Enhancing U.S. Economic Competitiveness Through Support for Small Businesses and Innovators

Fiscal Year 2024 Report from the Invention, Innovation, and Entrepreneurship Advisory Committee (IIEAC)

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Letter from the IIEAC Chair and Vice Chair

On behalf of the full membership of the Invention, Innovation, and Entrepreneurship Advisory Committee, we are pleased to submit our report to you: Enhancing U.S. Economic Competitiveness Through Support for Small Businesses and Innovators.

For the first time in decades, the U.S. has dropped out of the top 10 in global competitiveness. While the country's economic performance remains high, drops in business and government efficiency have both fallen to an all-time low, highlighting key opportunities for improvement.

Indeed, entrepreneurs continue to face considerable challenges in securing resources, support, data, metrics, and capital to help them start, grow and sustain businesses. While there have been some advances, providing more investment in these areas can help businesses scale to a revenue size comparable to the U.S. GDP.

We believe the U.S Small Business Administration (SBA) has a unique opportunity to build on its programs supporting technology-based innovation ecosystems as well its role providing access to and resources of the $4.5 billion America's Seed Fund, the Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) programs, to further catalyze innovators and small businesses as engines of U.S. global competitiveness. In this report, we have provided recommendations to inform how the SBA, and the federal government more broadly, can address persistent gaps in support for entrepreneurs inventing, commercializing, and scaling breakthrough innovations that are critical to not just our country's global economic competitiveness, but our national security as well.

Specifically, the following pages propose 12 recommendations through a framework of three themes:

What gets measured, gets done. The Committee identified opportunities for consistent and transparent metrics across all 11 agencies' SBIR/STTR programs, especially when looking at commercialization outcomes, as well as engaging federal innovation and entrepreneurship program leaders to agree on how to measure participation in invention, innovation and entrepreneurship as well as the health and impact of the ecosystems that support them.

Enhancing access and reducing complexity. Further, reducing complexity and, in the case of the SBIR/STTR programs - increasing response times could enhance entrepreneurs' ability to fully leverage existing assets to support their business journey. These enhancements would make it easier to navigate the breadth of entrepreneurial programs and offerings across the federal government and within local communities.

Knowledge creation and sharing. Finally, the Committee identified significant benefits from SBA facilitating a broader sharing of best practices. Programs and communities

across the country have evolved over time and developed knowledge about what works and what doesn't, and this knowledge should be made readily available for others to build upon. Further, some of the SBIR/STTR policy directives such as Data Rights and Phase III procurement program represent best practices for catalyzing innovation created by small businesses through the program but are not consistently applied across agencies.

The Committee firmly believes in America's ability to lead the world in invention, innovation, and entrepreneurship and these recommendations will collectively enhance the ability for all Americans to start, grow, and sustain the businesses that continue to be the backbone of the American economy.

Sincerely,

Philip H. Gaskin & Julie Lenzer

Chair and Vice Chair

Invention, Innovation, and Entrepreneurship Advisory Committee

Background

The Invention, Innovation, and Entrepreneurship Advisory Committee (IIEAC) provides advice, insights, and recommendations to the U.S. Small Business Administration (SBA) on matters relating to the innovation ecosystem, research commercialization, and lab-to-market translation. The Committee held its inaugural meeting in November 2023. Over its first year, IIEAC members examined the challenges and obstacles faced by stakeholders in the U.S. innovation economy and proposed policy and programmatic changes to strengthen and enhance SBA's programs and services.

The Committee is composed of up to 15 members, including a Chair and Vice Chair, representing startups and small businesses, SBIR/STTR awardees, foundations, universities, entrepreneur support organizations (ESOs), and other innovation ecosystem representatives.

The IIEAC is supported by the SBA's Office of Investment and Innovation Ecosystem Development Division (IIED). IIED works to connect, fund, and train the networks and stakeholders helping growth oriented small businesses. These ESOs include state and federal government agencies, universities and research institutions, and local and regional economic development organizations and ESOs.

More information on the IIEAC is available at: https://www.sba.gov/iieac

IIEAC Members

Committee members as of September 30, 2024:

- Philip Gaskin, Executive Advisor, Economic Mobility, Entrepreneurship and Capital Innovation (IIEAC Chair)
- Julie Lenzer, Chief Innovation Officer, Advanced Regenerative Manufacturing Institute (IIEAC Vice Chair)
- Andrew McCandless, Chairman and CEO, Bascom Hunter
- Carol Dahl, Board Member, VentureWell, VertueLab, and Washington Research Foundation; Trustee, WiSys
- Colleen D. Egan, President Emeritus and Strategic Advisor, Illinois Science and Technology Coalition, General Partner at Migrate Ventures, LLC
- David McFeeters-Krone, Principal, Intellectual Assets, Corp.
- Dedric Carter, Vice Chancellor for Innovation, Entrepreneurship and Economic Development and Chief Innovation Officer, University of North Carolina at Chapel Hill
- Jenny Servo, President, Dawnbreaker
- ML Mackey, CEO, Beacon Interactive Systems
- Ramón Barquín III, Chairman of the Board, Atlantic University
- Eric Adolphe, CEO & Founder, Forward Edge-AI, Inc.
- Richard Carroll, Chairman, Innovative Defense Enterprises
- Sally Morton, Executive Vice President, Knowledge Enterprise, Arizona State University
- Tim Tiemann, Managing Director of Innovation Programs, California State University Northbridge

A list of current IIEAC members can be found on SBA's website at: https://www.sba.gov/iieac

Executive Summary

The Invention, Innovation, and Entrepreneurship Advisory Committee's (IIEAC) main objective is to promote, expand, and strengthen the entrepreneurship ecosystem, including innovation commercialization, lab-to-market translation, and facilitating more efficient and accessible federal innovation programs.

The IIEAC was created to serve as a resource, providing insights and recommendations from experts in business, academia, and community-based support organizations to help the U.S. Small Business Administration (SBA) support American ingenuity, innovation, and economic competitiveness.

The IIEAC seeks to inform how the SBA, and the federal government more broadly, thinks about addressing persistent gaps in support for entrepreneurs inventing, commercializing, and scaling breakthrough innovations that are critical to our country's global economic competitiveness and national security.

The 12 recommendations in this report bring to the forefront significant challenges and promising solutions which can leverage the SBA's strengths in support of America's inventors, innovators, and entrepreneurs.

The Process

The Committee was divided into two sub-committees to work on the different facets that make up the SBA Office of Investment and Innovation's remit - Commercialization: Opportunities and Vulnerabilities (Commercialization Subcommittee) and Support for Ecosystem Builders (Ecosystem Builders Subcommittee). The Subcommittees met regularly between April 2024 and August 2024 and solicited input from external experts and practitioners.

Each subcommittee outlined specific goals, and further divided into working teams to dive more deeply into specific topics.

The Commercialization Subcommittee focused on recommendations to accelerate the transition of novel technologies, including technologies funded through the SBIR/STTR programs. Areas of focus included: regulatory or statutory opportunities for improvement or enforcement, programs or resources to enhance the commercialization of innovative technologies; expanding the utilization of SBIR/STTR Phase III (sole source) contracting, both through participating and non-participating SBIR/STTR agencies; and identifying challenges that impact commercialization of new technologies in the government and private markets.

The Ecosystem Builders Subcommittee divided their work into four focus areas including increasing access to fully utilize American entrepreneurial resources; facilitating and curating federal programming and best practices; supporting regional

ecosystem builders; and providing insight into long-term sustainability and competitiveness of businesses in an increasingly competitive global market.

Both subcommittees presented their recommendations for discussion and consideration by the entire Committee, further shaping this final report. In those discussions, three themes emerged with the underlying recommendations as follows:

1) A need for better, more consistent, and transparent **metrics**
   a) Review and require transparency of SBIR/STTR recipient commercialization metrics
   b) Establish baseline metrics for participation and success in inventors, innovators, and entrepreneurs across demographics
   c) Coordinate between various federal agencies to develop common measures of evaluating the health and impact of regional ecosystems

2) A need to **remove complexity** while increasing **accessibility**
   a) Mitigate complexity of SBIR/STTR program forms and submission process
   b) Address latency in time to award for SBIR/STTR programs
   c) Partner with Minority Serving Institutions (MSIs) to identify and support ecosystem builders
   d) Support development of regional ecosystem maps for the ecosystem builder

3) A need for broader **sharing and**, in the case of the SBIR/STTR programs**, adhering to, best practices aligned with congressional intent**
   a) Federal agencies, where applicable, should fully utilize codified SBIR/STTR program provisions that provide direct access to contracting opportunities for SBIR/STTR awardees while also protecting intellectual property via Data Rights Issues
   b) Evaluate and share best practices for selecting and managing SBIR/STTR reviewers
   c) Support ecosystem builders by sharing best practice resources
   d) Extract and share key elements of competitiveness across small businesses and entrepreneurs

Introduction

For the first time in decades, the U.S. has dropped out of the top 10 in global competitiveness[1]. While the country's economic performance remains high, drops in business and government efficiency have both fallen to an all-time low. With documented support from the government, small businesses contributed more than half of the net new jobs across the last decade[2] highlighting key opportunities for improving this critical component of competitiveness.

The U.S. Small Business Administration (SBA) is a critical component of making the American dream of business ownership a reality. As the go-to resource and designated voice for small businesses, the SBA empowers entrepreneurs and small business owners with the resources and support they need to start, grow, or expand their businesses or recover from a declared disaster. And there is ample evidence that current approaches work: entrepreneurs and the innovations they bring to market are well-appreciated drivers of the American economy and global competitiveness. Similarly, American small businesses are key drivers in strengthening economies locally, regionally, and nationally with support from the SBA.

While SBA programs have been effective, there remain opportunities to further streamline and coordinate programs within the agency and across the federal government while also supporting ecosystem builders[3] across the country to help even more current and aspiring small business owners, inventors, innovators, and entrepreneurs be successful.

What is an ecosystem builder?

The Ewing Marion Kauffman Foundation s Entrepreneurial Ecosystem Building Playbook 3.0 says, "Ecosystem builders connect, empower, and collaborate with others to build the whole system. They are system entrepreneurs working to lift up the whole community to achieve its potential.

Of specific relevance to this Committee, the unique support needed by our nation's inventors and innovators as they develop and commercialize technologies to fill gaps in both the government and commercial markets. These innovative small businesses are especially relevant to maintaining U.S. global competitiveness and need unique support when developing their technologies and businesses. SBA's creation of the Investment and Innovation Ecosystem Development Division (IIED) is an important step in addressing the needs of our nation's most innovative entrepreneurs. IIED is focused on ensuring entrepreneur support organizations

(ESOs)[4] and ecosystem builders have the funding and connections necessary to serve this unique subset of small businesses and entrepreneurs. Entrepreneurs continue to face considerable challenges in securing resources, support, data, metrics, and capital to help them start, grow and sustain businesses. While there have been some advances, providing more investment in these areas can help businesses scale to a revenue size comparable to the U.S. Gross Domestic Product (GDP).

What do ESOs do?

The U.S. Securities and Exchange Commission (SEC) says ESOs support, mentor, train, and sometimes fund entrepreneurs and early stage businesses. ESOs help spur innovation and economic growth by providing business development services and resources to help founders develop, scale, and sustain viable businesses.

Studies reveal that certain Americans face more challenges with receiving the support, data, metrics and other investment they need to be successful in their businesses. Other studies[5] show large swathes of demographics and geographies are under-represented in entrepreneurial activities, resulting in a suboptimal economic output nation-wide, while reducing free competitive enterprise.

For example, the Ewing Marion Kauffman Foundation observed that founders with greater gender and ethnic diversity achieve **30% higher returns** for investors upon exit than their white male founder counterparts[6]. Overall, Kauffman Foundation reports that 83% of new businesses with employees don't access capital from banks or other financial institutions, and instead 65% of them tap into their personal or family savings, with this burden mostly felt by under-represented populations and geographies[7].

Further, McKinsey recently estimated that based on the observed **>80% underrepresentation of Black and Latinx American entrepreneurs** compared to the population, "Black- and Latino- owned businesses would generate an **additional $1.6 trillion and $2.3 trillion** respectively, assuming Black- and Latino-owned business ownership matched their share of the population and their business revenues [only] matched those of their peers[8]."

These effects are dominated and perpetuated by "in-group" effects, i.e., by the ecosystems within which every American lives and works. These ecosystems are typically geographic, but always cultural, and always powerful. For example, underrepresented groups tend to invest more equitably, **yet only 1.4% of growth capital assets under management are managed by women or BIPOC managers[9].** Or considering support for rural ecosystems, while 62% of early-stage biomedical risk capital investment occurs in Massachusetts and California, 77% of biomedical research occurs outside of these two states[10].

Challenges are faced by aspiring and current founders in smaller, more remote or rural geographies as well. In fact, a report by Carta tracked venture capital investment and

startup activity across U.S. cities and found that venture capital investments are extremely concentrated in specific regions while other regions show very little investment activity[11]. In the first quarter of 2024, for example, California accounted for nearly 60% of all venture capital investment.

Without proactive steps to address these persistent and incredibly costly inequities, they will remain and the U.S will continue to lose ground on a global stage.

SBA and its federal partners have a strong core of programs and support for innovation-based entrepreneurship and ecosystem builders. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs remain a national driver of innovation and small business growth. While SBA's funding programs for entrepreneur support organizations (ESOs) – the Growth Accelerator Fund Competition (GAFC), the Federal and State Technology (FAST) Partnership Program, and the Regional Innovation Cluster (RIC) Initiative – are critical to maintaining and expanding the national innovation ecosystem. The foundation exists to support and expand innovation-based entrepreneurship in the U.S. but there are critical opportunities to ensure our nation's most innovative entrepreneurs have the resources and support needed to start, scale, and grow their businesses and ensure our nation's innovation capacity is not underutilized.

We must recognize the nation's (potential) inventors, innovators, and entrepreneurs (IIEs) as the uniquely valuable economic resource that they are. Wherever they are underutilized, we all suffer. We must proactively measure, diagnose the root cause, and address it.

This report delves into these opportunities through the lens of the current capabilities and remit of the SBA and makes specific recommendations across three themes to close the gaps and drive greater effectiveness of existing resources.

Theme 1: Better, more consistent, and transparent metrics

In "Competitiveness through Entrepreneurship: A Strategy for U.S. Innovation[12]," the National Advisory Council for Innovation and Entrepreneurship (NACIE) made several recommendations to the Secretary of Commerce. Among them, along with the establishment of a National Innovation Council, is to "establish and measure the appropriate local and national performance metrics for entrepreneurship ecosystem success, inclusion, and capital allocation," and reference metrics when advocating for a coalescing of best practices across federal government funders. Among the programs and objectives the IIEAC was tasked to review, the adage "you get what you measure"

was used as a guide, resulting in a number of recommendations highlighting opportunities for improvement, as shared below.

Recommendation 1: Review and require transparency of SBIR/ STTR recipient commercialization metrics

The SBIR/STTR programs span 11 different agencies, all differing slightly in their approach. However, the legislation for the SBIR/STTR programs[13] which spans all agencies describes commercialization as one of four goals of the program. Specifically, it cites the goal to "Increase the commercialization of innovations developed through federal R&D funding in the private sector" indicating a desire to increase competition, improve productivity, and promote economic growth. To this end, commercialization metrics are critical for ensuring that the SBIR participants are meeting the goals of the program.

Currently, the likelihood of a company receiving multiple SBIR/ STTR awards is partly dependent on self-reporting specific performance benchmarks that include transition from Phase I to Phase II and certain commercialization metrics to ascertain the success of a company from prior awards. For metrics to be useful, they need to be clear, measurable, and easy to report and collect.

Considerations for commercialization metrics include:

- Success should be defined in terms of the value that markets place on a technology.
- Alternatively, success could be based on the impact that a technology has in addressing a critical defense or social problem, irrespective of investor valuations.
- Success should be defined as the return on an agency's investment
- Licensing is a viable commercialization strategy for SBIR/STTR awardees. A dollar value can be associated with this based on the royalty rate as a percentage of sales.
- Determine if the Paperwork Reduction Act impacts the collection of commercialization data by participating agencies and the paucity of SBIR/STTR success stories.
- Success stories published by the various agencies also illustrate metrics related to achieving their extramural R&D goals through small business that can be considered.

Potential Actions for SBA to Take:

- **Assess the effectiveness and completeness of current commercialization**

metrics being used as indicators of SBIR/STTR program success. The analysis should consider differences in the mission of contracting and granting agencies, as well as the respective regulations and opportunities within those industries. Finally, success should consider not only the return on investment to the agency, but also both the technology's market value from an external investor perspective as well as the impact it has on addressing a critical defense or social need.

- **Conduct a study with all participating agencies to determine to what extent the Paperwork Reduction Act affects their collection of metrics.** Prioritize metrics based on difficulty on ease of measuring and reporting.

- **Assess frequent Phase II award winners that are still participating in the SBIR/STTR programs to determine effectiveness of current commercialization metrics.** Within the agencies, assess the (1) presence of a process for evaluating portfolio companies and (2) the way that process is being engaged to inform additional investments.

Recommendation 2: Establish baseline metrics for participation and success in inventors, innovators, and entrepreneurs across demographics.

As mentioned in the Introduction, we must recognize the nation's (potential) IIEs as the uniquely valuable economic resource that they are to achieve our full potential as an economic powerhouse. Underutilizing our nation's innovation capacity and people resources unnecessarily restricts our competitiveness. Without proactive and consistent measurement of full participation in innovation programs and ecosystems it is impossible to diagnose the root causes of inequity and address them. Understanding the current levels and trends in participation and access across demographics is the first step.

Potential Actions for SBA to take:

- **Standardize definitions and metrics for tracking participation in innovation and entrepreneurship.** Construct clear and consistent definitions of subgroups of interest, and metrics covering participation, access to funding, success rates, economic impacts and failure modes. Harmonize with others' work and standardize across federal programs to the extent possible.
- **Engage communities in the purpose behind the need for these metrics.**

Developing and collecting metrics should occur via meaningful engagement with communities of interest – to engender engagement and trust, to inform and educate, and to minimize sampling biases.

This may be done *de novo* or by careful reference to extant studies.

Recommendation 3: Coordinate between various federal agencies to develop common measures of evaluating the health and impact of regional ecosystems

As evidenced by the growth and reach of programs such as the National Science Foundation's (NSF) Regional Innovation Engines (Engines), the Department of Energy's (DOE) Energy Program for Innovation Clusters (EPIC), the Economic Development Administration's (EDA) Regional Technology and Innovation Hubs (Tech Hubs), the Advanced Research Projects Agency for Health (ARPA-H) Investor Catalyst Hub, the Department of Defense's (DoD) Microelectronics Commons in addition to the SBA's own GAFC and RIC Initiative, there is a recognition of the unique opportunity to enhance regional ecosystems and thereby place-based development by leveraging the substantial federal resources that are currently being deployed. While cross-collaboration across these programs has been increasing, there is no consistency in the definition and measurement of the value and impact of regional economic ecosystem support. Utilizing a common language and set of metrics across all these programs which are aligned with broader impacts of interest to stakeholders, including Congress, will make it easier for them to assess the value of comparative investments.

Potential Actions for SBA to take:

- **Standardize ecosystem success and health metrics.** Take a leadership role in coordination between the various federally funded innovation ecosystem support programs (NSF Engines, DOE EPIC, EDA Tech Hubs, ARPA-H hubs, SBA GAFC and RIC Initiative, etc.) to develop common measures of evaluating impact in cultivating regional ecosystems.

Theme 2: Removing complexity while increasing accessibility

Complexity across federal programs creates significant barriers for small businesses, particularly those led by under-represented demographics and those engaging for the first- time. This complexity is seen in both entrepreneurs engaging with individual programs as well as finding accessible, complete information about support resources available, both federally and regionally. Ecosystem builders can also experience challenges in building their local networks, if the ecosystem builder is challenged, we can only imagine the difficulty the entrepreneur would face in navigating various ESOs[14] in their ecosystem. Specifically:

What is an ESO?

Many types of organizations can be an ESO. IIED often considers accelerators and incubators, tech based economic development organizations, investors, federal and national labs, Small Business Development Centers, APEX Accelerators, tech transfer offices, and colleges and universities to be ESOs.

- Because programs such as the SBIR/STTR are decentralized there are wide variations in forms, instructions, and submission processes across agencies. This variation increases the complexity for applicants and creates inefficiencies for agencies maintaining custom infrastructures.

- Phase III SBIR/STTR awards lack uniformity across government agencies and often take longer than competitive bidding processes, making it challenging for small businesses to navigate and serves to disincentivize their participation. Finally, the absence of standardized practices and clear guidance in the Federal Acquisition Regulation (FAR) for Phase III procurements and the frequent rotation of acquisitions professionals proficient in SBIR Phase III procurement exacerbates this issue.

- Federal agency submission review and funding process for SBIR/STTR programs takes too long, putting small business owners at risk as technology innovation continues to accelerate.

- The multitude of programs across different agencies supporting innovation-based entrepreneurs leads to unnecessary complexity and potential redundancies.

- As a result of this complexity, engaging with governmental agencies requires traversing a learning curve. First time entrepreneurs from under-represented groups have fewer opportunities to learn how and when to best engage SBA or other federal agencies in developing their business or applying for programs.

The following recommendations are positioned to simplify and make programs and information streamlined and more accessible.

4: Mitigate complexity of SBIR/STTR program forms and submission process

Complexities in forms and process as well as variances between agencies make accessing SBIR/STTR challenging and have resulted in demographic inequities in awards. Additionally, where companies do attempt to apply for funding, innovations go unfunded due to administrative errors and have negated many of the intended benefits of sole-source contracting (SBIR Phase III) under the SBIR/STTR Policy Directive[15].

By implementing these actions, the SBA can significantly reduce the administrative burden on small businesses, streamline the application process, and ensure more consistent and efficient Phase III contracting practices across agencies.

Potential Actions for SBA to Take:

- **Reduce administrative burden on small businesses.** The SBA should identify common submission requirements across the 11 agencies to consider where there are opportunities to streamline the processes and reduce administrative burden on small businesses.

- **Recommend to Congress the acceleration of incorporating SBIR Phase III contracting best practices[16] into the Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation (DFAR) under the National Defense Authorization Act (NDAA).**

- **Enforce the SBA's Appeal Rights under the Policy Directive** through one of the following methods:

    a. Alternative Dispute Resolution (ADR) process through each agency's Acquisition Ombudsman.

    b. Establish a SBIR Phase III Appeals Intake procedure with the Government Accountability Office (GAO).

    c. Implement an ADR function within the SBA's Office of Advocacy

- **Implement training on "the SBIR/STTR Policy Directive and SBIR Phase III contracting" for acquisition officers and acquisition ombudsmen.**

Recommendation 5: Address latency in time to award for SBIR/STTR programs

The SBIR/STTR programs suffer from delays in awarding Phase I and Phase II funding, with some agencies taking up to a year or more to finalize decisions. This sluggishness is particularly troubling in a world where innovation is accelerating at an unprecedented pace, putting U.S. competitiveness and technological leadership at risk. The sluggishness can cause delays to products moving into the marketplace (and to patients), while also creating a prolonged, problematic delay for companies that may wish to re-submit for future consideration on a Phase I award or for subsequent funding on a Phase II award. Allowing these delays creates danger of stifling the very innovation the SBIR/STTR programs are meant to foster, potentially causing the U.S. to fall behind in critical technological advancements.

Potential Actions for SBA to Take:

- **Investigate ways to speed up the funding timeline.** The SBA should work with federal agencies to accelerate SBIR/STTR funding cycles such that companies receive feedback in time to make adjustments and apply in the next application cycle.
- **Investigate incentives for rapid review.** The SBA should investigate mechanisms for addressing the trade-offs between resources for processing awards and increasing the number of awards allotted to align the timeline of submission, review, and award.

Recommendation 6: Partner with Minority Serving Institutions (MSIs) to expand their contributions to the local innovation ecosystems

As mentioned previously, ecosystems are typically geographic with a foundational cultural relevance that can be powerful for engaging underrepresented demographics. Given research universities often play an outsized, "anchor" role in innovation ecosystems[17], MSI's[18] have an opportunity to play a larger role in building regional innovation clusters as highlighted by the NSF's recent focus on building research capacity across MSI's. Additional focus on building MSI's capacity to support innovation ecosystems will provide a culturally relevant entrée for individuals from groups historically underrepresented to engage in the innovation startup community.

What is an MSI?

From the University of Maryland, Baltimore County: Minority Serving Institution is not defined by the U.S. federal statute. Still, it is generally used as an umbrella term, which includes institutions of higher education enrolling a significant percentage of undergraduate minority students or serving certain populations of minority students under various programs created by Congress. These include Alaska Native and Native Hawaiian Serving Institutions (ANANHSI); Asian American Native American Pacific Islander Serving Institutions (AANAPISI); Historically Black Colleges and Universities (HBCUs); Hispanic Serving Institutions (HSI); Native American Serving Non Tribal Institutions (NASNTI); Predominantly Black Institutions (PBI); and Tribal Colleges and Universities (TCU).

Potential Actions for SBA to Take:

- **Work directly with MSIs to provide support aimed at building the capacity** of MSIs to actively participate in and contribute to regional innovation clusters, including:
    - Encouraging other agencies to focus on MSI's in their funding of translation of research and development projects
    - Offering training and technical assistance on federal contracting readiness

- Supporting programs to build innovation-based entrepreneurship training and support

Recommendation 7: Support development of regional ecosystem maps for the ecosystem builders

Just as accessibility of information about federal entrepreneurial support programs is important, providing a way for entrepreneurs to find resources specific to their region and/ or sector especially helps entrepreneurs who don't have already-made support networks.

Ecosystem and asset mapping[19] within regions can be a critical starting point to provide a deeper understanding of the strengths, resources, and needs within each regional innovation cluster, but is rarely funded. This information can be used to identify opportunities for synergy and collaboration between industry, higher education institutions, and other stakeholders and provide opportunities for coordination between players. By involving key players in the mapping process, such as industry leaders and academic experts, shared goals and priorities can be established, facilitating greater alignment and cooperation, as well as cultural change.

What is asset mapping?

Asset mapping provides information about the strengths and resources of a community and can help uncover solutions. Once community strengths and resources are inventoried and depicted in a map, you can more easily think about how to build on these assets to address community needs and improve health. Finally, asset mapping promotes community involvement, ownership, and empowerment.

Additionally, ecosystem mapping can help identify areas where targeted interventions and investments are needed to strengthen the innovation ecosystem and drive economic growth. Overall, this approach can enhance the effectiveness of innovation ecosystems by fostering a more cohesive and collaborative environment conducive to support shared strategic agendas with various ecosystem partners.

Potential Action for SBA to Take:

- **Provide support (potentially in partnership with other agencies) to region-based entrepreneur support organizations** for creation and maintenance of regional and sector-based ecosystem maps and knowledge repositories that are broadly accessible.

Recommendation 8: Facilitate the curation of SBA and other federal entrepreneurial offerings to remove complexity and redundancy for entrepreneurs to find appropriate assistance

In trying to identify gaps and redundancies across federal entrepreneurial support programs, Committee members conducted multiple scans of federal entrepreneur support resources to identify a comprehensive, updated list of existing federal agency programs intended to train and support innovation-based entrepreneurs. There were a few publications, academic and sponsored, but typically published rather than web-based, so even though they were admittedly incomplete in scope, they were also just a snapshot of what existed at that moment. They became increasingly obsolete with every passing day, and given the time required for printing and distribution, may have been obsolete by the time they reached the public. The implications of this gap are extraordinary. It is an obstacle to federal agencies for coordinating or collaborating on similar programs. Without a consolidated view, it is much more complicated to spot gaps in support for novel programs, redundancies, or to efficiently deploy resources across agencies and programs.

However, the greatest adverse impact is experienced by the novice entrepreneur. Without understanding what support exists and the target beneficiary of that support, entrepreneurs may seek out less advantageous, but better publicized funding or training programs potentially compromising the true potential of the venture. This may, in part, also explain the observation that funding and support too frequently is received by those with the greatest experience with a program. Having distinct, disconnected pools of resources reduces overall competition and efficiency; even those ventures with knowledge of a particular program may not be aware of other programs that may address other needs.

Identifying the needs for support and sourcing the best options is an enormous task for a small, resource constrained organization/startup. Access to the information and connections are even more challenging for those new to the ecosystem such as those from groups historically underrepresented in the innovation and startup community (e.g. women, BIPOC, rural). While accelerators and some incubators are helpful, they are

short term and rarely individualized or regionally focused in their support. Companies could benefit from additional individualized and longer-term support in navigating the regional ecosystem where they are based, in addition to the national ecosystem.

Potential Actions for SBA to Take:

- **Lead a cross-agency effort to create a single, accurate, updated resource** where an entrepreneur could become aware of all entrepreneurial resources and programming from the federal government with linkage to the sponsoring agency website should broaden the pool of potential applicants by reducing associated search costs.
    - Solicit input from a variety of traditional and under-served innovation communities to comment on desired utilities and organization of a web page promoting federally sponsored entrepreneur and innovation services. One might envision an organizational structure based on phase of maturity, geographic region, and/or market segment, but this would need to be validated with target user groups.

- **Explore the utilization of AI so entrepreneurs can access all SBA programs and resources** and be a model for how government can leverage AI to increase the ability for entrepreneurs and other interested stakeholders to access necessary services and support.

- **Provide support (potentially in partnership with other agencies) to regionally based entrepreneur support organizations for regional concierge/individually tailored services** that assist startups in navigating existing ecosystem resources, making needed partnerships within their region and sector.
- **Fund and implement an outreach strategy whereby all (involved) agencies would promote their involvement and support of integrated support to organizations** representing all target clients, but especially those in underrepresented communities.

Theme 3: Broader sharing and, in the case of the SBIR/STTR programs, adhering to, best practices aligned with congressional intent

As referenced earlier, the SBA was created to help Americans start, grow, and build resilient businesses to maintain and strengthen the overall economy of our nation. One of the most important of these roles is coordination of the SBIR/STTR programs across

the 11 different agencies that operate the programs, each with its own mission and operational approach. This has led to a high degree of variability in how these programs are executed, resulting in missed opportunities for cross-agency learning and the adoption of best practices. The decentralized nature of the programs makes it challenging to share and implement successful practices across agencies. Without a structured mechanism for sharing best practices, some agencies may continue to struggle with issues that others have already solved, leading to inefficiencies and a reduced overall impact of the SBIR/STTR programs. Additionally, implementing best practices and congressionally mandated approaches more consistently across agencies will protect and incentivize broader small business participation and improve overall commercialization outcomes.

Additionally, previously cited studies reveal that large swathes of Americans are under-represented in entrepreneurial activities, resulting in a suboptimal economic output nation-wide, while reducing free competitive enterprise. Imparting best practices for competitiveness across ecosystems and amongst small businesses will help unlock the full potential of all entrepreneurs regardless of geography or demographic, further democratizing opportunity.

Recommendation 9: Federal agencies, where applicable, should fully utilize codified SBIR/STTR program provisions that provide direct access to contracting opportunities for SBIR/STTR awardees while also protecting intellectual property via data rights issues

SBIR Data Rights are a federal contracting approach that can provide a nimble and streamlined approach to the federal funding of innovative research. SBIR Data Rights incent industry to engage with government stakeholders in a more collaborative, trusted, and integrated fashion through:

- Protecting technical data and intellectual property from competitors incentivizes the private sector to engage with government entities by safeguarding their most valuable assets.
- Providing sole source options for contracting as a Phase III SBIR speeds the time to value for government-funded technology innovations.
- Congressionally mandated contracting preference where a technology was the result of an SBIR investment, further leveraging original investments and encouraging small businesses to engage in providing government solutions.
- Keeping small businesses from being penalized for growth through the extension of Data Rights regardless of company growth, whether organic or

through mergers and acquisitions.

Further, the SBIR Phase III program was created to facilitate the growth of SBIR/STTR-funded companies and their innovations. In commercial markets, the most successful small business innovators often grow to become leaders in their respective fields. This keeps markets efficient, affordable, and technologically advanced. However, in government-driven markets, this growth has not occurred at scale, especially in national security markets.

The consolidation of the U.S. national security industrial base and the lack of new entrants at scale is significantly impacting the U.S. national security posture. Ineffective enforcement of the SBIR Phase III commercialization provisions has contributed to this issue. Correcting it would also improve the overall commercialization impact of SBIR/STTR nationally, with its derivatives in commercial markets.

Potential Actions for SBA to Take:

- **Educate federal program contracting officers on SBIR Data Rights that protects technical data**. Specifically, that research generated with SBIR investment is understood to be company generated intellectual property (IP) that the government has the rights to see but not divulge to potential industry competitors. Formal training for federal employees around SBIR Data Rights should include not only how to engage effectively but also the downside of non-compliance.

- **Ensure SBIR Data Rights are protected.** This can be done throughout market research, solicitation or request for proposal language, contracting, and the continuous management of ongoing phase III efforts.

- **Source from within the federal government's existing pipeline of investments.** This will be sourcing for SBIR/STTR technologies and companies that can reasonably meet the needs identified. Include requirements for use of SBIR/STTR-generated innovations in acquisition plans.

- **Ensure that SBIR/STTR Phase III evaluation criteria do not penalize the assertion of SBIR Data Rights**.

- **Ensure that flow down requirements do not put demands on a prime contractor.** SBA action can ensure a subcontractor is not forced to give up their SBIR Data Rights to perform on the contract. Include in the evaluation criteria of both the government program office and the prime contractor that they have responsibly managed SBIR Data Rights.

- **Conduct regular training sessions and workshops for both SBIR awardees and agency program managers**. Specifically, educating them on Phase III commercialization provisions and best practices. Consider developing an online learning portal with resources, tutorials, and case studies on successful SBIR/STTR Phase III implementations.

- **Consider approaches to ensure SBIR technologies are considered** when a need arises that could be easily and quickly filled through a Phase III/ sole source contract vehicle.

- **Implement or, if already in place, better publicize whistleblower protections** around compliance with SBIR Data Rights and acquisitions policies such as Phase III preferences and sole source opportunities.

- **Publicize and make visible successful SBIR transitions.** Provide role models for government decision-makers. The communications around SBIR Data Rights need to include a balanced 'carrot & stick' knowledge dissemination.

- **Lead a national campaign to highlight success stories of SBIR/STTR projects that have effectively transitioned to Phase III.** By raising awareness of these successes, other agencies may be encouraged to adopt similar practices while increasing learning within and across agencies.

- **Publish annual reports detailing the progress, success stories, and challenges related to SBIR Phase III transitions**, making the information accessible to the public and stakeholders.

Recommendation 10: Evaluate and share best practices for selecting and managing SBIR/STTR reviewers

The SBIR/STTR programs have variable mechanisms for attracting, retaining, and completing the review process. DoD and DOE employ a compensated reviewer pool, whereas NSF and the National Institutes of Health (NIH) rely on volunteers. Additionally, there is a high concentration of academic researchers who serve as reviewers but lack an in-depth understanding of commercialization plans, which are a key component of Phase II submissions. This recommendation addresses increased reliance on compensated reviewers, that are monitored for quality of reviews and rated for potential future engagement.

The variability and quality of scores can be a limiting factor on effectiveness and resubmissions for new entrants to the SBIR/STTR programs. In discussions with some

regular submitters, there was a perception that they only received useful feedback in a very low percentage of instances. It was noted that forms are generally geared towards academic evaluations and not SBIR/STTR focused reviews. That perception aligned with a reviewer's comment that they found themselves conforming to their own peer standard.

Potential Actions for SBA to Take:

- Improve the quality of SBIR/STTR reviews/reviewers through:
    - **Investigate the effectiveness of paid SBIR/STTR reviewers** versus volunteer panels based on overall applicant success metrics referenced earlier. Consider the rate paid reviewers and whether it attracts the appropriate level of expertise to drive desired outcomes.

    - **Use analytics/AI to score and identify the most qualified reviewers** who have sufficient background experience in and appreciation for the importance of commercialization outcomes from SBIR/STTR versus other federal R&D awards focused on basic research. Analyze success rates of companies recommended for funding by each reviewer, track the results and identify high- and low-performing reviewers. Keep strong reviewers and replace ones with weak track records. Identify characteristics of "strong" reviewers and recruit more like them. This mechanism could be an alternative to publishing more information about the reviewer's expert level. Such a mechanism could likely work within the existing information release practices of agencies like NSF.

    - **Enhance/increase training for reviewers.** Ensure that reviewers are provided an explanation of rank, rate, and score for proposals. Present good examples of judge's statements and bad relative to sample text to ensure that reviewers understand the quality and type of feedback that is helpful. Such enhanced training will afford an opportunity to cast a wider net for reviewers. The only way to increase quality and learn in the system is to ensure that each proposal has access to a valuable debrief.

- **Create professional prestige around the reviewer position.** Work to increase the perception of reviewers within the community. The effort should go beyond a "slog" or "simply service" to a position worthy of an investment committee in a major fund area. Market reviewers as "exclusive" positions that will "put a jet engine under their career." Amplify reviewers on social channels like LinkedIn or promote them as "heroes" of the SBIR program. It is important to enhance the

reviewer value proposition.

Recommendation 11: Support ecosystem builders by sharing best practice resources from peer communities as well as the federal government

In geographies/ecosystems that have not traditionally been leaders in innovation, many of the support organizations lack the experience and expertise in scalable startups and instead focus primarily on the needs of "main street" businesses. Support should be provided to strengthen regional innovation ecosystems for innovation-based startups to increase the likelihood that promising new businesses can succeed, including in geographies beyond the current limited set of innovation hubs.

Creating and sharing usable and implementable knowledge to ecosystem builders is key to their success in strengthening small businesses and the communities in which they work. Further, having the knowledge shared and understood consistently more broadly will help with improve outcomes across rural and urban communities including both established and emerging technology centers.

Potential Actions for SBA to Take

- **Take a leadership role in coordination between the various federally funded innovation ecosystem support programs** (NSF Engines, DOE EPIC, EDA Tech Hubs, ARPA-H hubs, SBA's GAFC, etc.) sharing progress and challenges, cooperatively filling gaps in regional capacities as they are identified and identifying and sharing knowledge regarding best practices in regional innovation ecosystem development.
- **Directly deliver or provide support to regional ESOs** to provide training on the unique needs of startups in regions that have not historically been innovation hubs.
- **Encourage expanded use of the effective Beat the Odds Bootcamp** approach in regional assistance programs and additional agency SBIR/STTR programs

Recommendation 12: Prepare entrepreneurs to be competitive in the current and future national and global markets

As global competitiveness continues to intensify, lessons learned from successful entrepreneurs about operating in an increasingly complex and evolving environment would help level the playing field for all small and entrepreneurial businesses and position the U.S. to retain the lead in key industries. Compliance with or preparation for rapidly changing regulations related to various federal, state and country responses to environmental controls, privacy, public health, and tariffs on imports are difficult to navigate for small businesses but may determine whether they may successfully enter or remain in new markets within the U.S. as well as globally. The SBA's direct access to and connection with small business owners and entrepreneurs uniquely positions the agency to lead this effort, providing thought leadership curated from its diverse stakeholders around existing knowledge on regulations and tariffs, as well as best practices for business growth, sustainability and competitiveness.

Potential Actions for SBA to Take

- **Develop an easily accessible repository of information on sources clarifying regulations and tariffs that may influence viability and competitiveness of innovation-based products entering new markets and training on how to address them.**
- **Utilize the vast support networks within the SBA**, such as the Small Business Development Centers (SBDC's), the Women's Business Centers, and the companies awarded through the RIC Initiative and GAFC to convene forums of successful entrepreneurs to extract their experiences and approaches to identify common themes and elements.
- **Leverage MOU with DoD's Office of Strategic Capital** to engage licensed SBICCTs (Small Business Investment Company Critical Technology) to provide their insight into factors in investing in small businesses building critical technologies or how they support their portfolio companies in a globally competitive environment.

Appendix A: Acronyms and Abbreviations

ADR	Alternative Dispute Resolution
ARPA-H	Advanced Research Projects Agency for Health
DFAR	Defense Federal Acquisition Regulation
DoD	Department of Defense
DOE	Department of Energy
EDA	Economic Development Administration
EPIC	Energy Program for Innovation Clusters
ESO	Entrepreneur Support Organization
FAR	Federal Acquisition Regulation
GAFC	Growth Accelerator Fund Competition
GAO	Government Accountability Office
GDP	Gross Domestic Product
IIEs	Inventors, Innovators, and Entrepreneurs
IIEAC	Innovation, Investment, and Entrepreneurship Advisory Committee
IIED	Investment and Innovation Ecosystem Development
IP	Intellectual Property
MSI	Minority Serving Institutions
NACIE	National Advisory Council for Innovation and Entrepreneurship
NDAA	National Defense Authorization Act
NIH	National Institutes of Health
NSF	National Science Foundation
R&D	Research and Development
RIC	Regional Innovation Cluster
SAM	System for Award Management
SBA	U.S. Small Business Administration
SBDC	Small Business Development Center
SBICCT	Small Business Investment Company Critical Technology initiative
SBIR	Small Business Innovation Research
STTR	Small Business Technology Transfer
Tech Hubs	Regional Technology and Innovation Hubs

Appendix B: References

[1] World Competitiveness Ranking 2024 - IMD business school for management and leadership courses

[2] Small businesses contributed 55 percent of the total net job creation from 2013 to 2023 : The Economics Daily: U.S. Bureau of Labor Statistics

[3] Entrepreneurial Ecosystem Building Playbook 3.0

[4] SEC.gov | Entrepreneurial Support Organizations

[5] Who is the Entrepreneur? New Entrepreneurs in the United States, 1996-2021

[6] More women founders equals more women in executive roles – Ewing Marion Kauffman Foundation | Kauffman.org

[7] Access to Capital for Entrepreneurs: Removing Barriers (2023)

[8] The economic state of Black America: What is and what could be | McKinsey

[9] Knight Diversity of Asset Managers Research Series: Asset Management Industry – Knight Foundation

[10] PitchBook, 2023; NIH Reporter, 2021

[11] 5 geographic trends in U.S. venture funding | Carta

[12] NACIE Competitiveness Through Entrepreneurship

[13] 15 U.S. Code § 638 - Research and development | U.S. Code | US Law | LII / Legal Information Institute

[14] SBA Innovation Ecosystem - America's Seed Fund

[15] SBIR and STTR Policy Directive - October 2020

[16] Best practices include the US Air Force RAPIDX (https://82cons.com/services-table/), US Army Catalyst (https://www.armysbir.army.mil/catalyst/)and VISTA programs, GSA's Assisted Acquisition Services, and DOT's combined Phase I/II/III awards.

[17] 4 The Roles of Universities | Trends in the Innovation Ecosystem: Can Past Successes Help Inform Future Strategies? Summary of Two Workshops | The National Academies Press

[18] Diversity – Office of the Provost – UMBC

[19] UCLA Center for Health Policy Research