for small businesses to enforce their patents. This institutionalization of retarding small business monetization of patents further cuts funding for small business commercialization.

¹¹ Swearingen, Will, and Peterson, Jeffrey, *National Economic Impacts from the Air Force and Navy SBIR/STTR Programs, 2000-2013* (Techlink, 2018)

¹² Block, Fred and Keller, Matthew, *Where do Innovations Come From? Transformations in the U.S. National Innovation System, 1970-2006*, (ITIF, 2008)

¹³ Swearingen, Will, and Peterson, Jeffrey, *National Economic Impacts from the Air Force and Navy SBIR/STTR Programs, 2000-2013* (Techlink, 2018)

¹⁴ Swearingen, Will, and Peterson, Jeffrey, *National Economic Impacts from the Air Force and Navy SBIR/STTR Programs, 2000-2013* (Techlink, 2018)



- (3) What is the proposed solution for each issue that poses a systemic challenge to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D? Please consider the approaches identified in the RFI.

SBTC Response:

1. **Double the amount of Federal funding going to small business.** This can be done by the agencies simply promulgating their own rules and regulations. NIST should encourage an Executive Order or new legislation that will require this by law.
2. **Create new programs for small business R&D. The innovation engine needs more fuel.** Again, this can be done by the agencies simply promulgating their own rules and regulations. NIST should consider leading these programs by working with the Executive Office of the President, Office of Science and Technology, to prepare an Executive Order for the President's signature. NIST should also encourage new legislation that will require more small business funding by law.
3. **Double the SBIR program allocation. Already recommended by DOD 809 committee.**¹⁵ Agencies are free to allocate more funding to SBIR as only a minimum amount is set by statute. Once again, NIST should encourage new Executive Orders and legislation that will require this by law.
4. **Double the DOD's RIF program. DOD 809 recommendation.** Agencies are free to allocate more funding to the RIF program. NIST should encourage new legislation that will require this by law or assist its implementation by Executive Order.
5. **Create goals for agencies to award a minimum of 12% of their R&D to small businesses. (Still only 60% of what Europe invests in small business R&D.)** Agencies should be encouraged to set goals for small business R&D funding. An Executive Order or legislation will assist this process.
6. **Eliminate cost sharing for small business and universities in Federal R&D Programs.** Some civilian agencies require small business to cost share. This is usually not possible for most small businesses working to commercialize innovative technologies, screening against innovation and dampening the tech transfer and commercialization effort. It should be eliminated by the Agencies, the President, or Congress.
7. **Provide follow on funding for civilian small business research through programs like RIF.** Additional funding for the testing and evaluation of new R&D products and services should be encouraged by the Agencies, the President, or Congress.
8. **Update the FAR and DFAR to reflect legislative changes.** The FAR, DFAR, and other procurement manuals, documents, and training programs have not been updated this decade, severely slowing the impact of legislative improvements. This is

¹⁵ Section 809 Panel, *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations* (Department of Defense, 2018)



harmful to the economy and tech transfer efforts. This should be demanded of the Agencies to immediately implement laws passed by Congress. Further, reporting on small business issues required by Congress must be submitted.

9. **Streamline and simplify contracting and reduce the regulatory burden on innovative small business doing business with the Government.** Other Transaction Authority (OTA) is helpful in bypassing many burdensome regulations on small business. Insisting 5 person companies implement regulations written for multi-billion dollar corporations is not only impractical, but counterproductive to the essence of new technology introduction and the tech transfer effort. Accounting regulations are particularly time consuming, taking away from conducting research and transferring the technology into the economy for smaller contracts.
10. **Banking laws and regulations have made it more difficult for small businesses to obtain funding, thus retarding commercialization.** This is beyond the scope of NIST's and the Department of Commerce's mission, but it is important that tech transfer personnel be aware of deleterious effects the lack of capital has on the mission of tech transfer. The Department of Commerce should work with the EOP to encourage Congress to pass additional laws that facilitate the flow of capital to small businesses.
11. **Revise the patent laws to protect inventions and allow small businesses to enforce their patents and enjoin infringers.** This is one of the most critical items that must be accomplished by the Department of Commerce. It has a number of components.
 - a. The Department should implement the USPTO's proposed new rules on claim construction (PTAB Notice of Proposed Rulemaking 2018 Docket number: PTO-P-2018-0036) as soon as feasible. This is important to help ameliorate the deleterious effects of the current rules of the patent office issued by the former administration under the *America Invents Act*. (See Attachment E, SBTC comments.)
 - b. The USPTO should evaluate other rules for the PTAB to help clear title to patents as soon as possible. This will allow enforcement
 - c. The Department of Commerce, working with the EOP, should encourage Congress to pass currently pending bills such as the Restoring America's Leadership in Innovation Act of 2018 (RALIA) (H.R. 6264) (see Attachment F, SBTC Letter of Support), STRONGER Patents Act (H.R. 5340), The Inventor Protection Act (H.R. 6657), and the TROL Act (H.R. 6370). Working to mitigate or better to totally reverse the very deleterious effects of the America Invents Act and its resulting cloud on patent titles caused by the PTAB will be one of the most important actions to help speed tech transfer and commercialization. Restoring injunctive relief by Congressionally reversing the SCOTUS *eBay* decision, and allowing many new patents be issued by Congressionally reversing the SCOTUS *Alice* decision will also encourage licensing (rather than efficient infringement) and deter the Chinese from absconding with US technology.
 - d. Finally, the USPTO should hold seminars for Supreme Court Justices and for their clerks to inform them of the importance of patents in the economy. SCOTUS has



shown for a decade that they do not understand the importance of intellectual property on the innovation ecosystem and the cost that weak patents have on the economy. The USPTO can help provide that understanding.

(4) 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?

SBTC Response: Please see our comments above.

America's individual inventors and small businesses that have built this country, and have led its innovations. The key problem with Federal technology transition strategy is that it does not harness the entrepreneurial energies and ingenuity of American small business. Whatever is new is always vulnerable to the existing order, and Federal policy contains myriad defenses of the existing and too few encouragements and streamlining for the new. As you are looking for how to improve Federal technology transfer, look for ways to make it easier for small businesses to continue to make America great.

America needs a Small Business R&D Policy to encourage innovation. It should include the above recommendations.

Thank you for this opportunity to comment. Please feel free to contact us at alec@sbtc.org to obtain clarification or if you have additional questions. We would be happy to help provide additional input and would be delighted to participate in panel discussions or working groups on the subject.

Sincerely,
Small Business Technology Council

A handwritten signature in black ink, appearing to read "Jere W. Glover".

Jere W. Glover
Executive Director

A handwritten signature in black ink, appearing to read "Robert N. Schmidt".

Robert N. Schmidt
Co-Chairman

A handwritten signature in blue ink, appearing to read "Kevin Burns".

Kevin Burns
Co-Chairman

List of attachments:

- A) SBTC 2017 SBIR Economic Impact White Paper
- B) Air Force SBIR/STTR Economic Impact Study
- C) Navy SBIR/STTR Economic Impact Study
- D) SBIR/STTR: The Best Return on Taxpayer Dollar
- E) SBTC Comment on USPTO Rulemaking Change
- F) SBTC Letter of Support for RALIA bill