

The Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) Program Interagency Policy Committee Report to Congress

Office of Science and Technology

Small Business Administration

Participating Agencies

Department of Defense

Department of Health & Human
Services

Department of Energy

National Aeronautics & Space
Administration

National Science Foundation

Department of Agriculture

Department of Homeland Security

Department of Education

Department of Commerce

Environmental Protection Agency

Department of Transportation

SBIR/STTR Commercialization

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SBIR/STTR Interagency Policy Committee

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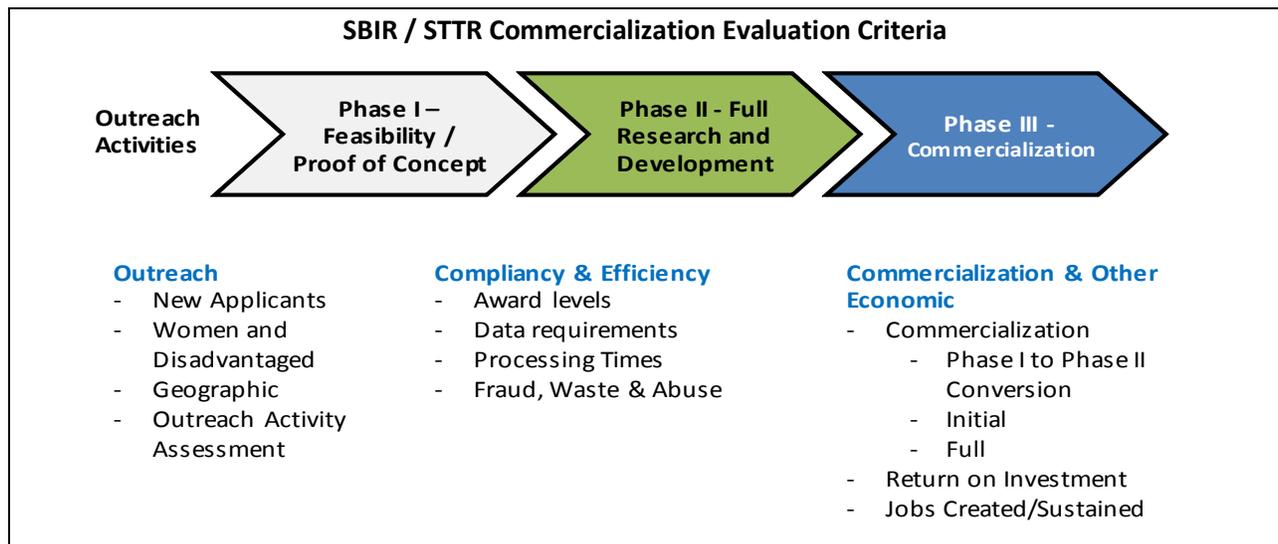
1. Executive Summary

Purpose. This report responds to the statutory requirement in the Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) Reauthorization Act of 2011 (Reauthorization Act), which was included in the [2012 Defense Authorization Act \(Pub. L.112-81\)](#)¹. The Reauthorization Act requires the Interagency Policy Committee (IPC) to review the issues around successful commercialization of SBIR/STTR funded technologies.

Key Issues. The key issues that need to be addressed include: improving compliance; reducing processing times; improving commercialization; and measuring the value of the SBIR / STTR programs via agreed upon benchmarks by the agencies from a technology commercialization perspective. This report focuses on the best practices that Federal agencies have implemented to increase commercialization results for SBIR and STTR awardees. This report also focuses on new ways to address the funding gaps that SBIR/STTR awardees often face after the receipt of a Phase II award but before commercialization. Many of these issues will overlap the IPC Standard Evaluation Framework and TechNet Public & Government Databases reports and thus should be read in conjunction with another to better understand these issues holistically.

Key Recommendations.

- The criteria shown in the diagram below should be assessed for feasibility and budgetary constraints. If acceptable, changes to the SBIR.gov database, overseen by SBA, should be made to collect and automate metrics in determining best practices for technology commercialization based on the subject matter of interest.



- To better gauge and evaluate commercialization efficacies across the SBIR/STTR programs and facilitate continued maintenance of a centralized database that allows for continuous and up-to-date information to flow freely between SBA and the Federal agencies that administer SBIR/STTR awards. This will enable an in-depth understanding of data across the 11 Federal agencies on how better commercialization of SBIR/STTR funded projects might occur based on prior success and understanding of how that success came about.

¹ <http://www.gpo.gov/fdsys/pkg/PLAW-112publ81/pdf/PLAW-112publ81.pdf>

- Focused effort across the SBIR/STTR programs to increase success of Tech-to-Market initiatives. Federal agencies will continue to share best practices to improve commercialization results for SBIR/STTR awardees.² This includes review and understanding around leveraging Commercialization Assistance Programs used by some of the larger and smaller agencies.
- Ensure better usage and promotion of various technology accelerator and incubator programs that help with technology-risk mitigation and foster greater success for high tech startup growth.

2. Introduction

The Reauthorization Act, a division of the National Defense Authorization Act for Fiscal Year 2012, created the SBIR/STTR Interagency Policy Committee (IPC). The IPC is co-chaired by the White House Office of Science and Technology Policy (OSTP) and the Small Business Administration (SBA) and includes representatives from Federal agencies that participate in the SBIR or STTR programs. As part of the Reauthorization Act, the IPC is required to review certain issues and make policy recommendations to Congress on ways to improve program effectiveness and efficiency.

a. Background

Congress established the SBIR program in 1982 and the STTR program ten years later to assist small business concerns (SBCs) in obtaining Federal research and development (R&D) funds to build a strong economy and support technological innovation as discussed below:

- **SBIR:** Requires Federal agencies with extramural R/R&D budgets over \$100 million to set aside a percentage of their annual extramural R/R&D budget for small businesses. This percentage was 2.5% prior to FY 2012, and increased to 2.6% in FY 2012 and will continue to increase by 0.1% each year until it reaches a base requirement of 3.2% in FY 2017.
- **STTR:** Modeled after the SBIR program, STTR requires Federal agencies with extramural budgets exceeding \$1 billion to set aside a percentage of their annual extramural R&D budget for SBCs that work in cooperation with universities, federally funded research and development centers, and other non-profit scientific and educational institutions. This percentage was 0.3% in FYs 2004-2011, and legislation increased this minimum to 0.35% for FYs 2012 and 2013, with continued increases through 2016. The goal is to facilitate transfer of technology and research from these institutions to commercial use and encourage innovation.

b. Program Objectives

The Small Business Act indicates that “assistance” provided by the SBIR and STTR programs “be given to small-business concerns to enable them to undertake and obtain the benefits of research and development in order to *maintain and strengthen the competitive free enterprise system and the national economy.*”³

The [SBIR Policy Directive](#) identifies the following primary objectives:

² DOD supports collaboration whenever practical, however as stated previously the agency does not support the use of interagency/joint funding outside the DOD community.

³ 15 U.S.C. § 638(a).

- Stimulate technological innovation;
- Meet Federal R&D needs while strengthening the role of small businesses;
- Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons; and,
- Increase private-sector commercialization of innovations derived from Federal research and development funding.

In addition, the Reauthorization Act added several new initiatives including:

- Permitting agencies to direct some SBIR funds to firms that are owned by multiple venture capital operating companies (VCOs), hedge funds, or private equity firms;
- Allowing agencies to provide one additional Phase II award to small businesses to extend a study;
- Commercialization readiness program at DOD and pilot programs at civilian agencies;
- Reducing processing times;
- Pilot program to allow agencies to use 3% of program budgets for administration and oversight;
- Reducing vulnerability of fraud, waste, and abuse (FWA);
- Provisions for improved program evaluation; and,
- Other initiatives to increase commercialization and outreach.

In general, the SBIR/STTR reauthorization legislation underscored the need for improved commercialization, outreach, and program evaluation. In December 2013 the lead SBIR/STTR Program Managers in conjunction with White House Office of Science & Technology Policy (OSTP) facilitated the creation of five sub-working groups that fall under the “Fueling Small Business Innovation” component of the President’s Lab to Market Commercialization Agenda. These five groups are:

- 1) Outreach & Communications
- 2) Commercialization Pathways
- 3) Awards Efficiency & Efficacy
- 4) Databases & Interagency Exchange of Information
- 5) Asset Mapping

Going forward these five groups are tasked with various short-term and long-term projects that fall within scope of various facets covered in the President’s Lab to Market Commercialization Agenda. They will seek to identify issues, challenges, and provide further recommendations for consideration amongst the various SBIR/STTR program managers as well for SBA and OSTP consideration as it relates to the SBIR/STTR program.

c. SBIR/STTR Process

To bring technology from ideas to commercialization, both programs utilize a three phase approach:



- **Phase I – Feasibility/Proof of Concept.** Using a competitive process, Federal agencies award up to \$150,000 to a small business to perform research/research and development (R/R&D) for up to 6-12 months on a specific topic in order to establish its technical merit, feasibility, and commercial potential. During this phase, Federal agencies assess both the performance of the small business and the potential of the technology prior to providing further Federal support in Phase II.
- **Phase II – Full Research and Development.** Based on the results achieved in Phase I, Federal agencies will decide whether to continue R/R&D efforts into Phase II based on the scientific, technical, and commercial merit and feasibility of the idea. If the Federal agency decides to continue into Phase II, they will award up to \$1 million to the small business to continue R/R&D efforts for up to 2 years.
- **Phase III - Commercialization.** No specific SBIR funding is associated with Phase III, however, some agencies may include follow-on non-SBIR funded R&D or production contracts for products or services intended for use by the U.S. Government. The objective of Phase III, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The Small Business Act⁴ defines commercialization as:
 - the process of developing products, processes, technologies, or service and
 - the production and delivery (whether by the originating party or by others) of products, processes, technologies, or services for sale to or use by the Federal Government or commercial markets.

A significant advantage to Phase I/II award winners is that Federal agencies may pursue sole source contracts to utilize technology developed through prior SBIR/STTR awards which automatically qualify as a Phase III activity.

The IPC's reports consider whether Federal agencies participating in the SBIR/STTR programs have successfully attracted qualified small business concerns to participate in the program, whether SBIR/STTR award recipients experience successful transitions between the phases of the programs, and the impact of the technology developed through SBIR/STTR awards as evidence of commercialization success.

3. SBIR Commercialization and Government Agencies

a. Overview

Commercialization as defined by the Small Business Act is: The process of developing products, processes, technologies, or services and the production and delivery (whether by the originating party or others) of the products, processes, technologies, or services for sale to or use by the Federal government or commercial markets.⁵

Increasing private sector commercialization of innovations derived from SBIR/STTR funds is one of the key pillars of the program.

⁴ 15 U.S.C. § 638(e)(10).

⁵ 15 U.S.C. § 638(e)(10).

- Commercialization Database⁶: Under the Reauthorization Act, SBA is required to build a commercialization database (further discussed in the IPC TechNet Public & Government Databases report) to track the performance of each SBIR/STTR awardee and conduct portfolio analysis. Information procured includes: number of awards/contracts/grants procured, patent related applications filed as a result of funding, number of employees, structure of ownership, etc.

Having this information will be key to evaluating the performance and success of the program from a commercialization efficacy prospective. Within this mission, applicant firms must now register at a Company Registry Database on SBIR.gov, which will be centralized to lower the agency's reporting burden and give cross-agency visibility into firms' performance history. However, unless stated otherwise, the information contained in the Company Registry Database, the Application Information Database, and the Commercialization Database are solely available to authorized officials, with the approval of SBA. *Working with agencies, the Small Business Administration should explore options for providing resources for building and maintaining databases and other systems to support SBIR/STTR program requirements. Options for resources could include a direct request for appropriations to perform these functions to be managed by SBA, use of an interagency funding agreement between SBIR/STTR agencies and SBA, or other funding mechanisms.*

- Annual Report: When submitting their report to SBA annually, agencies must include an accounting of Phase I awards made to SBCs that have received more than 15 Phase II awards from all agencies in the preceding 5 fiscal years (In general all Phase I awards are reported, but this particular metric is crucial for the commercialization benchmark perspective). Each agency must report: the name of the awardee; Phase I funding agreement number and date of award; Phase I topic or subtopic title; amount and date of previous Phase II funding; and commercialization status for each prior Phase II award. *Each agency must submit a report to SBA on those SBCs that submitted an application and were found to not meet the agency's benchmarks with respect to progress towards commercialization. This report must include the name and employer identification number of the SBC, the closing date of the solicitation to which it proposed, and the agency that issued the solicitation.*
- Agency Assistance: Participating agencies within the SBIR/STTR program will soon be disseminating datasets that relate to the central work of their agency. In many cases, these datasets on their own tell only a limited story, however, when combined with data from other agencies charged with assisting the small business community with job creation and private sector investment success, the potential for a powerful assessment tool is introduced. *The SBIR/STTR Commercialization Database should be able to mine as well display, as appropriate, individual agency data and actions in order to better promote the creation of American jobs through greater participation, collaboration and transparency.*

b. Commercialization Assistance

- A number of SBIR/STTR agencies have been very successful at helping their awardees commercialize. However, there is no streamlined way for agencies to share lessons learned. SBA should lead in the sharing of best practices among SBIR/STTR agencies and help lay out the appropriate steps to achieve that leverage as well as proposals for new initiatives to address funding gaps that business concerns face after Phase II, but before commercialization. SBIR/STTR participants must keep in mind that per reauthorization, a Federal agency may provide to the recipient of a Phase I SBIR or STTR award, an amount equal to but not more than \$5,000 per year in order to purchase the services of a vendor that would assist with commercialization efforts. The same applies to the recipient of a Phase II SBIR or STTR award. In carrying out these efforts, each Federal agency shall provide the allowable amounts to a recipient that

⁶ DOD supports collaboration whenever practical, however as stated previously the agency does not support the use of interagency/joint funding outside the DOD community.

meets the eligibility requirements, even if the recipient requests to seek technical assistance from an individual or entity other than the vendor selected by the Federal agency.

c. Commercialization Readiness Program – DoD

- General: The Department of Defense is authorized to create and administer a “Commercialization Readiness Program” to accelerate the transition of technologies, products, and services developed under the SBIR Program to Phase III, including the acquisition process. *The authority to create this Commercialization Readiness Program does not eliminate or replace any other SBIR or STTR program that enhances the insertion or transition of SBIR or STTR technologies.*

- Accelerated transition of research programs to acquisition process: DoD must identify research programs of the SBIR Program that have the potential for rapid transitioning to Phase III and into the acquisition process and certify in writing that the successful transition of the program to Phase III and into the acquisition process is expected to meet high priority requirements.

d. Commercialization Readiness Pilot Program for Civilian Agencies

- General: The Commercialization Readiness Pilot Program permits the head of any Federal agency participating in the SBIR Program (except DoD) to allocate not more than 10% of its funds allocated to the SBIR Program in two modes:
 - For follow-on awards to small businesses for technology development, testing, evaluation, and commercialization assistance for SBIR or STTR Phase II technologies; or
 - For awards to small businesses to support the progress of R/R&D and commercialization conducted under the SBIR or STTR programs to Phase III.

- Application to SBA: Before establishing this pilot program, the agency must submit a written application to SBA not later than 90 days before the first day of the fiscal year in which the pilot program is to be established. The written application must set forth a compelling reason that additional investment in SBIR or STTR technologies is necessary, including unusually high regulatory, systems integration, or other costs relating to development or manufacturing of identifiable, highly promising small business technologies or a class of such technologies expected to substantially advance the mission of the agency.

- SBA’s Determination: SBA must make its determination regarding an application to the pilot program, not later than 30 days before the first day of the fiscal year for which the application is submitted. SBA must also publish its determination in the Federal Register and make a copy of the determination and any related materials available to the Committee on Small Business and Entrepreneurship of the Senate and the Committee on Small Business and the Committee on Science, Space, and Technology of the House of Representatives.

e. Methodology

- SBA is currently building the SBIR/STTR Commercialization Database with routine User Acceptance Testing (UATs) provided by the agencies in order to produce an outcome that is unanimously supported due to continuous implementation practical agency feedback. A primary objective throughout the entire process has been a seamless transition due to careful analysis of individual agency database questions, while adhering to congressional requirements for displaying program success via performance metrics (sales, revenue, job created, patents, etc.). The three-phase process of build-up and implementation is slated to be complete by late 2014.

f. SBIR/STTR Commercialization Best Practices

- Since the program’s inception, a wealth of information and institutional knowledge has been procured about how to best successfully reach effective commercialization. As one would suspect, the notion and timeline readiness for technology market maturation varies differently by the sector for a variety of reasons from “financially intensive readiness” to an appropriate “technology support system” to fuel growth and development of a particularly advanced piece of hardware or software.
- Commercialization Assistance Programs (CAPs) are generally third party subcontractors that aid in the mentoring and initial scaling of small businesses that are seeking mentoring, advising, and network building as they reach proof of concept stage for prototype development (Phase I) or endeavor in scale up commercialization opportunities for market expansion from an initial customer base (Phase II). Typical programmatic endeavors that result from CAPs (like Dawnbreaker, Larta, Foresight, etc.) that aid in development include webinars, workshops, annual conferences, networking opportunities, etc.

Additionally, there are various types of in between “Post Phase Programs” that are utilized to help derive better chances of successful commercialization in bridging the gap over the “Valley of Death”. These include but are not limited to:

- Post Phase II Bridge funding (e.g. Phase II-B/II-E/II-X)
- Phase III Awards (e.g., Federal acquisition of SBIR products – DoD (especially Navy), NASA, HHS (through Biomedical Advanced R&D Authority), DHS, etc.)
- Commercialization Readiness Programs

4. Conclusion & Recommendations

a. Proposals for New Initiatives

- Leveraging partnerships with high growth stakeholders: There are a multitude of organizations that provide resources to high growth entrepreneurs. *SBA will take the lead in a “train the trainers” model and reach out to these trade associations, high growth groups, and universities to train them about the SBIR/STTR program. Through these relationships, SBA can:*
 - Conduct outreach activities to these stakeholder’s members (i.e.: webinars, educational materials, etc.)
 - Connect these stakeholders to specific agencies for additional outreach activities by sector or by region.
 - Attend stakeholder conferences where Program Managers can rotate between those based on region and sector. This way, Program Managers are able to target their travel while doing outreach to individuals that are most likely to apply to their solicitations and commercialize.
 - Explore how NSF’s I-Corp model might be applicable and/or deployable amongst other agencies (HHS-NIH recently implemented usage of the program; DHS will implement its own I-Corp model in FY 2015).

Accelerators, Incubators, and Clusters: Continuing along the path of resources to small businesses, there are a host of available avenues that small businesses can pursue either directly at SBA or through assistance from the agency. These resources can play the role of intermediary or mentor to provide small business with the tools, funding, and guidance required to achieve successful commercialization. *SBA will take the lead to work with their partners at the Office of Entrepreneurial Development (OED) and the global accelerator/incubator network to schedule innovation summits, conferences, and demo day allowing for introduction and substantial interaction between the various entities.*

b. Key Recommendations

- *Policy Recommendation 1 – Leveraging CAP programs at larger agencies:* The SBIR/STTR program should analyze the data on the current commercialization assistance programs. SBA should look into smaller SBIR programs that would like to take advantage of the services offered by larger agencies, but cannot get contractor interest because of their small size. If an interest is indicated, SBA should explore funding mechanisms whereby smaller agencies can collaboratively work with larger agencies to obtain those services.

- *Policy Recommendation 2:* SBA and the SBIR/STTR participating agencies should host meetings with CAP providers and small businesses to optimize offerings from these programs. For example, the feasibility of hosting a session during a National SBIR conference whereby the contractors provide presentations to SBA and all agencies on the strengths and weaknesses of these programs based on their interactions with small businesses should be investigated. Furthermore, several small businesses should be tapped to share their experiences, positive and negative, with these commercialization services. (Session could be closed or open to the public.)

- *Policy Recommendation 3:* By the end of 2016, agencies should collect feedback on small businesses that utilized their own commercialization assistance providers and analyze the information to make future recommendations for this statutory provision.