DEFENSE INNOVATION BOARD

SCALING NONTRADITIONAL DEFENSE INNOVATION

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Table of Contents

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Executive Summary

Despite the rapidly accelerating and emergent competition with China and conflicts over Ukraine and the Middle East, the Department of Defense (DoD) still lacks the ability to mass test, procure, and field emerging capability within months or weeks. Without aggressive action, our warfighters risk defeat on the battlefield. We strongly urge immediately amplifying the urgency level, taking a significant portion of Research, Development, Test and Evaluation (RDT&E) investment out of the Planning, Programming, Budgeting and Execution (PPBE) process, and placing it within a system of flexible procurement. In addition, we must act swiftly to ensure the DoD leads in global innovation and competition over AI and autonomous systems – and is a trendsetter for their responsible use in modern warfare.[1] The importance of these tasks cannot be understated; our very democracy and way of life are at stake.

We need to significantly enhance the acquisition system's risk tolerance for failure, enforce existing authorities and contract mechanisms for nontraditional vendors (which we define as any business entity that does not typically work in defense, essentially meaning they are new to the DoD market), and incentivize the DoD contracting workforce to place larger bets on new market participants through a mix of both critical acquisition targets and Open Topic-based pathways.

We must shift from program-of-record requirements-centric transactions to "capability-of-record"[2] portfolio-level oversight and performance-based partnerships. Elevating existing authorities while providing political top cover for fiscal agility across the Services will increase "speed to capital"[3] for nontraditional vendors and enable rapid iteration with the end-user throughout the entire procurement lifecycle.

We recommend the incoming Administration's national security team establish decisive pathfinders for commercial, dual-use, nontraditional capabilities. This requires ruthlessly managing cost, schedule, and performance, and propelling millions of people within the system to move at the pace and scale of our adversaries.[4]

"As a nation, we are in an undeclared state of emergency … The only requirement is winning."

–Shyam Sankar, The Defense Reformation, Oct. 2024

Despite the DoD's meaningful strides in technology acquisition over the past decade, the Defense Innovation Board (DIB) determined in its 2023 *Terraforming the Valley of Death* report (attached in Appendix D) that these "methods were never formalized, shared, and integrated into a repeatable, transparent process capable of transitioning new DoD R&D entrants to recurring revenue *at scale*."[5] This conclusion is one that we still hold today.

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[1] See the DIB's concurrent study on scaling manufacturing for unmanned and autonomous weapons systems. Defense Innovation Board. (2025, January 13). A Pathway to Scaling Unmanned Weapons Systems. INSERT LINK WHEN PUBLISHED

[2] Michael Brown and RADM Lorin Selby / War on the Rocks. (2023, September 7). Revisiting the Hedge Strategy with Renewed Urgency. https://warontherocks.com/2023/09/revisiting-the-hedge-strategy-with-renewed-urgency/

[3] Gen. James E. Rainey / Military Review, Army University Press. (2024, August). Continuous Transformation: Transformation in Contact. https://www.armyupress.army.mil/journals/military-review/online-exclusive/2024-ole/Transformation-in-Contact/

[4] The DIB previously assessed that the DoD's current industrial base with its "process-focused, risk-averse culture creates enough obstacles to make it nearly impossible for nontraditional defense companies to contribute to the DoD mission." Defense Innovation Board. (2023, July 17). An Innovation Strategy for the Decisive Decade. https://innovation.defense.gov/Portals/63/DIB_An%20Innovation%20Strategy%20for%20the%20Decisive%20Decade_230717_1.pdf

[5] Notably, the DoD made meaningful strides in technology acquisition through methods pursued by the Defense Innovation Unit (DIU), Strategic Capabilities Office (SCO), and various Service- and Combatant Command-level organizations such as AFWERX/SpaceWERX, Army Futures Command,

To regain full sight of commercial innovation and ensure overmatch within this decisive decade, the Pentagon will need to continue leveraging its relationships with the established defense primes while rapidly accelerating entry for nontraditional vendors who bring fresh ambition and ideas to compete within a reformed defense industrial base.[6]

To take full advantage of America's dual-use innovation ecosystem, the next Secretary of Defense and Deputy Secretary of Defense will need to open the Service acquisition bureaucracy to competition, disruption, and transparency. Bottom line, we must improve the efficiency of our operations to ensure a significant difference before the next major conflict.

NavalX, Marine Corps Warfighting Laboratory, and SOFWERX, among others. Defense Innovation Board. (2023, July 17). Terraforming the Valley of Death. https://innovation.defense.gov/Portals/63/DIB_Terraforming%20the%20Valley%20of%20Death_230717_1.pdf

[6] There were 27 major formal investigations conducted on defense acquisition reform between 1960 and 2009. In the last decade, Congress convened two blue-ribbon committees – the Section 809 Advisory Panel on Streamlining and Codifying Acquisition Regulations and the Commission on Planning, Programming, Budgeting, and Execution (PPBE) Reform – to study the issue further. Others across the policy think-tank community, such as the Atlantic Council, Center for a New American Security, and RAND Corporation, have undertaken their own significant reviews. Throughout, the main challenges – schedule slippages, cost growth, and shortfalls in technical performance – rarely shifted. Nearly every study concluded that the barriers to an improved defense acquisition process, leveraging the entirety of America's innovation ecosystem, derive less from a lack of ideas than from the inability of leaders within Congress and the DoD to change counterproductive incentives for government and industry.

Key Findings

Our overarching recommendation within this report is to address the immediate imperatives of **focused organizational structure**, **cultural optimization**, and **dedicated capital** required for dramatically elevating the DoD's ability to leverage nontraditional vendor capabilities *at scale*.

FOCUSED ORGANIZATIONAL STRUCTURE – Nontraditional vendors still do not know where to start in the DoD procurement system. Without a clear front door, vendors continue to struggle to maneuver through the complex defense landscape, hindered by a lack of familiarity with DoD requirements and priorities – a critical "demand signal" that informs their product development, sales, and capital requirement strategies. Moreover, vendors face limited access to key stakeholders, including buyers, funders, and end-users, which restricts their ability to build relationships and secure contracts. This lack of access and understanding is exacerbated by the DoD's internal acquisition processes, which can be opaque and difficult to navigate.

Recommendation 1**:** Congress and the DoD should expand DIU into a cross-Service 'Sherpa', a guide to the DoD market for commercial industry, capable of providing entry-to-exit support to nontraditional vendors *at scale*. DIU (Sherpa) should be:

- A central hub for nontraditional vendors, including startups, small businesses, and investors.
- Resourced with data and AI tools to conduct commercial market research.
- Staffed with cross-Service and independent acquisition and technology experts.
- Empowered to identify and procure commercial solutions for pressing end-user needs.
- Recognizing innovation and investment professionals and rewarding innovation efficiency.
- Evaluating the DoD innovation ecosystem based on tangible key performance indicators.

Details in Appendix A.

CULTURAL OPTIMIZATION – The DoD still lacks the appropriate culture for doing business with nontraditional vendors. Vendors have difficulty adapting to an arcane, multilayered system of acquisition approval and certification processes – from confusing proposal submission and data rights policies to burdensome security clearance requirements which, even in the best-case scenarios, can add months or years to gaining DoD market entry. Vendors struggle to obtain Authority to Operate (ATO) IT security accreditation, worry about oversharing intellectual property, and incur significant costs to ensure compliance with a complex federal regulatory landscape. These barriers limit their direct contact with end-users and mission partners, dramatically extending the development-to-procurement lifecycle and reducing the likelihood of a successful technology transition.

Recommendation 2: Train the DoD acquisition workforce on relational contracting. A multifaceted approach is necessary to foster a culture and mindset shift prioritizing collaboration and empathy:

- Establish metrics for contracting officers on empathy and communication.
- Train Program Executive Offices (PEOs) on balanced proposal pricing, particularly in firm-fixed-price contracts.
- Educate nontraditional vendors on the importance of asserting data rights.
- Offer advanced training opportunities focusing on true commercial pricing practices.

Recommendation 3: Eliminate burdensome, confusing, or lengthy contracting. The DoD needs decisive leadership to create a more industry-friendly acquisition environment:

- Implement DoD-wide standardized proposal formats that mirror commercial practices.
- Streamline solicitation processes per Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) policies and implement a "tiger team" review.
- Eliminate Defense Contract Audit Agency (DCAA) audits and accounting reviews for firm-fixed-price contracts under $2 million.
- Require PEOs to justify contracts with market research in accordance with the Federal Acquisition Streamlining Act (FASA), 10 U.S.C. 3453, and Federal Acquisition Regulations (FAR) Part 10.
- Educate vendors on differences between traditional and Middle Tier of Acquisition pathways.

Recommendation 4: Maintain clarity on tradeoffs across cost, schedule, and performance. Establish a deliberative process for making trades and mitigating risks:

- Establish a Nontraditional Vendor Investment Review Committee overseen by the Office of Cost Assessment and Program Evaluation (CAPE).
- Implement a bifurcated review process for traditional and nontraditional vendor capabilities.
- Develop a transparent process for identifying and documenting "Big R" vs. "little r" requirements.
- Adopt a product management-based approach to cost assessment and program evaluation.

Recommendation 5: Commit to procuring and fielding five to ten game-changing capabilities inside 2027. Embrace a minimum viable product (MVP) mindset to prevent Chinese overmatch:

- Convene a closed meeting (a "First Breakfast") to secure commitments for Congress to fund and the DoD to procure and field a focused set of emerging capabilities inside 2027.
- Grant the Office of Strategic Capital (OSC) "skin in the game" equity financing authority.
- Enhance DIU (Sherpa)'s ability to conduct deep-tech use cases with OSC, DARPA, the Strategic Capabilities Office (SCO), etc.
- Leverage DIU (Sherpa), AFWERX, NavalX, Army xTech, SOFWERX, etc. partnerships with external tech scouts, acquisition advisors, venture capitalists, and other subject matter experts.
- Disrupt the Service labs with Air Force Research Lab (AFRL) Vanguard-like initiatives and Army Futures Command/Rapid Capabilities and Critical Technologies Office (RCCTO)-like constructs.
- Require programs to maintain a basic bill of materials and understanding of their supplier lists.
- Establish a program of record for DoD-wide supply chain risk management.

Recommendation 6: Establish a speedy and efficient security clearance process for nontraditional vendors. The Defense Counterintelligence and Security Agency (DCSA) lacks the authority to oversee DoD-level relationships across personal, physical, and industrial security:

- Establish a central credentialing authority overseen by DCSA, including relevant agencies (e.g., Defense Intelligence Agency (DIA) and National Security Agency (NSA)), to manage personal, physical, and industrial security of SCIFs across the DoD.
- Update and tailor Intelligence Community Directive (ICD) 705 Standard Sensitive Compartmented Information Facility (SCIF) requirements to the needs of nontraditional vendors.

- Scale DIU (Sherpa)'s fractional Facility Security Officer (FSO) initiative, DARPA's Bringing Classified Innovation to Defense and Government Systems (BRIDGES) program, and similar efforts.
- Invest in coworking-style SCIF infrastructure and allow nontraditional vendors greater access to other existing classified facilities such as underutilized government storage hubs.
- Establish enduring clearance reciprocity with the option for clearance holders to pay for continuous vetting following departure from duty.

Recommendation 7: Implement an *ex post* instead of *ex ante* approach to risk in IT, cloud, and network security for nontraditional vendors. The DoD Chief Information Officer (CIO) must foster true reciprocity allowing vendors to "comply once, sell many" in order to drive competition, reduce costs, and improve quality of service:

- Ensure the ATO process remains a top priority for the Secretary of Defense and establish a senior leader "tracking group" to collect data on time to ATO under the new guidance and processes.
- Update the DoD CIO "Cybersecurity Reciprocity Playbook" to ensure it does not perpetuate a culture of non-reciprocity.
- Adopt the Federal Risk and Authorization Management Program (FedRAMP) for DoD unclassified networks rather than maintaining separate, *sui generis* risk management standards.
- Waive Cybersecurity Maturity Model Certification (CMMC) requirements for larger vendors that are already compliant with FedRAMP and DoD-specific Cloud Computing Security Requirements Guide (CC SRG) standards.
- Leverage continuous ATO (cATO) approaches using commercial continuous monitoring (CONMON) tools, focusing on maturity assessments of tactics, techniques, and procedures.

Details in Appendix B.

DEDICATED CAPITAL – Nontraditional vendors have difficulty accessing dedicated capital as they invest resources to transition their prototypes to production. Despite successfully developing innovative solutions, these vendors struggle to scale quickly to meet the needs of the warfighter while satisfying their investors. The complexities of the PPBE resource programming process, a lack of clear guidance and support for SBIR/STTR Phase III contracting, and uncertainty around post-SBIR/STTR funding opportunities exacerbates these production challenges.

Recommendation 8: Reauthorize the DoD SBIR/STTR program with reforms to improve the rate of Phase III transitions for companies with a viable commercial and defense product, eliminating "SBIR mills" that treat the program as a business in itself:

- Re-establish the Rapid Innovation Fund (RIF), now known as the Rapid Integrated Scalable Enterprise (RISE) program, as a unified stopgap measure to address the longstanding concerns with SBIR/STTR Phase III funding. This would provide immediate support to industry while Congress investigates the possibility of creating a permanent DoD SBIR/STTR Phase III program, which could be funded from a variety of sources, including additional appropriations or pooled funds from existing programs.
- Establish a dedicated "Oasis Fund" within each Service, complementing the permanent SBIR/STTR Phase III program with a separate additional vehicle for Service Acquisition Executives to invest in promising nontraditional vendors. Rather than being filled through a separate appropriation or taxing existing Service programs, leverage decolorized End-of-Fiscal-Year (EoFY) contingency readiness funds comprising over $15 billion in (often poorly managed) Service appropriations.

- Require enforcement of Open Topic legitimacy, a minimum funding level, and an independent third-party validation that Open Topics conform to GAO's definition.
- Implement commercialization benchmarks and penalties for "SBIR mill" companies failing to demonstrate sufficient non-SBIR/STTR revenue.
- Adjust size standards for companies eligible for SBIR/STTR awards: 200 employees for Phase I and 1,000 employees for Phase II.
- Institute shot clocks for SBIR/STTR Phase I or II contract notifications and awards.
- Direct the FAR Council to include SBIR/STTR Phase III authority in the FAR.
- Require SBIR/STTR Phase III training for all DoD contracting officers.
- Enforce market research practices and incentives to find commercial items and SBIR/STTR products that meet DoD needs more efficiently.
- Introduce incentives for leveraging open standards and prohibiting proprietary interfaces to encourage prime contractors to adopt commercial technology.

Details in Appendix C.

Appendix A: Focused Organizational Structure

Nontraditional vendors still do not know where to start in the DoD procurement system. Without a clear front door, vendors continue to struggle to maneuver through the complex defense landscape, hindered by a lack of familiarity with DoD requirements and priorities – a critical "demand signal" that informs their product development, sales, and capital requirement strategies. Moreover, vendors face limited access to key stakeholders, including buyers, funders, and end-users, which restricts their ability to build relationships and secure contracts. This lack of access and understanding is exacerbated by the DoD's internal acquisition processes, which can be opaque and difficult to navigate.

At the heart of these challenges lie the DoD's Program Executive Offices (PEOs) and incentive structures surrounding them, which dictate major acquisition decision-making within the Military Departments. A structure adopted on the basis of the 1986 Packard Commission[7], the result of mounting accusations of waste and mismanagement in defense acquisitions during the 1980s, PEOs were originally intended to streamline and focus Service procurement efforts, cut through bureaucratic red tape, and reduce nebulous requirements. However, as major defense firms consolidated after the Cold War, the PEOs inadvertently created a system which disincentivizes risk-taking born from additional layers of regulatory oversight and complexity, deterring new companies from entering the DoD market and, by no fault of their own, fostering a set of conditions for incumbents in the space to eat their competition. Meanwhile, new rules like the 1994 Federal Acquisition Streamlining Act (FASA), which aimed to counter the effects of industrial base consolidation and make it easier for acquisition managers to procure commercial goods and services, have been egregiously violated and proven largely ineffectual at lowering the barriers to entry into the defense sector.

The result – monopsonistic structures that conceal true costs and drive down quality – is quickly reversible. During World War II and the Cold War, the Services engaged in intense competition to produce the best capabilities, regardless of who built them. For a vendor operating within this continuously evolving procurement environment, past performance was no guarantor of future contractual obligation. Investments shifted rapidly toward the most promising technologies, led by long-term acquisition heads who took on large and risky bets, oversaw programs to completion rather than in frequent rotations, and amassed significant personal authority as the successes grew.[8]

Replicating these outcomes is achievable by empowering the Service Acquisition Executives (another product of the Packard Commission) to drive risk-taking within their respective Military Departments, competing PEOs and other acquisition managers against one another based on cost, schedule, and performance incentives that are aligned with the priorities of the dual-use technology ecosystem writ large, and rewarding both wins and failures for their respective contributions to advancing the mission. While the Packard Commission's recommendations to improve acquisition structures were sound when the defense industrial base was large and diverse, after defense industry revenues narrowed during the 1990s, and as commercial R&D continued to outstrip DoD-funded (including defense sector) R&D, their adoption has had gradual unintended consequences for our industrial base competitiveness, which our servicemembers are only now reckoning with.

As the Secretary of Defense's principal staff assistant for innovation since April 2023, the Defense Innovation Unit (DIU) has grown into a significant driver of reforms to procurement incentive structures,

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[7] President's Blue Ribbon Commission on Defense Management. (1986, June). A Quest for Excellence (David Packard). https://www.cia.gov/readingroom/docs/CIA-RDP90-00530R000400890003-3.pdf

[8] Shyam Sankar / Palantir. (2024, October 31). The Defense Reformation. https://www.18theses.com/

working with the Services to better engage nontraditional vendors and acquire commercial off-the-shelf items where appropriate. With its re-elevation as a direct report to the Secretary, enhanced local presence, focus on non-Federal Acquisition Regulation (FAR)-based alternatives to cost-plus contracting, and embeds strategically placed at key Combatant Commands, DIU now heads a growing ecosystem of around 300 Service- and Combatant Command-level innovation organizations seeking to disrupt the system from within. DIU is well-positioned to continue catalyzing the DoD's future engagement with nontraditional vendors.

However, DIU still requires additional staffing and infrastructure to provide an end-to-end "concierge service" for nontraditional vendors *at scale*. Congress's Fiscal Year (FY) 2024 $983 million "hedge" investment in DIU was an important milestone for an organization with a history of modest funding and top cover.[9] Today, as the principal staff support to the Deputy's Innovation Steering Group and the chair of the Defense Innovation Working Group, DIU plays an important role in "quarterbacking" the process of accelerating delivery of innovative capabilities for the warfighter. This is demonstrable through its leadership in the Replicator Initiative, the DoD's effort to transform internal processes for procuring unmanned systems by August 2025.[10] DIU must continue building on the governance processes put in place through Replicator, growing its centrifugal role in identifying and bringing aboard commercial technologies while catalyzing others across the Services – especially the PEOs – to do the same.

Scaling DIU with further infusions of 'Series C' investment from Congress, beyond its FY 2024 $983 million appropriation, will be necessary to achieve these goals. The growing success of founder-driven startups has begun to attract commercial companies and investors to the DoD, but sustaining this momentum will require more "wins" (or "points on the board," as DIU Director Doug Beck frequently underscores) to justify continued investment.[11] Despite attracting more than $130 billion in venture backing to the DoD market since 2021, dispersed across roughly 100 defense startups founded during this same period, thus far only a handful of nontraditional vendors are beginning to demonstrate the ability to achieve production at scale.[12]

With DIU enjoying robust bipartisan support on Capitol Hill, the next Secretary of Defense should seize this opportunity to capitalize on Congress's enthusiasm for DIU's mission. Rather than scaling back investments, the DoD should build on the momentum of DIU's FY 2024 budget to further expand its capabilities and connections to the nontraditional vendor ecosystem.

Recommendation 1: **Congress and the DoD should expand DIU into a cross-Service 'Sherpa', a guide to the DoD market for commercial industry.** This entity should serve as a central hub for nontraditional vendors, capable of providing entry-to-exit support to new market participants *at scale*. It should be staffed with cross-Service and independent acquisition experts, resourced with data and AI tools, and empowered to identify and procure commercial solutions for pressing end-user needs. It should also evaluate innovation organizations based on a standard set of incentives and metrics, streamlining the existing DoD innovation ecosystem.

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[9] Defense Innovation Unit (DIU). (2024, June 20). DIU Announces Strategic Allocation of 2024 Budget and Plan to Scale Commercial Tech Adoption. https://www.diu.mil/latest/diu-announces-strategic-allocation-of-2024-budget-and-plan-to-scale

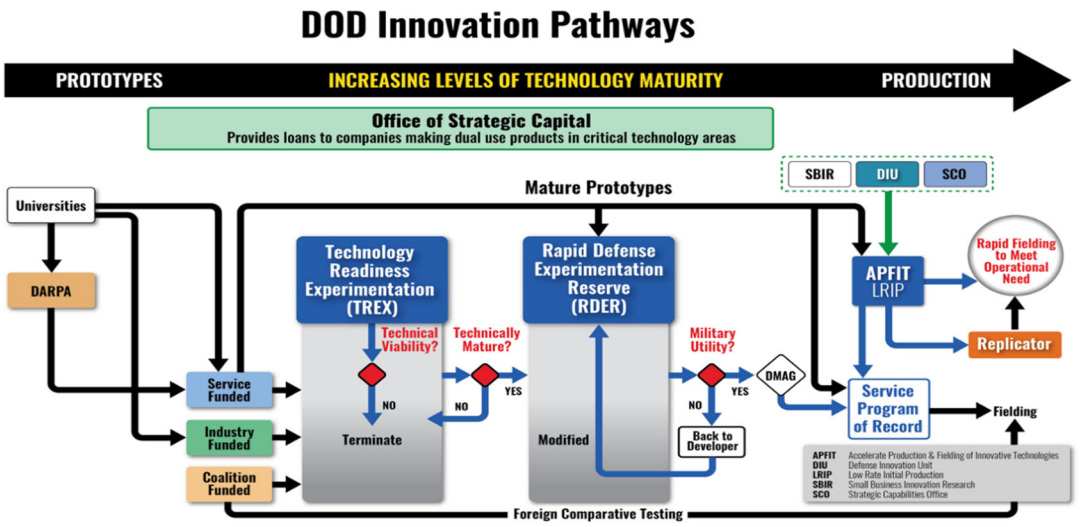
[10] Defense Innovation Unit (DIU). (2023, November 30). Implementing the Department of Defense Replicator Initiative to Accelerate All-Domain Attritable Autonomous Systems to Warfighters at Speed and Scale. https://www.diu.mil/latest/implementing-the-department-of-defense-replicator-initiative-to-accelerate

[11] The Aspen Institute. (2023, July 19) Doug Beck, Aspen Security Forum Panel Discussion. (Addressing Today's Threat and Ensuring Tomorrow's Edge: Accelerating Capabilities for the DoD). https://www.youtube.com/watch?v=WXO3zPucBcg

[12] Heather Somerville / The Wall Street Journal (WSJ). (2024, January 25). Investors are Betting on Defense Startups. The Pentagon Isn't. Tech startups get cool reception from Defense Department despite its rhetoric that it will buy more from Silicon Valley. https://www.wsj.com/tech/defense-startups-risk-becoming-failed-experiment-without-more-pentagon-dollars-dc9e663a?msockid=3b4a9539e9d767b51455805ce8946689

A Front Door for Nontraditional Vendors

DIU along with its **National Security Innovation Network (NSIN)** and **National Security Innovation Capital (NSIC)** sister organizations are pursuing a distributed approach to working with nontraditional vendors, leveraging their local presence and expertise in the DoD Other Transaction Authority (OTA) under 10 U.S.C. 4021 and 4022 to drive innovation across the Services and encourage the use of nontraditional acquisition pathways to get commercial capability on contract rapidly. Through its Commercial Engagement Team, regional network of Defense Innovation OnRamp Hubs, collaboration with the Department of Commerce Economic Development Administration's Tech Hubs, and new Joint Defense Innovation workspace in Austin, Texas, DIU is systematically expanding the defense innovation ecosystem and making it easier for nontraditional vendors to enter the DoD market. DIU additionally has a network of liaisons and embeds across five of the seven geographic Combatant Commands, including deep embeds at European Command (EUCOM), Security Assistance Group-Ukraine (SAG-U), and Indo-Pacific Command (INDOPACOM). Since September 2023, it has helped manage the Deputy's Innovation Steering Group, developed new governance processes for partnering with the Services to scale procurement of commercial capabilities addressing critical warfighter problems, and collaborated with international partners such as Japan, United Kingdom, Australia, Singapore, France, India, Taiwan, and Ukraine to strengthen their engagement with nontraditional vendors. DIU's efforts are having real-world impact. Dozens of products created by DIU portfolio companies are being used on Ukraine's front lines. Since DIU pioneered the Commercial Solutions Opening (CSO) process, more acquisitions are being made through DIU's streamlined pathways, with over $70 billion in purchases since. Under DIU's stewardship, the DoD is accelerating procurement of critical dual-use technologies, such as cutting-edge AI-enabled tools, uncrewed and autonomous systems, and space launch vehicles, to ensure that commercial solutions are deployed to the field rapidly and smartly, in tandem with traditional weapons systems.



Highlights the complexity of existing systems.

Source: Department of Defense

Beyond its primary objective to create a more accessible defense acquisition environment for nontraditional vendors, the Sherpa would hold the following goals, to:

- **Raise Awareness and Education** – reducing the knowledge gap between companies and customers by training and equipping vendors and mission partners with tools to evaluate product-requirement fit, locate appropriate funding, and mechanize new contracts.
- **Scale Rapid Prototyping** – assisting a larger pool of companies prototype faster by establishing a staff of customer-capability managers, fractional Facility Security Officers (FSOs), and solutions to streamline the Authority to Operate (ATO) IT security accreditation process.
- **Quantify Service Demand-Signal** – helping smaller companies scale by systematically tracking the potential return on investment for nontraditional vendors as they transition from prototype to production contracts, leveraging data and AI to inform future investment decisions.

Several steps should be taken to fully activate the Sherpa:

1. **Invest in Commercial Market Research Tools:** Leverage AI and machine learning tools to make sense of the commercial and dual-use markets, with advanced software to manage and continually extract data from the Sherpa's interactions with vendors, end-users, mission partners, private capital, and others. A one-stop, AI-enabled commercial market research and due diligence cell within the Sherpa should be empowered to identify and procure commercial solutions for the most pressing end-user needs in accordance with the market research requirements of the Federal Acquisition Streamlining Act (FASA), 10 U.S.C. 3453, and FAR Part 10.
2. **Staff Cross-Service and Independent Experts:** Establish an agile staff of cross-Service contracting officers, third-party tech scouts, and other independent subject matter experts to improve the Service acquisition workforce's understanding of non-FAR-based funding vehicles, such as the DoD Other Transaction Authority (OTA). In particular, the Sherpa should oversee the adoption of a DIU Commercial Solutions Opening (CSO)-like process within every Service PEO and provide greater oversight of OTA funding as prototype vendors transition to production.
3. **Establish Direct-to-Solution Pathways:** Oversee DoD-wide investment in competitive and post-competition direct-to-solution pathways, such as the Chief Digital and AI Office (CDAO) Tradewinds Ecosystem and Solutions Marketplace, which leverages CSO processes, OTA vehicles, and Broad Agency Announcement (BAA) procedures to match vendors to end-users, identify contracting opportunities, and complete awards within days.
4. **Create Collaborative DevSecOps Environments:** Oversee DoD-wide establishment of new collaborative development, security, and operations (DevSecOps) environments for coding and problem-solving with prospective and existing vendors to provide industry with unambiguous data about requirements and feedback on potential solutions.
5. **Maintain Democratized Knowledge Repositories:** Consolidate and maintain open knowledge repositories, such as the DoD's Innovation Pathways website and SciTechCONNECT hub, to allow companies to better self-serve. The Sherpa should work continuously across the Office of Small Business Programs (OSBP), Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) Program Office, Office of Strategic Capital (OSC), DARPA Commercial Strategy Office, and others to ensure that related efforts are well-aligned and not duplicative.
6. **Recognize Innovation and Investment Professionals:** Establish "Innovation" and "Investment" as recognized Areas of Practice and Military Occupational Specialties. The Services and Combatant Commands should work with key stakeholders, such as the Defense Acquisition University (DAU) and Defense Civilian Personnel Advisory Service (DCPAS), to evaluate their Innovators and Investors based on metrics that may be clearly understood and audited both inside and outside of the DoD.
7. **Establish Incentives for Innovation Efficiency:** Evaluate and empower the Defense Innovation Community of Entities (DICE) using a tangible set of key performance indicators (KPIs), such as response time, customer satisfaction, successful matches made, sales volume resulting from introductions, dollar value of custom development programs eliminated, acceleration of timeline to warfighter delivery, commercial sales, and more. Based on these KPIs, reward competitive performers with additional funding, join strong performers with struggling performers (particularly where clear win-win benefits exist), and encourage limited resources to flow toward effective innovators elsewhere.

An enhanced and fully resourced DIU (Sherpa) would dramatically open Office of the Secretary of Defense (OSD) contract administration to new solutions and approaches for removing the barriers to

entry facing nontraditional vendors. Current DoD programs are still not adequately incentivized to complete projects under budget or ahead of schedule by expanding the industrial base or purchasing commercial “off-the-shelf" items. While OSD does not represent its own customer base in the defense market aside from its fourth-estate agency and field elements, its unique authorities and centralized convening power can reshape and accelerate the investment mission across the Services. An OSD office with parallel mission areas, resources, and personnel should rapidly evolve current investment decision-making, with the goal to sunset upon successfully disrupting the system.

Appendix B: Cultural Optimization

The DoD still lacks the appropriate culture for doing business with nontraditional vendors. Vendors have difficulty adapting to an arcane, multilayered system of acquisition approval and certification processes – from confusing proposal submission and data rights policies to burdensome security clearance requirements. Vendors struggle to obtain Authority to Operate (ATO) IT security accreditation, worry about oversharing intellectual property, and incur significant costs to maintain compliance with a complex and growing federal regulatory landscape. These barriers limit their direct contact with end-users and mission partners, dramatically extending the development-to-procurement lifecycle and reducing the likelihood over time of a successful technology transition.

The DoD faces significant challenges in reversing these barriers, including an entrenched climate of risk aversion and a lack of empathy and understanding for the needs and limitations of nontraditional vendors. First, contracting officers often lack the training and mindset to engage vendors effectively, leading to breakdowns in communication and a mutual lack of trust. Second, procurement decisions remain overly driven by a capability's technical maturity rather than a vendor's holistic contributions to the DoD's fiscal health and warfighting advantage, leading to frequent cost overruns and schedule delays. Meanwhile, the continued focus on technology adoption and transition rates as key metrics for success – i.e., how quickly can capability get on contract and to the field – may overlook two, more fundamental and strategic questions regarding (a) where should the DoD prioritize its dual-use technology investment, and (b) how should the system quantify and demonstrate to commercial industry this demand-signal over time as requirements shift? Despite their growing interest in defense, the commercial markets still struggle to identify what specific technologies and sectors have the most DoD funding opportunities and longer-term financial commitment.

To overcome these challenges, the DoD needs to adopt a procurement mindset centered on "relational contracting,"[13] prioritizing mutually beneficial partnerships and creating streamlined, flexible RDT&E pathfinders and PPBE processes for accommodating the unique needs and capabilities of nontraditional vendors. It needs to become more expeditionary and accommodating to external stakeholders, and overhaul the way capabilities are identified, selected, and funded. Capability opportunities should be commonplace, agility should be hammered into program portfolios and colors of money, and incentives for disruptive practices, such as collaborating with venture-backed startups and automating parts of the certification process, must be promoted broadly. It should not take as many as 25 full-time employees, 12 months, and millions of dollars to prepare a proposal for the average cost-plus DoD contract – whereas a similar commercial contract requires only 3 part-time employees, 2 months, and thousands of dollars.[14]

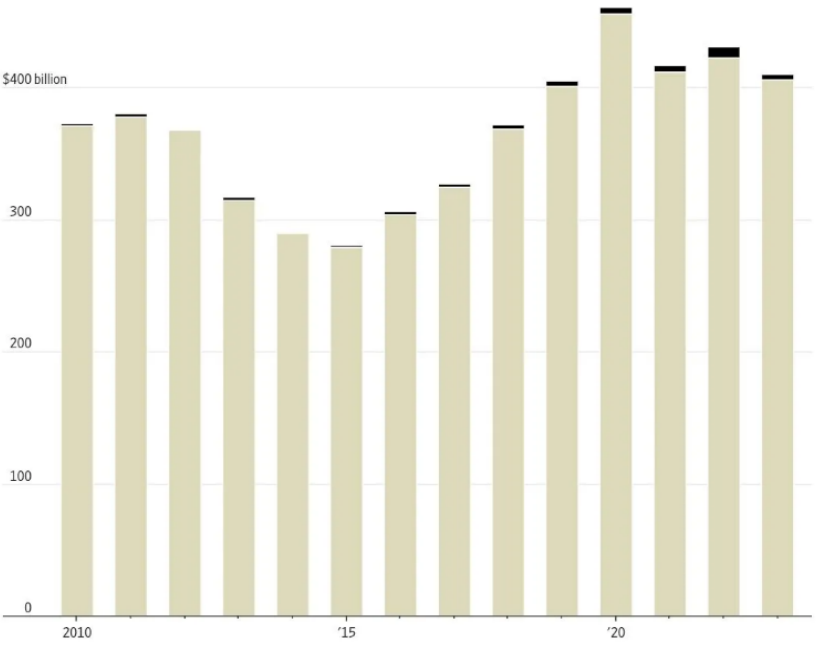
[13] Contracting leaders emphasized during DIB interviews that there needs to be greater education and training for those involved in DoD award selections or contracting in general with small businesses, venture-backed startups, and other nontraditional vendors. One subject recommended that acquisition training should shift from transactional to relational contracting, i.e., a culture and mindset change that emphasizes looking out for a contractor as much as looking out for the taxpayer, rather than an approach that preaches "win-win" negotiations yet takes advantage of ignorance of government contracting rules. Another subject recommended that contracting officers should be required to take a course by an actual venture capitalist or startup operator (rather than a contractor researching and interpreting how startups work) on how startups are funded, how they pay their bills, and how private capital works.

[14] Commission on Planning, Programming, Budgeting, and Execution Reform. (2024, March 6). Defense Resourcing for the Future Final Report. https://ppbereform.senate.gov/finalreport/

Re-coupling the Defense and Commercial Innovation Ecosystems

The U.S. defense industry significantly downsized after a sudden meeting at the Pentagon in 1993 known as the "Last Supper," where the heads of the major defense firms were warned that with substantial post-Cold War defense budget cuts on the way, many of their companies would not survive. As this climactic event led to a flurry of mergers and acquisitions by the nation's largest defense contractors, Congress passed the 1994 Federal Acquisition Streamlining Act (FASA) to in turn make it easier for other firms to enter the DoD market. Although FASA introduced mandates for the DoD to use commercial off-the-shelf alternatives to bespoke capabilities and for acquisition managers to place more bets on new technologies and companies, its weak enforcement during the ensuing years resulted in the defense sector's gradual decoupling from the broader commercial private sector.

As the DoD's procurement dollars were diverted to its five biggest primes, the commercial innovation ecosystem's interest in developing dual-use technologies, much less working directly in defense, waned. At the time of the Soviet Union's collapse, approximately 75 percent of the DoD acquisition budget was distributed to commercial, dual-use manufacturers.[15] Today, roughly 10 percent of the defense acquisition budget (an estimated $411 billion in FY 2023 according to data from Govini) is allocated to commercial companies, and less than one percent goes to venture-backed startups, while the rest of the funds go to traditional defense-specialized vendors.[16] Although nearly three-quarters of defense contractors were classified as small businesses when the DoD published its last *Small Business Strategy* in 2023, they collectively receive a minority of DoD contract obligations, and unsurprisingly, the number of small businesses participating in the defense industrial base has continued to decline precipitously.[17]



Source: Govini via Wall Street Journal

The DoD's basic decoupling from commercial industry has had several catastrophic outcomes for its industrial base:

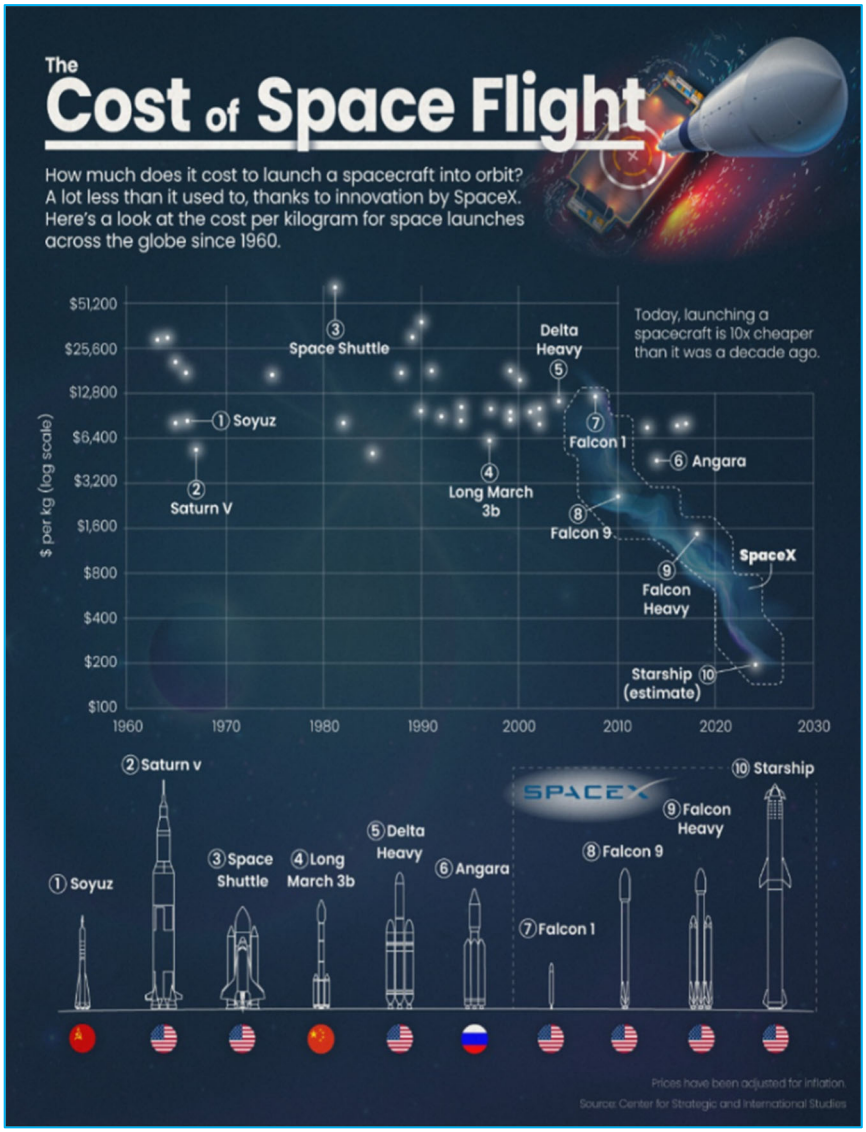
- **Limited Innovation** – overreliance on cost-plus contracts discouraging meaningful investment in game-changing technologies and new manufacturing techniques.
- **Inefficient Use of Resources** – for "exquisite" systems with fixed requirements leading to years of planning and investment with no guarantee of military purchase and wasted funds.
- **Stagnant Price Performance** – stifled competition resulting in defense costs growing faster than inflation, without achieving proportionate price performance decreases.

[15] Shyam Sankar / Palantir. (2024, October 31). The Defense Reformation. https://www.18theses.com/

[16] Ibid; Matt Macgregor and Pete Modigliani / Substack. (2024, January 28). Defense Tech and Acquisition News. https://defenseacquisition.substack.com/p/defense-tech-and-acquisition-news-5ec

[17] U.S. Department of Defense. (2023, January 26). Small Business Strategy. https://www.defense.gov/News/Releases/Release/Article/3279279/dod-releases-small-business-strategy/

Commercial companies, such as SpaceX, have demonstrated the ability to return radical innovation and cost savings to the defense industry, often in the face of stark product development, sales, and capital requirement challenges. Leveraging commercial contracting approaches, SpaceX has achieved remarkable performance improvements and cost declines, with the Falcon 9's launch costs in 2010 falling to $2,500 per kilogram and the Falcon Heavy in 2018 reaching $1,500 per kilogram. Over time, the Starship rocket is anticipated to reduce launch costs 100x over the Falcon 9, and 1,000x over traditional cost-plus launch alternatives in the DoD market.[18] The SpaceX example highlights the importance of embracing firm-fixed-price models, performance-based incentives, agile and modular techniques, and other collaborative approaches to technology development and procurement.



SpaceX's successes have come at a high cost. Stringent government licensing and review processes frequently interfered with its ambitious timelines, while the competitive and litigious nature of government contracting diverted valuable resources from immediate projects. On occasion, SpaceX's rapid pace of innovation outstripped its adherence to regulatory frameworks, clashing with entrenched oversight structures and requiring the resources and clout of its high-profile founder to overcome typical bureaucratic inertia. As SpaceX ventured into important missions with its commercial Starlink system, which has been militarized to provide secure internet access in contested environments and to enhance U.S. strategic nuclear deterrence capabilities, the company has had to balance new equities and priorities, and exercise discretion and good judgment, all while continuing to deliver advanced capability for its consumers and mission partners in a high-demand environment.

Although amplified by its rapid growth in global influence, SpaceX's struggles with the U.S. government are not unique within the DoD's nontraditional vendor ecosystem. While the company's journey to becoming a major disruptive force in the space domain may be difficult to replicate for other nontraditional vendors, its efforts to revolutionize DoD contracting are applicable to less-resourced companies competing with the established defense primes in other areas. SpaceX's over 20-year transformation – from the difficulty it faced acquiring its first major military satellite launch contract in 2015, to becoming a key service provider for connected systems used by the Ukrainians in their defense against Russia – highlights that new defense companies must demonstrate flexibility, ingenuity, and risk-taking beyond what can be expected in other sectors.

Yet, many in the DoD are still failing to leverage total addressable market potential, with requirements, acquisition plans, and budgets that weigh military needs alongside commercial ones. SBIR/STTR and Service research lab contracts continue to fail to indicate future recurring revenue opportunities, which

[18] Pierre Lionnet / Space News. (2024, June 7). SpaceX and the Categorical Imperative to Achieve Low Launch Cost. https://spacenews.com/spacex-and-the-categorical-imperative-to-achieve-low-launch-cost/

are built separately in each Component's Program Objective Memorandum (POM), or five-year budget submit. Rather than systematically tiering its investments to produce completed products, not just mostly prototypes, the DoD continues to overspread its RDT&E spend, placing too many small prototyping bets that fall short of productizing, are ineligible for colors of money, and force productization to shift toward private investors who are not suited to judge DoD product-market fit.

Recommendation 2: **Train the DoD acquisition workforce on relational contracting.** A multifaceted approach is necessary to foster a culture and mindset shift that prioritizes collaboration, empathy, and understanding in all interactions, including sourcing and deal selections, pricing, and data rights. Mobilize organizations, such as DIU (Sherpa), AFWERX, and OSC, that already focus on facilitating end-user/customer introductions, matching products to DoD needs, and mechanizing contracts for nontraditional vendors, to train the Service PEOs on the necessary tools and practices for accelerating the time it takes to get dual-use capabilities on contract and to the field.

1. **Metrics on Empathy and Communication:** Ensure that contracting officers are trained to work effectively with nontraditional vendors, emphasizing empathy, patience, and open communication. This includes being responsive to questions, available for meetings, and willing to guide contractors through complex policies and regulations, even after the completion of market research. Establish metrics for incentivizing and evaluating these behaviors in the workforce.
2. **Balanced Proposal Pricing:** Educate PEOs on the importance of finding a balance in proposal pricing when working with nontraditional vendors, particularly in firm-fixed-price contracts for R&D projects. This balance is crucial to avoid underbidding and potential financial strain due to the uncertainties and escalating costs often associated with R&D.
3. **Protect Core Data Rights:** Educate nontraditional vendors on the importance of asserting their data rights, which is critical for their commercialization and growth. Implement an approach that prioritizes mutual benefits and protects the interests of both the government and contractors, ensuring that vendors are not pressured into giving up their core data rights.
4. **Commercial Pricing Practices:** Offer advanced training opportunities that focus on true commercial pricing practices, moving beyond traditional FAR Part 15 pricing methods. This includes evaluating pricing practices used in the commercial sector and eliminating the reliance on full cost element breakdowns, which can hinder effective collaboration with nontraditional vendors unfamiliar with the DoD's normal practices. Update DoD "guides" that are supposed to help with commercial pricing but that still cling to the idea of full cost breakdowns.

Recommendation 3: **Eliminate burdensome, confusing, or lengthy contracting.** The current state of DoD acquisition reform indicates that efforts such as the Adaptive Acquisition Framework (AAF), the Pentagon's updated 5000 series policies, have yielded mixed results.[19] Established primes report seeing benefits from the AAF while nontraditional vendors, including startups and smaller businesses, express continued concerns over their complexity and inflexibility. The FY 2025 National Defense Authorization Act (NDAA) includes provisions for allowing programs undertaken through the AAF's Middle Tier of Acquisition (MTA) pathway to be executed in perpetuity provided they deliver capability every five years. However, in its latest annual assessment of weapon systems acquisition, the Government Accountability Office (GAO) found that MTA projects, although designed to introduce flexibility and speed to the acquisition process, also continued to report delays in delivering initial capability. GAO concluded that most MTA projects are reverting to traditional lengthy, waterfall

[19] Government Accountability Office (GAO). (2024, December). DoD Acquisition Reform: Military Departments Should Take Steps to Facilitate Speed and Innovation. https://www.gao.gov/assets/gao-25-107003.pdf

approaches with consecutive five-year schedules for prototyping and further development.[20] The DoD's persistence on GAO's High-Risk List[21] underscores the need for further decisive leadership to create a more agile, responsive, and industry-friendly acquisition environment.

1. **Standardize Proposal Formats:** Implement DoD-wide standardized proposal formats that mirror commercial practices, such as pitch decks and commercial proof-of-concept contracts. This simplification will facilitate easier navigation for nontraditional vendors and reduce the barriers to entry for new market participants.
2. **Shorten Solicitations:** Streamline solicitation processes in accordance with SBIR/STTR precedent mandating simplified solicitations to reduce the administrative burden and make it easier for nontraditional vendor applicants to understand their requirements. Implement a "tiger team" to review and redline existing requirements, ensuring that only essential information is requested, as exemplified by the SBIR/STTR policy's outline of required sections, which does not exceed 20 pages.
3. **Eliminate Unnecessary Reviews:** Openly discourage or prohibit the use of unnecessary, burdensome, time-consuming, and costly reviews, such as Defense Contract Audit Agency (DCAA) audits and accounting system reviews, which are not required by policy or law for firm-fixed-price contracts under $2 million. Ensure that contracting officers are aware of and adhere to policies that recommend considering such audits only for contracts over $10 million.
4. **Contract Award Justification:** Require PEOs working with DIU (Sherpa) and cross-functional teams to justify contract awards with thorough market research, in compliance with FASA, 10 U.S.C. 3453, and FAR Part 10. This will ensure that contracting decisions are informed, transparent, and fair, fostering trust and collaboration with nontraditional vendors.
5. **Acquisition Pathway Clarity:** Provide clear guidance and transparency on the acquisition pathways used, ensuring that nontraditional vendors are aware of the processes and timelines involved. This includes educating vendors on the differences between traditional and MTA procurement, as well as the benefits and challenges associated with each. Section 832 of the FY 2025 NDAA requires the Services to undertake new acquisition training focusing on the MTA pathway, technology procured "as-a-Service", and other commercial products and services.

Recommendation 4: **Maintain clarity on tradeoffs across cost, schedule, and performance.** Establish a deliberative process for making trades, ensuring that all relevant stakeholders are engaged and that risks are carefully considered and mitigated. Distinguishing between "Big R" and "little r" acquisition requirements is crucial, as the latter can create unnecessary bottlenecks and delays in the intermediate layers of the DoD's compliance bureaucracy. While "Big R" requirements are typically broad and defined in terms of overall operational or mission needs, "little r" requirements – referring to the detailed technical specifications, interfaces, and performance parameters of systems – can have cascading waterfall implications for a system's larger design requirements, leading to excessive gold-plating. Catching and adjudicating these downstream bottlenecks faster and more frequently will streamline acquisition processes and ensure continued buy-in for investments in nontraditional vendors.

[20] Government Accountability Office (GAO). (2024, June 17). Weapons Systems Annual Assessment: DoD is not yet well-positioned to field systems with speed. https://www.gao.gov/products/gao-24-106831

[21] Government Accountability Office (GAO). (2023, April). High-Risk List: GAO's list, updated at the start of each new Congress, of programs and operations that are vulnerable to waste, fraud, abuse, or mismanagement, or in need of transformation. https://www.gao.gov/high-risk-list

1. **Establish a Nontraditional Vendor Investment Review Committee:** Create a central mechanism to continuously review and evaluate investments in nontraditional vendors and their technologies. Overseen by the OSD Office of Cost Assessment and Program Evaluation (CAPE), this Nontraditional Vendor Investment Review Committee would function as a mission-oriented board or panel to elevate issues as they emerge and facilitate an orderly discussion around risks and tradeoffs across cost, schedule, and performance.
2. **Bifurcate the Review Process:** Implement a bifurcated review process that distinguishes between traditional and nontraditional vendor capabilities, acknowledging the unique characteristics and challenges of each. This would enable more effective assessment and management of risks, as well as tailored support for nontraditional vendors as they navigate the DoD's acquisition processes.
3. **Requirements Identification:** Develop a clear and transparent process for identifying and documenting "Big R" and "little r" requirements, ensuring that contracting officers and nontraditional vendors understand the distinctions and implications of each. This would help prevent unnecessary delays and cost growth resulting from blurry or evolving requirements.
4. **Product Management:** Adopt a product management-based approach to cost assessment and program evaluation, focusing on the specific capabilities and technologies being acquired rather than the program as a whole. This would enable more accurate and efficient decision-making across the lifecycle of an acquisition program, as well as better alignment with the needs and priorities of nontraditional vendors.

Recommendation 5: **Commit to procuring and fielding five to ten game-changing capabilities inside 2027.** The DoD must embrace a minimum viable product (MVP) mindset and dramatically accelerate its efforts to field a focused set of emerging capabilities essential to preventing Chinese overmatch during this decisive decade. This requires a fundamental shift from past initiatives and approaches to prototyping and procuring game-changing technologies – including adopting new partnership models, scaling successful initiatives, and disrupting the Service research labs.

1. **Stakeholder Engagement and Commitment:** The next Secretary of Defense should convene a closed meeting with leaders across the DoD, Congress, industry, and investment community to establish the need for disruption and secure commitments for Congress to fund and the DoD procure and field a focused set of emerging capabilities inside 2027. This meeting – call it a “First Breakfast”[22] – would provide a relationship reset helping build trust and confidence across the industrial base, focusing demand-signal around a handful of capabilities, and paving the way for a new collaborative effort designed to establish technological advantage against our adversaries.
2. **Equity Financing Authority:** Grant the Office of Strategic Capital (OSC) “skin in the game” equity financing authority. While the DoD has not historically provided equity funding to commercial companies, game-changing technologies should merit greater investment by government to ensure rapid development, product-market fit, and scaled productization. Designating OSC as the DoD’s traditional investor in transformative capabilities would strengthen industry’s commitment to maintaining U.S. technological leadership.
3. **Enhance Deep-Tech Focus:** Enhance DIU (Sherpa)'s ability to conduct deep-tech use cases in collaboration with OSC, DARPA, the Strategic Capabilities Office (SCO), and other organizations. This would enable the DoD to quickly evaluate emerging technologies that are not yet ready for Service deployment but have the potential to drive significant advancements in the near-term.

[22] Shyam Sankar / Palantir. (2024, October 31). The Defense Reformation. https://www.18theses.com/

3. **Leverage Commercial Partnerships:** Leverage commercial partnerships such as DIU (Sherpa), AFWERX, NavalX, Army xTech, Army Applications Lab, and SOFWERX's external tech scouts, acquisition advisors, venture capitalists, and other independent subject matter experts. Alongside key initiatives such as DARPA's Regional Commercial Accelerator network[23] and OSBP's Mentor-Protégé Program[24] and APEX Accelerators[25], these partnerships have shown promise in accelerating the procurement of innovative technologies and expanding them will help unlock the industrial base's full potential inside 2027.
4. **Disrupt the Service Labs:** Disrupt the Service research labs to accelerate the development of commercial technologies while developing military-unique ones. This could involve placing routine large bets using programs resembling Air Force Research Lab (AFRL) Vanguard initiatives[26] and considering an Army Futures Command/Rapid Capabilities and Critical Technologies Office (RCCTO)[27] construct to ensure investment facilitation is targeted and has top cover.
5. **Supplier Bill of Materials:** Require programs to maintain a basic bill of materials and understanding of their supplier lists, enabling better supply chain management and risk mitigation. This would help the DoD identify and address potential vulnerabilities in their industrial supply chains, ensuring the resilience and reliability of critical systems and technologies. Section 849 of the FY 2025 NDAA directs the Secretary of Defense to introduce incentives for establishing transparency and visibility into defense industrial supply chains.
6. **Supply Chain Risk Management:** Establish a program of record for supply chain risk management to strengthen the DoD's commercial, dual-use, and nontraditional supply chain resiliency. This would help improve supply chain understanding from both an economic security perspective and a contract negotiation standpoint, enabling the DoD to make better-informed contract decisions and reduce risks associated with supply chain disruptions.

Recommendation 6: **Establish a speedy and efficient security clearance process for nontraditional vendors.** The current system, managed by the Defense Counterintelligence and Security Agency (DCSA), lacks the authority to oversee DoD-level relationships across personal, physical, and industrial security, imposing undue limits on vendor access to sensitive information and facilities. *Ex ante* security requirements, particularly during the proposal stage of a project, can be a significant barrier to entry, highlighting the need for a more flexible and adaptive clearance system. For context, on average, it can require 95 to 249 days to get secret or top secret-level clearance, and most nontraditional vendors take at least three months, often longer, to gain facility access.[28] Creating a more inclusive and innovative security ecosystem will enable nontraditional vendors to collaborate better with their DoD customers, with one another, and with established primes.

1. **Central Credentialing Authority:** Establish a central credentialing authority, overseen by DCSA with other relevant agencies, to manage personal, physical, and industrial security of Sensitive Compartmented Information Facilities (SCIFs) across the DoD. This would facilitate engagement

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[23] Defense Advanced Research Projects Agency (DARPA). (2024, August 22). DARPA Launches Regional Commercial Accelerator. https://www.darpa.mil/news/2024/regional-commercial-accelerators

[24] DoD Office of Small Business Programs (OSBP). Mentor-Protege Program (MPP). https://mpp.acq.osd.mil/mpp/#/

[25] Office of the Under Secretary of Defense for Acquisition and Sustainment (A&S). APEX Accelerators. https://www.acq.osd.mil/asda/dpc/ce/p2p/docs/training-presentations/2023/APEX%20Accelerators.pdf

[26] Air Force Research Lab (AFRL). Air Force Vanguards. https://afresearchlab.com/technology/vanguards/

[27] Army Rapid Capabilities and Critical Technologies Office (RCCTO). https://www.army.mil/rccto#org-rccto-portfolio

[28] Clearance Jobs. (2024, November 13). How Long Does It Take to Get a Security Clearance? Times Go Up in 2024. https://news.clearancejobs.com/2024/11/13/how-long-does-it-take-to-get-a-security-clearance-times-go-up-in-2024/

with nontraditional vendors, enabling them to work through a single entity to access facilities in accordance with established clearance requirements.

2. **ICD 705 Standard SCIF Requirements:** Update and tailor the Intelligence Community Directive (ICD) 705 Standard SCIF requirements to the needs of the nontraditional vendor workforce, including by improving risk analysis support, conducting risk assessments of existing and planned SCIFs, developing tailored security measures, implementing continuous monitoring and evaluation systems, and ensuring direct collaboration between DCSA, the Defense Intelligence Agency (DIA), and the National Security Agency (NSA) on SCIF technical and physical aspects.
3. **Fractional FSOs and Other Partnerships:** Scale DIU (Sherpa)'s use of fractional Facility Security Officers (FSOs) and other novel partnerships, such as the DARPA Bringing Classified Innovation to Defense and Government Facilities (BRIDGES) program[29], to provide nontraditional vendors with fast-tracked access to classified spaces. This would enable vendors to participate more easily in R&D and contracting processes, while also ensuring the necessary security protocols are in place.
4. **Coworking SCIFs:** Invest in coworking-style SCIFs, including allowing small businesses to access underutilized SCIF space or setting up new SCIFs in facilities managed by the General Services Administration (GSA) that are currently not in full use. Leverage other secure properties across the country, such as government storage hubs, to serve as SCIFs for classified information meetings. This would provide nontraditional vendors with flexible access to classified spaces, enabling them to participate more easily in DoD projects and contracts.
5. **Enduring Clearance Reciprocity:** Establish enduring clearance reciprocity by providing DoD clearance holders, including contractors and Special Government Employees (SGEs), the option to pay for continuous vetting following their departure from duty. This would enable them to maintain their clearance status and facilitate their participation in future DoD projects and contracts.

Recommendation 7: **Pursue an *ex post* instead of *ex ante* approach to risk in IT, cloud, and network security for nontraditional vendors.** The DoD's *ex ante* approach to cybersecurity risk promulgates rules, such as the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53, -171, and -160 guidelines[30], that require vendors to take a number of compliance steps prior to obtaining Authority to Operate (ATO) IT security accreditation. An *ex ante* approach is commonplace in other jurisdictions, such as the European Union, where the result has been market limiting and competition stifling.[31] The DoD should embrace an *ex post* approach more typical in common law forms of government, allowing vendors to compete on performance, innovation, and price. The DoD can afterwards create a walk-up to compliance within a desired risk profile and nail vendors with liability on the back-end if something bad happens, rather than drowning them in approvals on the front-end. This should increase vendor competition, drive down costs, and incentivize better quality of service, without necessarily compromising on cybersecurity. The DoD Chief Information Officer (CIO), as the key arbiter in this space, must foster true reciprocity allowing nontraditional

[29] Defense Advanced Research Projects Agency (DARPA). BRIDGES: Bringing Classified Innovation to Defense and Government Systems. https://www.darpa.mil/research/programs/bridges

[30] National Institute of Standards and Technology (NIST). (2020, September 23). Special Publication (SP) 800-53 Rev. 5 Security and Privacy Controls for Information Systems and Organizations. https://doi.org/10.6028/NIST.SP.800-53r5; NIST. (2024, May 14). SP 800-171 Rev. 3 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations. https://doi.org/10.6028/NIST.SP.800-171r3; NIST. (2022, November 16). SP 800-160 Vol. 1 Rev. 1 Engineering Trustworthy Secure Systems. https://doi.org/10.6028/NIST.SP.800-160v1r1; NIST. (2021, December 9). SP 800-160 Vol. 2 Rev. 1 Developing Cyber-Resilient Systems: A Systems Security Engineering Approach. https://doi.org/10.6028/NIST.SP.800-160v2r1

[31] William A. Reinsch and Kati Suominen / Center for Strategic and International Studies (CSIS). (2023, June 21). Are U.S. Digital Platforms Facing a Growing Wave of Ex Ante Competition Regulation?. https://www.csis.org/analysis/are-us-digital-platforms-facing-growing-wave-ex-ante-competition-regulation

vendors to "comply once, sell many" rather than having to recertify and re-attest for each individual contract or system.

1. **Streamlining the ATO Process:** Ensure that streamlining the ATO process is a top priority for the next Secretary of Defense, and continue to collect user- and software-community feedback on changes to the ATO process since the March 2024 DoD CIO "Cybersecurity Reciprocity Playbook" and the May 2024 Deputy Secretary of Defense memo "Resolving Risk Management Framework (RMF) and Cybersecurity Reciprocity Issues".[32] Set shot clocks on ATO applications and establish a Secretary- or Deputy Secretary-led senior leader "tracking group" for the new guidance and processes under Section 1522 of the FY 2025 NDAA to collect data on the efficacy of the changes, including key metrics such as ATO approval rates, average time to ATO, ATO application volume, vendor satisfaction, cost savings, number of ATO-related issues, and cloud service provider participation. Also track RMF compliance, ATO process automation, and estimated overall return on investment of ATO process improvements.
2. **Promoting Reciprocity:** Update the DoD CIO "Cybersecurity Reciprocity Playbook" to provide clearer guidance and support for reciprocity. While the current playbook broadly acknowledges the benefits of reciprocity, its implementation is hindered by overly rigorous and burdensome inter-office coordination requirements that add cost and complexity without demonstrating clear value for the effort. In practice, this makes it more time- and cost-effective for vendors to recertify rather than navigate the reciprocity process, which defeats the purpose of the playbook. The revised playbook should prioritize simplicity, clarity, and efficiency, and focus on delivering tangible value and return on investment for vendors, rather than perpetuating unnecessary bureaucratic complexity.
3. **Adopt FedRAMP for Unclassified Data:** Instead of or in conjunction to (1) and (2), the DoD should transition toward the Federal Risk and Authorization Management Program (FedRAMP) for unclassified data on NIPR (below SIPR) networks and promulgate rules that prioritize FedRAMP requirements, rather than maintaining separate, *sui generis* risk management standards in the RMF and DoD-specific Cloud Computing Security Requirements Guide (CC SRG).[33] If the DoD wants additional unclassified controls, it should work with its interagency partners to bake those into the FedRAMP baseline. That would enable true "comply once, sell many" for vendors and increase marketplace competition.
4. **Waive CMMC for Larger Vendors:** In accordance with (3), waive additional Cybersecurity Maturity Model Certification (CMMC) requirements for larger or established vendors who are already compliant with FedRAMP and/or DoD-specific CC SRG standards. This would further reduce the regulatory burden and spur nontraditional vendor participation in the DoD market.
5. **Leverage cATO Approaches:** Continue promulgating continuous ATO (cATO) approaches leveraging commercial continuous monitoring (CONMON) tools to accredit the DevSecOps pipelines developers use to build software, rather than mandating detailed examinations of the software itself. Conduct maturity assessments on the basic things needed to get a pipeline certified for Continuous Integration/Continuous Deployment (CI/CD), focusing on tactics, techniques, and procedures (TTP) rather than technologies. The emphasis on TTP will help identify areas where customers and vendors may need additional support or guidance.

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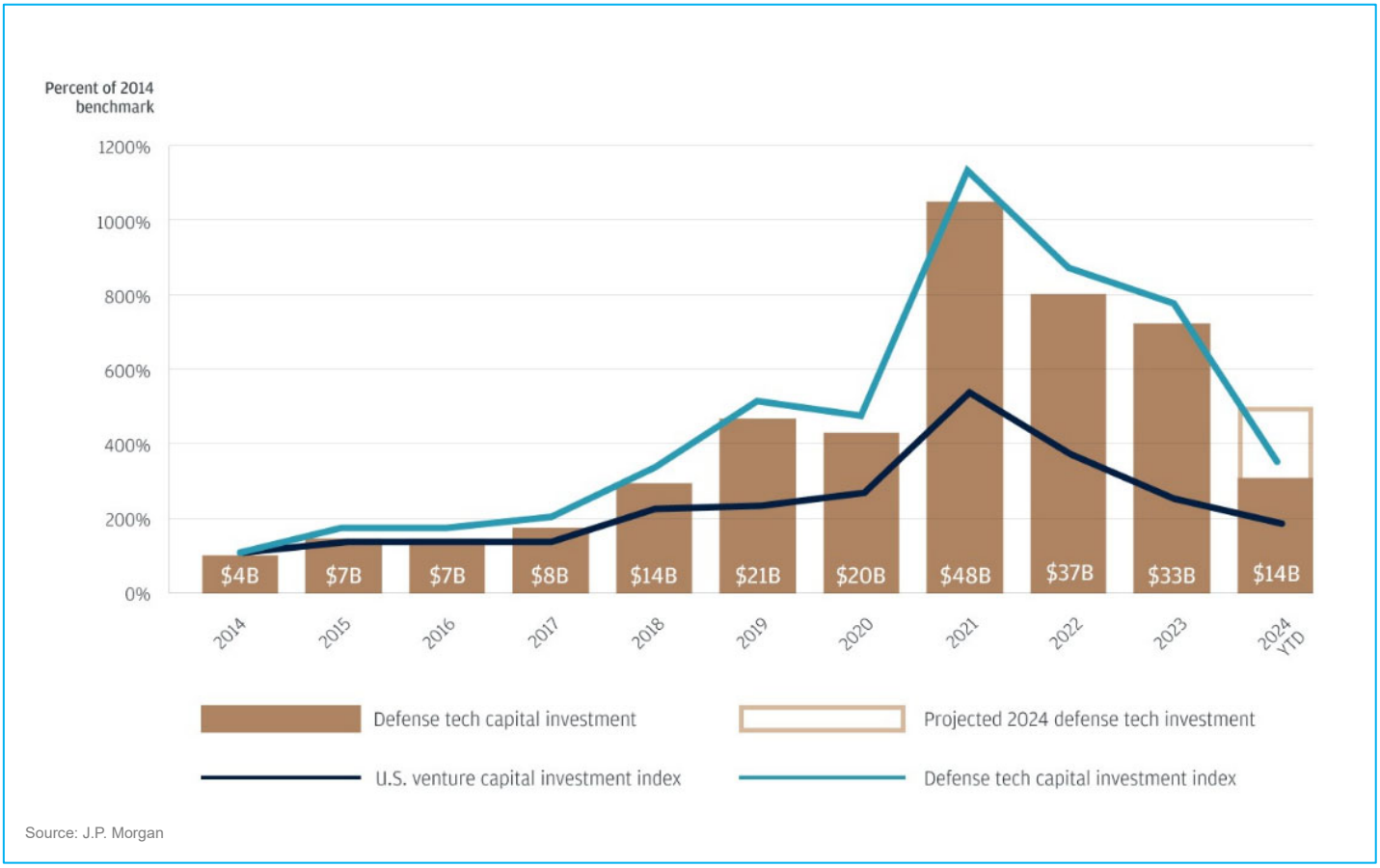
[32] DoD Chief Information Officer (CIO). (2024, May 15). Cybersecurity Reciprocity Playbook. https://dodcio.defense.gov/Portals/0/Documents/Library/(U)%202024-01-02%20DoD%20Cybersecurity%20Reciprocity%20Playbook.pdf; Deputy Secretary of Defense. (2024, May 2). Resolving Risk Management Framework and Cybersecurity Reciprocity Issues. https://dodcio.defense.gov/ Portals/0/Documents/Library/ResolvingRMF.pdf

[33] DoD Cyber Exchange, Defense Information System Agency (DISA). (2024, June 21). Cloud Computing Security Requirements Guide (CC SRG). https://dl.dod.cyber.mil/wp-content/uploads/stigs/zip/U_Cloud_Computing_Y24M07_SRG.zip

Appendix C: Dedicated Capital

Nontraditional vendors have difficulty accessing dedicated capital as they invest resources to transition their prototypes to production. Despite successfully developing innovative solutions, these vendors struggle to scale quickly to meet the needs of the warfighter while satisfying their investors. The complexities of the PPBE resource programming process, a lack of clear guidance and support for SBIR/STTR Phase III contracting, and uncertainty around post-SBIR/STTR funding opportunities exacerbates these production challenges.

The good news here is that America's venture capital industry has heightened its focus and capital commitment to defense-related businesses. Since 2021, venture and other private capital allocators have invested over $130 billion into defense technology startups in areas such as advanced computing and software, sensing connectivity and security (i.e., integrated network systems-of-systems), biomanufacturing, and autonomous systems.[34] According to the Silicon Valley Defense Group, both the amount of capital and number of deals involving defense startups have continued to increase above pre-pandemic levels, despite overall slowdowns in venture distributions and deal activity over the last couple years.[35] Allies and partners have also been coming to the table since Russia's full-scale invasion against Ukraine, most prominently in Europe where investors formed the NATO Innovation Fund (NIF)



[34] Justin Krauss / J.P. Morgan. (2024, September 20). Tapping the United States' greatest weapon: innovation. https://www.jpmorgan.com/insights/investing/investment-trends/defense-tech-innovation-and-the-role-of-startups

[35] Silicon Valley Defense Group (SVDG). NatSec100 – 2024 Edition. https://natsec100.org/

in 2023. Under advisement from their U.S. counterparts, NIF investors from 24 NATO countries have so far committed more than $1 billion to deep tech areas such as AI, autonomy, quantum, space, and advanced materials.[36] Many of these same investors have also been more involved in the Russia-Ukraine conflict, with U.S. and allied investors in Silicon Valley and elsewhere partnering with Ukrainian defense forces to rapidly upgrade their technology infrastructure and access to advanced capability.[37] As geopolitics and conflict continue to shape boardroom decision-making, private capital's determination to play an active role in shaping the future of defense will only deepen.

However, the influx of U.S. private capital in defense, while a critical long-term step toward expanding the defense industrial base, must be accompanied by a corresponding effort from the DoD to adapt its innovation funding model to better support the integration of commercial, dual-use technologies into its existing systems. The DoD's current funding model, including approximately $6 billion in RDT&E funding allocated at the OSD level – essentially to perform individual projects for joint objectives – is incongruous with the massive need to focus integration at the Service level, where the PEOs face a neglected business problem preventing nontraditional vendors from transitioning into programs of record at scale: *technical debt within those programs*.

Today, much of the nontraditional capability that the DoD desires is packaged as a software container or has a data flow requiring a modern digital infrastructure to develop and integrate. This capability has nowhere to go within the DoD's outdated digital infrastructure, thereby keeping the acquisition system tied into traditional vendors, despite a plethora of new strategies and policy directives for adopting open architectures, digital engineering tools, and other innovations from the broader technology ecosystem.

The extended PPBE process only entrenches this legacy paradigm. Under the existing regime, PEOs will largely focus on achieving specific military capabilities (e.g., having a certain number of tanks or aircraft) instead of improving how those capabilities are developed or procured (e.g., using agile software development methods, modular open systems approaches, or new rapid acquisition pathways). Rather, PEOs will remain captive to low-risk activities and resist change and disruption, lacking the capital and schedule to modernize and recapitalize.

Without dedicated capital to guide development and innovation centrally across the Services, the DoD's 40-year-old business model will remain incompatible with the modern, software-defined world. Absent fundamental changes in funding distributions, the PEOs will persist in bolting on new technologies to outdated infrastructure, increasing technical debt year by year, further slowing development, lowering buying power, raising costs, and creating added risk to new technology being integrated. To end this vicious cycle, a significant percentage of RDT&E funding must be taken out of the PPBE process and rapidly reallocated to new centralized organizations at the Service level focused exclusively on development, innovation, modernization, and recapitalization activities.

The FY 2025 NDAA includes a number of important initiatives to address these challenges, such as establishing an implementation team for the PPBE Reform Commission's recommendations, and specific provisions to improve the DoD's software acquisition pathway, require the use of open interface standards for DoD contracts, streamline milestone decision requirements for major defense acquisition programs, expand the scope of projects that can be conducted through the OTA vehicle, introduce new performance incentives related to commercial product and commercial service determinations, and

[36] NATO Innovation Fund. (2024, July 3). EIF and NATO Innovation Fund join forces to unlock private capital for Europe's defence and security future. https://www.nif.fund/news/eif-and-nato-innovation-fund-join-forces-to-unlock-private-capital-for-europes-defence-and-security-future/

[37] Raj M. Shah and Christopher Kirchhoff. *Unit X: How the Pentagon and Silicon Valley are Transforming the Future of War*. (New York: Scribnr, 2024).

allow the use of Defense Modernization Account funds for time-sensitive equipment modernization. While these provisions are sensible and overdue changes, centrally coordinated innovation and funding at the Service level is necessary to dramatically modernize and shift to a hardware-enabled, software-defined environment.

Recommendation 8: **Reauthorize the DoD SBIR/STTR program with reforms to improve the rate of Phase III transitions for companies with a viable commercial and defense product, eliminating "SBIR mills" that treat the program as a business in itself.** The DIB previously cited data indicating that the top 25 all-time recipients of DoD SBIR/STTR awards received 18 percent of total Phase I or II funding, and of those, only four generated more in Phase III contracts than they received in non-dilutive Phase I or II awards.[38] Moreover, 20 of those 25 companies have been receiving SBIR/STTR awards for more than 20 years, suggesting that almost a fifth of all SBIR/STTR funding goes to companies that do not create commercially viable products, but return to the SBIR/STTR pool year after year to consume funding that could be otherwise invested in future commercially viable defense capabilities. Changes in the SBIR/STTR award process would make it more consistent across agencies and less cumbersome for small technology startups.

1. **Formalize a Stopgap SBIR/STTR Phase III Fund:** Congress should re-establish the Rapid Innovation Fund (RIF), now known as the Rapid Integrated Scalable Enterprise (RISE) program currently managed under OSBP, to serve as a unified stopgap measure to address perennial SBIR/STTR Phase III concerns. RIF/RISE was originally established in the FY 2011 NDAA as a solution to years of recommendations for Congress to set aside dedicated SBIR/STTR Phase III funding.[39] RIF's relevance to operational needs, simple proposal process, bridge funding for commercialization, aggressive 18-24 month timelines, and large average award size of $2.5 million made it an effective program. In nine years, RIF distributed over $2.2 billion in funding to more than 30 DoD organizations, of which 57 percent transitioned or were expected to transition to SBIR/STTR Phase III, and at least 31 percent produced capabilities that were fielded and used by warfighters (these numbers likely underestimated).[40] Despite RIF's track record in terms of access to small business innovation and commercialization outcomes, Congress abruptly deleted the program's funding from its FY 2020 appropriations and its successor (RISE) remains unfunded. Current funded efforts, such as DIU's National Security Innovation Capital (NSIC), the Accelerate the Procurement and Fielding of Innovative Technologies (APFIT) pilot, and the Rapid Defense Experimentation Reserve (RDER) initiative, have endeavored to fill the gap left by RIF in meaningful ways. Other important efforts, like the Defense Industrial Base Consortium (DIBC) managed within OSD A&S, are putting funds to work with nontraditional vendors to enable rapid research and prototyping. One proposal we heard from industry – that Congress and the DoD should fund a permanent SBIR/STTR Phase III program from a variety of funding sources[41] – deserves careful investigation by Congress and the key likely implementers across OSD and the Services. In the meantime, elevating RISE as a unified stopgap solution to Phase III concerns would bypass the challenges of creating a new Phase III program – whether with additional appropriations or by pooling funds from existing sources which could take time to decide and enforce. It would also leverage RIF's established

[38] Defense Innovation Board. (2023, July 17). Terraforming the Valley of Death. https://innovation.defense.gov/Portals/63/DIB_Terraforming%20the%20Valley%20of%20Death_230717_1.pdf

[39] DoD Office of Small Business Programs (OSBP). (2017, December 13). Rapid Innovation Fund (RIF) Program Overview. https://business.defense.gov/Portals/57/Documents/RIF%20Overview%20%28Dec2017%29.pdf?ver=2017-12-13-110403-150

[40] TechLink. Defense Rapid Innovation Fund: An Assessment of RIF Effectiveness FY 2011-2016. https://rt.cto.mil/assessment-of-rif-effectiveness-fy-2011-2016-by-techlink/

[41] Software in Defense Coalition, The Alliance, National Venture Capital Association. (2024, October 3). Joint Innovation Coalition Comments re SBIR. https://the-alliance.squarespace.com/s/Joint-Innovation-Coalition-Comments-re-SBIR-Reauthorization-Oct-3-2024-dsc7.pdf

implementation mechanisms, including fund management and allocation strategies, and create immediate value for industry without precluding future work toward designing a permanent central Phase III program.

2. **Establish Permanent "Oasis Funds":** In tandem with (1), the DoD should work with Congress to create a dedicated transition fund within each Service to support nontraditional vendors in bridging the middle of the acquisition "valley of death" between prototyping and procurement with an “oasis” of decolorized dollars. Each Oasis Fund would complement the permanent SBIR/STTR Phase III initiative, providing a separate additional vehicle for Service Acquisition Executives to invest in promising nontraditional vendors not unlike the AFWERX Strategic Funding Increase (STRATFI) and Tactical Funding Increase (TACFI) programs.[42] Rather than being filled through a separate appropriation or taxing existing Service programs, the Oasis Fund would leverage decolorized End-of-Fiscal-Year (EoFY) contingency readiness funds, which frees up over $15 billion in Service appropriations during the last 48 hours of every fiscal year. Allowing the Services to move a fixed amount of these often poorly managed billions into a transition account that refreshes and decolors expiring funds would provide an additional source of transition dollars for nontraditional vendors at no additional taxpayer expense. To ensure effective use, limitations should be set on the duration and amount of Oasis funding, and investments should be reported yearly to Congress for portfolio-level oversight.
3. **Require Minimum 50 Percent Funding for Open Topics:** Open Topics invite bidders to describe problems they have discovered and solutions they have developed, which often augment and surpass in impact the priorities the DoD advances on its own. GAO recently found that half of DoD Components are issuing legacy narrow topics but falsely calling them open. Currently, more than half of all Air Force SBIR/STTR awards now come via Open Topics, and demonstrate that unrestricted calls for innovation produce more impactful ideas from a broader range of nontraditional respondents. SBIR’s success requires enforcement of Open Topic legitimacy, a minimum funding level, and an independent third-party validation that Open Topics conform to GAO’s definition.
4. **Eliminate “SBIR Mills”:** Implement meaningful commercialization benchmarks that unambiguously convey the message that SBIR/STTR is investment capital, not a business unto itself, and that the DoD expects companies to eventually graduate from the program. Recommend (a) after 25 Phase IIs, a company must demonstrate a greater than 1:1 gross revenue ratio of all non-SBIR/STTR sources directly resulting from SBIR/STTR investments against the total lifetime SBIR/STTR funding the company has been awarded; and (b) failure to meet the benchmark results in company not being permitted to submit any new Phase I proposals until they exceed the benchmark. Expand use of Technical and Business Assistance (TABA) and require agencies to permit awardees to select their own vendors rather than funneling them to agency-selected contractors.
5. **Adjust SBIR Business Size Standards:** Current SBIR/STTR size standards are set to 500 employees for both Phase I and II awards. To ensure funding for early R&D is awarded to truly small and innovative companies – not larger, more established vendors – reduce maximum allowable headcount for Phase I proposals to 200 employees. Meanwhile, to ensure that funding is also directed toward small businesses with the ability to scale R&D and manufacturing capacity, raise maximum allowable headcount for Phase II proposals to 1,000 employees. This would ensure SBIR/STTR also supports companies with the ability to compete directly with larger contractors for scaled production. For reference, the North American Industry Classification System (NAICS), used

[42] AFWERX. Air Force Ventures STRATFI and TACFI Programs. https://v3.afwerx.com/divisions/afventures/stratfi-tacfi/

to define standards for SBIR/STTR funding, sets headcount limits for Research businesses at 1,000 employees and for Manufacturing businesses at 5,000 employees.

6. **Institute Shot Clocks for SBIR Contract Notification and Award:** SBIR/STTR shot clocks could be set at 30 days for Phase I notification of award and 60 days to issue contract, as well as 60 days for Phase II notification of award and 60 days to issue contract. If an agency fails to award in a timely manner, its funding for the following year should be reallocated to other agencies that are meeting the timeline.
7. **Include SBIR Phase III Authority in the FAR:** Currently, the FAR does not explicitly address SBIR/STTR Phase III authority, which creates uncertainty and barriers for small businesses seeking to commercialize their developed technologies. Congress should mandate that the FAR Council include Phase III authority in the FAR to provide clarity and consistency in the implementation of SBIR/STTR and a framework for agencies to follow when awarding Phase IIIs.
8. **Require SBIR Phase III Training for Contracting Officers:** The FY 2025 NDAA introduced new funding for acquisition training for DoD contracting officers. While an essential step, it neglects training for SBIR/STTR Phase III contracting, a significant impediment for FAR-based contracting officers who refuse to negotiate Phase III awards. Congress should mandate and fund Phase III training for all DoD contracting officers.
9. **Enforce Market Research Requirements:** Enforce program strategies that maximize participation of multiple vendors, use of open standards, and commercial content. Audit market research performed by program managers or contracting officers on behalf of the DoD. Implement a new protest process for FAR Part 10 violations. Create career incentives for acquisition professionals to find commercial items and SBIR/STTR products that are “close enough,” pursuant to FAR 10.001(a)(3)(ii), and that deliver the capability faster, at reduced costs, or with improved capabilities compared to the original plan.
10. **Break Down Stovepipes:** Create proposal evaluation criteria and contract incentives for prime integrators that leverage open standards and commercial technology to increase the passthrough fee structure when buying commercial items that displace in-house custom development labor. Open interoperability standards are mandated by law (i.e., National Technology Transfer and Advancement Act and Office of Management and Budget (OMB) Circular A-119), but prime contractors often circumvent them to create stovepipes that keep out third-party commercial plug-in products. Congress should introduce legislation to more strictly enforce the Clinger-Cohen Act, which allows the use of simplified acquisition procedures for commercial items up to $5 million, to prohibit proprietary interfaces for subsystems and software.

Appendix D: DIB Terraforming the Valley of Death Report (July 2023)

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