

ATLANTIC COUNCIL

COMMISSION ON DEFENSE INNOVATION ADOPTION

Interim Report



REPORT AUTHORS

Eric Lofgren*, Whitney M. McNamara, and Peter Modigliani

COMMISSION CO-CHAIRS

The Hon. Mark T. Esper, PhD, and The Hon. Deborah Lee James

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FOREWORD

The US Department of Defense (DoD) needs to accelerate the adoption of cutting-edge technology from the leading edge of the commercial and defense sectors. Doing so will enable the Pentagon to deliver high-impact operational solutions to the Warfighter in a much timelier manner. That is why we are co-chairing the Atlantic Council's Commission on Defense Innovation Adoption, which has released this interim report.

In our time serving in the Defense Department, we have found that the United States does not have an *innovation* problem, but rather an *innovation adoption* problem. That is to say, our Nation leads in many emerging technologies relevant to defense and security—from artificial intelligence and directed energy to quantum information technology and beyond. But the DoD struggles to identify, adopt, integrate, and field these technologies into military applications.

The persistence of this challenge is not for lack of trying. The Air Force's Rapid Capabilities Office has cut through bureaucratic constraints to accelerate even the most complicated major acquisitions. The Defense Innovation Unit (DIU) stands out for expanding the range of firms involved in innovation for national security purposes. Army Futures Command has accelerated modernization in ground forces through its cross-functional team model. The new Office of Strategic Capital has a promising new approach to engaging capital markets in support of national security goals.

But the growing national security challenges facing our country and the threat they pose to the rules-based international order require actionable reform across the DoD. We and a group of distinguished Commissioners, with decades of service between us in government, the private

sector, and capital markets, believe that time is running out to do so. The United States faces simultaneous competition with two nuclear-armed, autocratic great-power rivals. Russia's ongoing war against Ukraine and China's revanchism not only spur urgent geopolitical considerations, but also cast into sharp relief the US industrial base's ability to produce and field innovative technologies at scale.

To address the DoD's innovation adoption challenge in light of the urgency of the geopolitical environment we face, this interim report advances ten policy recommendations for Congress and the Pentagon, focusing on the three key areas of reforming acquisition; overcoming barriers to innovation; and revising specific Planning, Programming, Budgeting, and Execution structures.

To that end, the DoD should adapt the way it conducts its acquisition programs to provide additional flexibility in the year of execution, and Congress can authorize that flexibility. We recommend that five DoD program executive offices be empowered to operate in a portfolio model so that they can more easily shift funding among possible products that meet their mission needs. Congress should appropriate money to DoD with *fewer* but *larger* discrete budget line items and reset reprogramming authorities so that acquisition professionals have greater flexibility.

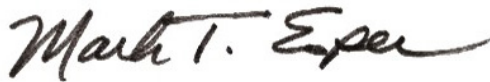
To better leverage innovation in the commercial sector, Congress should restore at least the traditional ratio of procurement funding to other defense spending, and the DoD should more intentionally engage a much broader innovation base. Allocating a higher percentage of the DoD's budget to procurement will clearly signal a larger market to nontraditional defense firms.

Additionally, the deputy secretary of defense, with the DIU as a direct report, should take a leadership role in aligning and harnessing stakeholders within the Pentagon and the existing defense industrial base for the twenty-first century. The DIU should be resourced and empowered to broaden the defense ecosystem by robustly engaging start-ups, nontraditional vendors, and capital market players.

The DoD must develop approaches to more rapidly validate its needs for commercial capabilities, rather than waiting years after identifying a key capability to write a requirement and submit a budget request. The DoD should both reform the Joint Capabilities Integration and Development System (JCIDS) to operate more swiftly and develop a military need

validation system outside of JCIDS for mature commercial capabilities. Congress and the DoD should expand both eligibility for, and the award size of, Small Business Innovation Research grants. To provide additional mechanisms for rapidly matching key capabilities with funding, they should also provide funds to procure capabilities successfully demonstrated in exercises.

As the 2022 National Security Strategy states, we are living through a “decisive decade,” a sentiment shared by the previous administration as well. Congress and the DoD must seize this opportunity to enact near-term changes that will help get our service members the capabilities they need to defend our country and its interests.



The Hon. Mark T. Esper, PhD
27th US Secretary of Defense



The Hon. Deborah Lee James
23rd US Secretary of the Air Force

OVERVIEW

MISSION STATEMENT

Accelerate the DoD's ability to adopt cutting-edge technology from commercial and defense sectors and deliver high-impact operational solutions to the Warfighters.

ENTERPRISE CHALLENGES

The DoD faces the following enterprise challenges in adopting defense innovations:

- 1 Outdated R&D Model** The DoD's requirements and acquisition processes were designed for a time when the DoD was the largest funder of global research and development (R&D). By 2020, however, the federal government's share of national R&D had fallen below 20 percent, and yet its processes have not adapted to this new leader-to-follower reality. Today, while the Defense Advanced Research Projects Agency (DARPA), Federally Funded Research and Development Centers (FFRDCs), national and service laboratories, and universities continue to innovate, many of the most critical technologies are driven by the commercial sector. The DoD struggles to adopt commercial technology at a relevant speed. Innovations from noncommercial R&D organizations are infrequently tied to a commercialization and adoption pipeline. Traditional prime contractors orient their independent R&D (IRAD) toward near-term defense requirements that are prescriptive relative to solutions rather than broadly defining warfighter gaps that allow applications of advanced technologies. As a result, the DoD is unable to effectively apply leading technologies to its weapon systems.
- 2 Long Timelines and Inflexible Execution** Too often, the DoD delivers systems to meet requirements defined more than a decade earlier. It is difficult to insert new technology to effectively respond to dynamic adversary threats, technological opportunities, advances in warfighting concepts, or macroeconomic and supply-chain disruptions, especially within fiscal years. Hardware-centric models ineffectively integrate rapid software updates.
- 3 Fewer Companies Providing Defense Solutions** The DoD's industrial base has shrunk by 40 percent over the past decade, due to both consolidation and exit. This decline stems from multiple causes, including a pivot to fewer more-complex major systems, long timelines, complex regulations, and the high compliance cost of doing business with the DoD. Many start-up, commercial, and international businesses are unable or unwilling to enter the DoD ecosystem. As a result, reduced competitive pressure has increased costs and decreased adoption of innovation.
- 4 Valleys of Death** The DoD spends billions annually on research and prototypes, yet only a small percentage transitions to production contracts with revenue to sustain operations and scale output. Consequently, one must question why the DoD continues to fund so many defense research organizations when most technology innovation comes from the commercial sector. Long timelines for contracts and funding, program constraints, and a disconnected ecosystem are among the transition challenges for companies that have developed viable products or services.
- 5 Hamstrung Workforce** The DoD acquisition workforce is subject to a bureaucratic culture of excessive compliance and oversight, a challenging environment for innovation. Creative problem-solving and measured risk-taking are not often rewarded, and too few individuals with an industry background agree to take senior leadership roles at the DoD.
- 6 Program-centric Acquisition** Defining requirements, securing budgets, and acquiring capabilities are done for hundreds of individual programs. The DoD invests a significant percentage of its funds in complex major systems for which prime contractors offer closed, propriety solutions. This impedes interoperability and responsiveness to changes in operations, threats, and technologies. Open-system architectures with well-defined interface control documents are rarely adopted, which constrains the ability to insert innovative technology.

- 7 Cumbersome Reporting from DoD to Congress** Budget justification documents run dozens of volumes and tens of thousands of pages. Document format, detail, and supporting information is inconsistent among military services and agencies. This impedes Congress's ability to understand program objectives in a timely manner. In turn, Congress does not trust that delegated decisions will consistently result in more rapid technology adoption.
- 8 Limited Understanding of Emerging Technology** The DoD struggles to effectively leverage critical emerging technologies (like biotechnology and quantum information technology) due to a lack of understanding of their state-of-the-art applications among those who generate requirements and draft requests for proposals. As these technologies mature, the DoD is challenged to have meaningful conversations about how to adopt, leverage, and defend against these technologies.

TOP RECOMMENDATIONS

To address these challenges, the Commission recommends that DoD leaders, congressional defense committees, and other executive branch agencies take the following ten high-priority actions to accelerate DoD innovation adoption:

- 1 Introduce a new capability portfolio model**
- 2 Consolidate program elements**
- 3 Reset reprogramming authorities**
- 4 Modernize the DoD to align with the twenty-first century industrial base**
- 5 Strengthen alignment of capital markets to defense outcomes**
- 6 Incentivize tech companies to do business with the DoD**
- 7 Modernize budget documents**
- 8 Establish bridge fund for successfully demonstrated technologies**
- 9 Scale the Space Development Agency model**
- 10 Modernize the DoD's requirements system**

RECOMMENDATION 1:

The DoD and Congress empower and resource five Program Executive Officers (PEOs) to operate via a new capability portfolio model in 2024.

Addresses challenges 2, 4, 5, and 6.

- Congress authorizes in the Fiscal Year (FY) 24 National Defense Authorization Act (NDAA) and/or the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) implements via a memo empowering five PEO portfolios to operate via a new capability portfolio model. Component acquisition executives from the Departments of the Army, Navy, Air Force, Special Operations Command, and a defense agency will each select a PEO portfolio.
- Service requirements organizations capture portfolio requirements in a concise, high-level document that provides overarching, joint, enduring capability needs and key mission impact measures that focus on warfighter-informed needs and mission outcomes. The Joint Staff validates the portfolio requirements within thirty days. The portfolio requirements document enables leaner program requirements and shapes future research and prototypes.
- Selected PEOs negotiate with congressional defense appropriations staff the consolidation of at least 20 percent of the smallest budget line items within their portfolios. This enables reprogramming flexibility to meet evolving, warfighter-informed requirements. These merged budget accounts must provide Congress with sufficient visibility of major elements within each.
- Selected PEOs develop a set of portfolio strategies, processes, road maps, contracts, infrastructure, and architectures to enable programs to leverage for greater speed and success. Portfolio contracting strategies will look beyond individual contracts or programs to promote a robust industrial base by enabling continuous competition, iterative development, supply chain risk mitigation, greater participation of nontraditional companies, commercial service acquisition, and economies of scale.
- Selected PEOs may lay out plans to decompose large programs into modular acquisitions; leverage common platforms, components, and services; and maximize use of commercial solutions and DoD research. Portfolios will scale and align prototyping, experimentation, and testing infrastructure. They will invest in a common suite of engineering tools, platforms, and strategies to enable interoperability, cybersecurity, and resiliency.
- PEOs require portfolio leaders to actively engage the DoD's R&D community, industry, and academia to communicate joint-warfighter portfolio needs and business opportunities, scout technologies, engage companies, and drive novel solutions to address portfolio needs.
- Congress appropriates at least \$20 million to each portfolio per year for three years to enable PEOs to implement the new model with appropriate staff, analytic tools, and strategies. The five PEOs work out the details for others to adopt. In time, the department will realize savings and return on investment through greater program efficiencies and mission impact.
- PEOs provide the Office of the Secretary of Defense (OSD) and Congress a short annual report to share insight into the new portfolio model progress, including issues, successes, and inputs to scale adoption.

Success Measure: By the end of 2023, five PEO portfolios are identified to operate via the new portfolio model. By the end of 2024, these portfolios begin operating with clear direction, leadership support, and initial implementation plans.

Notional Example: A command-and-control PEO shapes a portfolio strategy that invests in a software factory and enterprise services as a common infrastructure, with smaller programs tapping a diverse vendor base to regularly and iteratively deliver a suite of applications that work together seamlessly.

RECOMMENDATION 2:

Acquisition executives propose consolidated program elements to congressional staff and negotiate what can be included in the Fiscal Year (FY) 2024 Appropriations Act joint explanatory statement.

Addresses challenges 2, 6, and 7.

- The deputy secretary of defense (DepSecDef) directs acquisition executives to propose a list of program elements (PEs) and budget line items (BLIs) to consolidate. This will simplify budget submissions and enable greater flexibility within the year of execution to respond to rapid changes in warfighter needs and technology advancement within capability or mission portfolios.
 - Determine criteria for consolidation, such as BLIs and PEs under \$20 million, software-defined technologies, and supply chain-affected efforts.
 - Determine constructs for consolidation, such as capability areas, mission areas, and organizational alignment.
- Reduce BLI and PE count from more than 1,700 today in the investment accounts by at least 200 BLI and PEs each year, starting with the FY 2024 markup, for three years to enable cost-schedule-performance trade-offs, including the prototyping and fielding of novel systems that meet defined capability or mission areas.
- Allow PEOs, warfighters, and other DoD stakeholders to provide input to acquisition executives. Senior leadership in the resourcing process should propose the items to be consolidated and negotiate with congressional staff in advance of FY 2024 appropriations.
- Identify line items that enable opportunistic efforts to insert technologies into existing weapons programs without requiring a new start. Identify best practices for broadly justifying activities within a capability set.

Success Measure: The number of BLIs in the investment accounts is reduced by at least 200 in time for the passage of regular appropriations in FY 2024.

FY 2023 President’s Budget Request (DoD Total)

	RDT&E	Procurement	O&M	MILPERS
Line Items	956	845	347	270
Median (\$M)	\$35,262	\$42,707	\$243,631	\$87,564
# Under \$20M	390 (41%)	298 (35%)	49 (14%)	88 (33%)

This chart shows the number of line items, its median size, and the percentage under 20 million dollars in the FY23 budget request. Out of more than 1,700 investment budget line items today, nearly 700 are under \$20 million. Micromanaging these small stovepipes reduces flexibility, preventing adjustments in the year of execution. Credit: Eric Lofgren

Example of Program Element Consolidation - SOCOM

RDT&E	FY12	FY13	FY14	FY15	FY16	[...]	FY23
Line Items	29	28	15	15	15		13
Mean (\$M)	\$17.1	\$15.4	\$24.8	\$34.3	\$35.9		\$63.3

Procurement	FY12	FY13	FY14	FY15	FY16	[...]	FY23
Line Items	38	37	27	24	26		25
Mean (\$M)	\$58.3	\$49.9	\$54.3	\$65.8	\$71.6		\$93.7

Special Operations Command (SOCOM) provides an example for how the number of budget line items can be incrementally reduced in coordination with Congress. This resource flexibility allows SOCOM to take advantage of their close relationship with the warfighter by making integrated decisions that speed up fielding cycle times. Credit: Eric Lofgren

Notional Example: A PEO identifies a novel technology from DARPA or industry to integrate into one of its programs to improve performance and accelerate capability delivery. With investment funds spread across fewer budget accounts, the PEO is able to reprogram funds from a lower-priority development within the year of execution.

RECOMMENDATION 3:

Congressional appropriations committees reset reprogramming authorities to historical norms in their FY 2024 joint explanatory statements.

Addresses challenges 2 and 7.

- Appropriations committees write into FY 2024 joint explanatory statements the following changes:
 - Current reprogramming thresholds will be maintained, but above-threshold actions will revert from congressional prior approval to the historical norm of congressional notification with a thirty-day window for briefing or rejection. This streamlines the process and enables greater reprogramming while still providing Congress “veto authority” to block reprogramming actions they oppose. Prior approval will remain in place for items omitted, deleted, or specifically reduced; general transfer authorities; or above threshold new starts.
 - An alternative approach: Raise reprogramming thresholds from the lesser of \$10 million or 20 percent to at least \$40 million for Research, Development, Testing, and Evaluation (RDT&E) and \$100 million for procurement

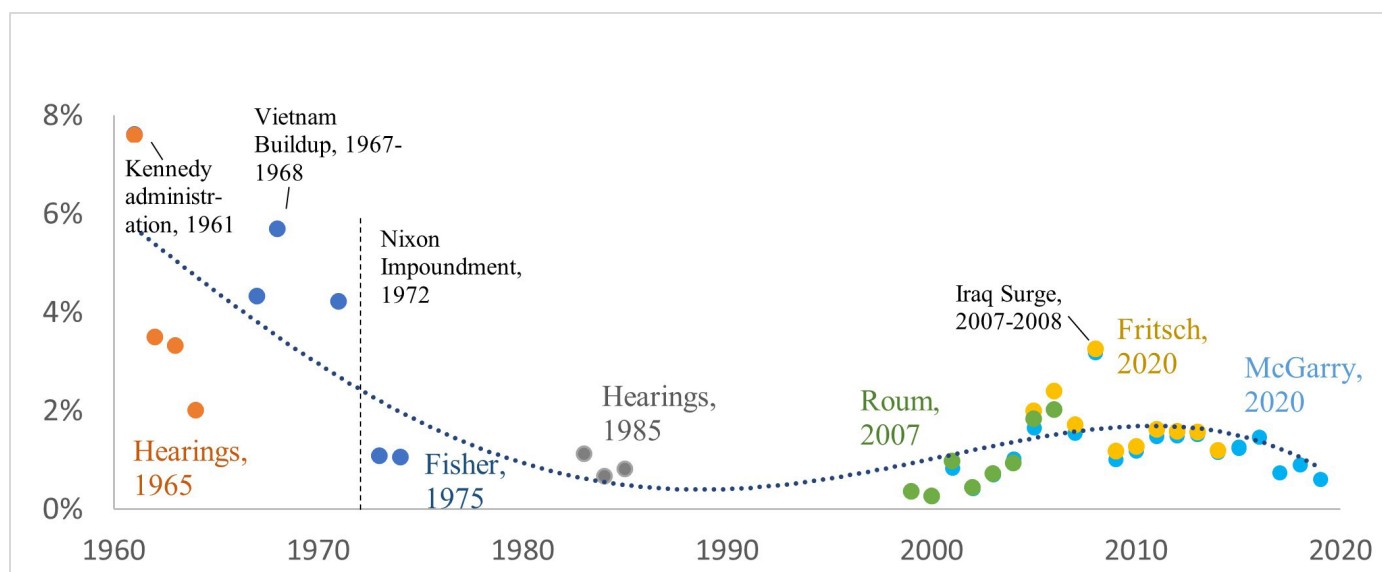
appropriation titles. Historical norms for reprogramming thresholds were \$15 million for RDT&E and \$40 million for procurement yet were progressively lowered to this historically low threshold. This change would revert thresholds to account for decades of inflation.

- Letter notifications for new starts will be “for the fiscal year,” not “for the entire effort.” This enables programs greater flexibility to start small programs while Congress retains the right to veto any new starts it opposes.

Success Measure: Recommended language is included in the FY 2024 Appropriations Act joint explanatory statement by the time regular appropriations are passed.

Notional Example: An acquisition program is “early to need” for procurement funds due to delays in finalizing development. Another program desperately seeks additional funds to accelerate and scale production of its weapon system. Service leadership decides to reprogram \$50M in procurement funds between the programs to optimize investments.

Total Above Threshold Reprogramming as a Percentage of the DoD Budget



This graph charts above threshold reprogramming (ATR) as a percentage of the defense budget according to research by various budget analysts. Modern control of reprogramming was implemented in FY 1963, and management has tightened severely since that time, including the expansion of prior approval requirements. As a result, many resource trades, including the adoption of new innovations, are foregone because of severe administrative burdens. Credit: Eric Lofgren

RECOMMENDATION 4:

Congress directs the DoD to elevate the DIU to a direct report to DepSecDef and resource it effectively to align and harness the nontraditional defense industrial base for the twenty-first century no later than six months of the enactment of this act.

Addresses challenges 1, 2, 3, 4, 5, and 8.

- Re-align DIU as a direct report to DepSecDef with the necessary staffing and resources to engage start-ups, nontraditional vendors, and capital market players in aligning capability requirements to harness solutions from the twenty-first-century industrial base per the 2022 National Defense Strategy.
 - DIU's expanded role should complement existing efforts in USD(R&E) and USD(A&S) in terms of traditional industrial policy and technology scouting, respectively, by better connecting the nontraditional industry and its resources, intelligence, and technologies to the needs of the warfighter.
 - DIU, USD(R&E), USD(A&S), and service partners should regularly integrate their efforts, in communicating to the industrial base the department's needs, planned investments, and business opportunities. In addition, they should share among themselves what is being discovered in industry that aligns with the department's missions.
 - In its expanded role, DIU should be resourced to regularly engage with acquisition organizations (PEOs, program offices), science and technology (S&T) organizations (labs, DARPA), and combatant commands to share the insights it gets from nontraditional industry players throughout the DoD. Additionally, DIU will communicate back to industry where it can align its technologies to the needs of the warfighter as communicated by acquisition organizations and combatant commands.
 - Prioritization for expanded staffing for DIU should be for new billets from the services over funding for contractors. The billets would be priority assignments, selected from relevant PEOs and service acquisition executives (SAEs).
 - DIU should track the intelligence, insights, and inputs it receives from industry trade associations, venture capitalists (VCs), private equity firms, primes, nontraditional defense companies (NDCs), Other Transaction (OT) Consortia, and innovation hubs. This information should be interoperable with USD(R&E)'s existing repository of research and intelligence for the department's needs.
- DIU, USD(A&S), and SAEs charter a team, including joint warfighter perspectives, to streamline processes, reviews, and documents for acquiring commercial solutions. The team will reinforce "buy before build" commercial practices in the early phases of programs by baking it into acquisition strategy templates and program reviews. It will also collaborate with defense industry, capital markets, and Congress to develop a broader set of rapid funding tools and approaches to demand signals consistent with the speed of commercial innovation cycles. It will publish an initial commercial pathway or guide by December 2023, with a comprehensive version in 2024.
- Joint Staff and service requirements organizations develop a rapid "military need validation" process, involving feedback from the warfighter, for commercial solutions in lieu of traditional Joint Capabilities Integration and Development System (JCIDS) requirements documents. This new process will enable hundreds or even thousands of commercial solutions to be validated by empowered, distributed officials, and not subject to the JCIDS process managed by the Joint Staff and the Joint Requirements Oversight Council (JROC).
- The Defense Acquisition University and related organizations should modernize guidance and training for commercial acquisition, to include:
 - Collaborating with industry, traditional and otherwise, in the early phases of an acquisition program to inform concepts, alternatives, and designs. The focus should be on feeding into mission objectives, not market research for system specifications.
 - Contracting strategies focused on commercial solutions (e.g., Commercial Solutions Openings, Other Transactions, Federal Acquisition Regulation Parts 12 and 13).
 - Testing, experimentation, exercises, rapid deliveries, and iteration.
 - Scaling programs like DIU's Immersive Commercial Acquisition Program.

Success Measures: Higher number of DIU projects that transition to a program of record; increased number of vendors entering the federal market and competing for contracts; better alignment of capital market investment and lending to DoD missions; alignment of DoD R&D and prime IRAD funds to help a wider number of entrants across the Valley of Death; increased transparency with the industrial base on DoD's priorities; a commercial pathway, guidance, and training enabling workforce to rapidly and successfully acquire commercial solutions; increased transparency and collaboration within the department on tech-related initiatives and intelligence; resources saved and efficiencies gained from central repository information from traditional and nontraditional industrial base like market intelligence, technology landscape analysis and due diligence on vendors.

Notional Examples: Expanded engagement with nontraditional industrial base helps DIU identify the commercial sector's leader in autonomous software for ground vehicles and, through the streamlined, well-defined process for rapid acquisition, the Army begins adopting it across its fleet of logistics vehicles on continental United States bases.

In their quarterly engagement, the US Marine Corps Warfighting Laboratory (MCWL) talks to DIU about its desire to procure better mission planning tools at the edge. DIU identifies and provides three viable commercial options for demonstrations. Before presenting them to MCWL, DIU leverages VC firm relationships to get existing due diligence on the potential vendors and discovers one of them draws components of its chips from China. DIU finds an alternative.

In its engagements with capital market players, DIU discovers there are several critical bottlenecks in the quantum computing supply chain due to either a severe lack of redundancy or routing through adversary nations. DIU flags this to R&E, Office of Strategic Capital (OSC), and A&S Industrial Policy to determine how to address this. As part of this, DIU and OSC engage with capital market players to inform them this is now a department priority, helping to direct capital market funding toward these enabling technologies critical to the US broader tech competition vis-à-vis China.

RECOMMENDATION 5:

Strengthen existing capital market programs and create new pathways for mission-critical technologies.

Addresses challenges 1, 3, 4, and 8.

US capital markets represent a critical yet underutilized strategic advantage for the DoD. To better leverage vast capital market resources for defense innovation and mission outcomes, the DoD should broaden programs through which capital market-backed companies can participate and create new pathways for DoD program offices to leverage capital market funding for mission-critical technologies.

Congress directs in legislation the Small Business Agency (SBA), in coordination with the General Services Administration (GSA), to enhance the Small Business Innovation Research (SBIR) grants program no later than six months after enactment.

To better scale SBIRs, the SBA should:

- Generate direct to Phase III SBIR grants in which early successful performers in Phase I can be fast-tracked to more-flexible contract vehicles, for which performers have exemptions from SBA size standards for procurement; no

limits on dollar size of procurement; the right to receive sole-source funding agreements; and the ability to pursue flexible ways to add value to an end user, whether that be research, R&D, services, products, production, or any combination thereof.

- Direct the SBIR offices of the Army, Navy, and Marine Corps to pilot a Strategic Funding Increase (STRATFI) program to help bridge the Valley of Death between Phase II and Phase III SBIR grants, no later than twelve months after designated. Service pilots would replicate the STRATFI program in that SBIR funding (\$15 million) would receive matched funding from customers (\$15 million) and private funding (up to \$30 million).

To increase competition and widen the aperture of firms competing for SBIR grants, the SBA should:

- Remove the barrier preventing companies with more than 50 percent backing by VCs or other capital market players to compete for SBIR grants. Small businesses often rely on

VC funding to cover the costs of operating as they work to commercialize their products and generate sufficient revenue to sustain their business. This is particularly true in the case of software development, for which highly skilled software engineers are the single most expensive operating cost. Placing strict limitations on the ability of these small businesses to compete for SBIR grants is contrary to the SBIR program goal of supporting scientific excellence and technological innovation.

- Remove the barrier preventing companies that meet the requirements of being a small business, but are publicly traded, to compete for SBIR grants. Small, high-tech R&D firms go public to continue their ability to raise funds for their capital-intensive technologies. By disallowing them from competing for SBIR grants, the DoD is limiting technology competition among some of the most technology-proficient corners of the industrial base.

To drive deep tech adoption, the OSC should develop tools for leveraging external capital market funding for pilot projects to service R&D organizations in FY 2024, with a formalization plan in conjunction with the president's FY 2025 budget request.

- OSC to be given expanded authorities to access capital markets to develop revenue, investment, and credit approaches for defense programs contracting with small-, mid-, and large-cap companies. As an initial step, direct \$15 million of external capital market funding to the R&D organization of each military branch to pilot projects that identify two novel use cases in one or more of R&E's deep-tech priority areas of quantum technology, biotechnology, or advanced materials that could be leveraged to achieve service-specific missions. The period of performance would be eighteen months. Service end users would provide matched funding of up to 25 percent of total outside funding to pilot these projects.
- This would assist in directing capital market funding to the DoD's mission, providing additional R&D funding and incentives for deep-tech companies to commercialize their technologies, and creating optimization loops that connect technology to warfighter use cases that can help turn basic research into relevant products and services. Lastly, exposure to deep-tech applications would allow service end users to better understand emerging technologies'

applications to future defense requirements. This will help accelerate the well-aligned adoption of these capabilities to meet services' unique missions at the speed of relevance.

- R&D leads will report to DIU's director and USD(R&E) no more than 180 days past the period of performance on the pilot's utility, lessons learned, and challenges DoD would face if technology were to be adopted at scale.

Success Measures: Meaningful increase in capital market funding for defense-related companies; increased number of companies crossing Valley of Death and program offices integrating commercially developed technology to speed innovation milestones; increased number of production contracts from nontraditional vendors, with more vendors competing for each contract; increased touchpoints between cutting-edge tech and the warfighter/end users; and the identification of specific tech adoption challenges that can be addressed ahead of requirements process for more-seamless tech adoption and integration.

Notional Examples: A majority VC-backed company demonstrates a novel capability that provides an advantage over a near-peer adversary and is fast-tracked to SBIR Phase III, through which the firm begins production at scale and crosses the Valley of Death.

A publicly traded deep-tech company that qualifies as a small business, now allowed to compete for SBIR grants, begins to develop the foundation of a quantum network for the US military.

The Army discovers through a biotech pilot project that an advanced material it hoped to put into a program of record does not provide meaningful benefit for the cost and pursues another alternative.

The Navy uses its OSC pilot to buy hours of time on a quantum computer provided over the cloud, through which the Navy discovers the quantum computer's utility in improving logistics and maintenance. However, the Navy does not know how to manage the data being generated and needs an extra data scientist to oversee the process. The Navy begins to generate a data governance process, forms a new billet to manage it, and begins determining the best acquisition pathway in anticipation of purchasing quantum computing as a service.

RECOMMENDATION 6:

Congress, OSD, and SAEs increase incentives and reduce barriers for leading technology companies to do business with the DoD by September 2024.

Addresses challenges 1 and 3.

● Increase Incentives

- **Production Contracts.** The DoD and Congress in future defense budgets rebalance the ratio of RDT&E and Procurement funding to historical norms over the past thirty years. From 1990 to 2019, the ratio was 39 percent to 61 percent, respectively. This would provide more than \$20 billion in additional procurement funds to acquire production quantities faster, leverage commercial R&D, and fuel a broader market for leading technology firms. Increasing production and lowering barriers to entry will attract venture capital firms and bring private research and development funding to the defense market. As most of USD(R&E)'s fourteen critical technologies are commercially driven, this rebalance would enable faster fielding of warfighter priorities.
- **Set Precedent.** USD(A&S) and SAEs report the number of large contracts (i.e., more than \$50 million) awarded to start-ups and NDCs annually to measure and convey the trends of the DoD investing in these companies beyond small SBIR awards.
- **Innovation Funds.** USD(R&E) and services include start-ups and NDCs as part of selection criteria for congressionally directed innovation funds.
- **Show Support.** USD(A&S) and SAEs scale the direction, goals, and guidance for working with small and disadvantaged businesses to include technology start-ups and NDCs. Include NDCs as part of the small-business integration working group being established for FY23 NDAA Section 874.
- **Broaden Access to Capital Markets.** Congress and USD(A&S) modernize the use of Defense Production Act Title III and credit loan authorities available to other agencies and departments to dynamically access capital, embrace commercial terms, and strengthen the domestic industrial base capabilities, based on lessons learned from COVID and the war in Ukraine. This use could include purchase commitments and loan guarantees, similar to how the Export-Import Bank works with US companies overseas, to increase incentives and reduce risk for companies seeking to scale production of critical technologies.

● Decrease Barriers

- Congress should raise the Cost Accounting Standards (CAS) threshold to at least \$100 million; revise the commercial item exemption in 48 CFR 9903.201-1(b)(6); and make related CAS reforms as recommended by the Section 809 Panel to reduce compliance costs, which are the biggest barrier to entry in defense.
- DoD, GSA, and Office of Management and Budget invest in modernizing SAM.gov and related DoD websites that publish contract opportunities to improve user design, alerts, DoD-industry collaboration, processes, and status. Many find SAM.gov onerous to use.
- Fully resource and drive the Defense Counterintelligence and Security Agency to streamline processes, increase staffing, and pursue novel approaches to reduce the large backlog of individual and facility security clearances that impose long delays on contractors to begin work or scale.
- USD(A&S) and SAEs assign visible leaders for SBIRs, OTs (including OT Consortia), Middle Tier of Acquisitions, and Commercial Solutions Openings to champion adoption; set vision; simplify processes; curate leading strategies; and improve guidance, training, structures, and direction to continuously improve adoption. Update policies and guidelines to ensure efforts conducted under OTs count for past performance and small disadvantaged business goals to incentivize industry and government use.
- USD(A&S), USD(R&E), and services establish a team to map and improve processes to scale successful research and prototypes into new or existing acquisition programs. This includes requirements, acquisition, budget, contracting, engineering, and testing, among others.
- USD(A&S) and SAEs establish a working group, to include primes and NDCs, to explore how to incentivize primes to better leverage technology start-up companies. The objective is to fuel disruptive defense innovation from novel tech companies and leverage the primes to scale integration and production of weapon systems to create an enduring battlefield advantage.

Success Measure: USD(A&S) reports an increase in the number of new companies in the industrial base by 5 percent, offsetting the recent trend of 5 percent decrease annually. At least ten NDCs are awarded contracts of more than \$50 million that address validated defense requirements. Defense primes significantly increase partnerships, subcontracts, and acquisitions of start-ups and NDCs to integrate their technologies into weapon systems.

Notional Example: A leading technology company with viable solutions for defense that historically avoided defense contracts is now receptive (with board support) to pursue contracts given the higher CAS thresholds, reduced unique compliance requirements, and improved clearance processes.

RECOMMENDATION 7:

USD comptroller proposes streamlined budget justification and chief digital and artificial intelligence officer (CDAO) modernizes supporting details in congressionally accessible information system for the president’s FY 2026 budget request.

Addresses challenge 7.

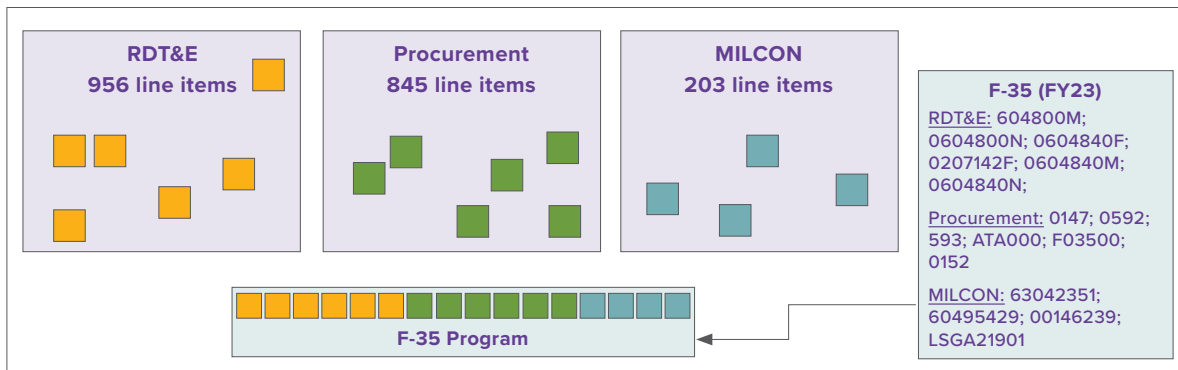
- USD comptroller proposes a format for streamlining budget justification documents in the investment accounts, focusing on cogent six-page program overviews at the BLI/PE level (R-1 and P-1) with hyperlinks to supporting details.
 - Seek implementation for the president’s FY 2026 budget request.
- CDAO leads the effort to create a query tool and dashboard tied to Advana’s backend data that delivers insight down to the existing level of justification material, allowing for more frequent updates.
 - This tool should be capable of replicating Financial Management Regulation Volume 2B, Chapters 4 and 5 presentations.

- Prototype early access to congressional staff with the president’s FY 2025 budget request, in addition to the traditional format.
- This tool should seek to incorporate budget execution data such as quarterly DD1416s and contract obligations as data integration improves.

Success Measure: Congressional staff use the new information system for their budgetary and program analysis; staff desires expansion into other accounts, including Operations and Maintenance and Military Personnel.

Notional Example: Congressional staff can find up-to-date information on DoD program activities without having DoD officials provide the information directly to a committee.

Budget Justification Not Supporting Congressional Oversight



Current budget justifications are submitted across tens of thousands of pages that often obscure program oversight. The F-35 program, for example, had total or partial interest in more than fifty investment and military construction line items since 2002, and was spread between sixteen line items in FY23 alone. This cumbersome system reduces trust and transparency between Congress and the DoD. Credit: Eric Lofgren

RECOMMENDATION 8:

Tying Experimentation to Acquisition Outcomes: Scaling and Accelerating Successful Demonstrations

Addresses challenges 1, 4, and 8.

The DoD and industry invest significant time, funding, and resources to conduct operational exercises that experiment and demonstrate emerging capabilities and technologies in an operationally relevant environment. Even after a major exercise in which senior commanders agree on the success of demonstrated capabilities and demand to acquire these at scale, there is often a two- to four-year lag time for DoD to formally define requirements, secure funding, and shape acquisition and contract strategies. For example, even successful capabilities selected by USD(R&E)'s Rapid Defense Experimentation Reserve (RDER) still must go through the Program Objective Memorandum and Deputy Secretary's Management Action Group processes to begin scaling.

- Congress to pilot providing \$250 million to scale operationally relevant technologies demonstrated at operational exercises that address the preeminent challenge of deterring the People's Republic of China, such as RDER. The funds will facilitate the acceleration and scaling of novel capabilities into the hands of the warfighter at the speed of relevance, help vendors cross the Valley of Death, and incentivize new nontraditional companies to work with the DoD. This will significantly shorten the traditionally long lag times for successful vendors to receive funding while the DoD finalizes requirements, funding, and contracts. The associated funds would be particularly useful for the technology needed to integrate military forces that will revolve around digital tools and other foundational "middleware" technologies that sometimes fall in the seams of traditional major hardware-centric acquisition.

The fund should:

- Be allocated in FY 2024 spending bill to specific programs or initiatives no later than 180 days from completion of the exercise on discovered solutions.
- Be limited to five or fewer high-potential capabilities to ensure they are properly resourced to meaningfully scale.
- Be directly allocated to an acquisition organization, such as a program executive office, to rapidly acquire capabilities that have demonstrated success in order to address priority operational risks or opportunities.
- Use Defense Production Act Title III or adapt authorities available to other agencies and departments to provide credit guarantees or other funding approaches in support of technology and capability providers.

Success Measures: Increased number of technologies and capabilities demonstrated successfully that are transitioned at scale to the warfighter; increased number of vendors incentivized to demonstrate at exercises.

Notional Example: A company demonstrates a swarm of small undersea intelligence, surveillance, and reconnaissance drones at the Rim of the Pacific 2024 exercise. The firm is awarded a low-rate initial production contract within sixty days and deploys its capability with the Navy in 2025.

RECOMMENDATION 9:

USD(A&S) and acquisition executives propose realigning existing organizations to adopt the Space Development Agency (SDA) model, and Congress grants additional enabling authorities to those organizations in FY25 NDAA.

Addresses challenges 2 and 4.

- USD(A&S) and SAEs charter a small team to build out a model, structure, key elements, and a framework replicating the SDA and lessons learned from rapid acquisition.
 - SDA provides an early model for preemptive disruption within the Space Force. The disruptive units should focus on current technologies from the labs and industry that can be quickly fielded and scaled within existing rapid acquisition authorities. Mature defense and commercial capabilities, along with broader portfolio requirements, can shape a streamlined process. This model builds upon successful organizations like the Air Force Rapid Capabilities Office, Big Safari, and Special Operations Command’s acquisition and SOFWERX organizations.
- Service leadership identifies priority capability areas that are ripe for disruption—ones where the current operational model is outmoded for the digital age and/or where novel technologies offer radically different operational capabilities at greater speed and scale to achieve mission priorities.
- Each identified service and defense agency employs an SDA model to a priority capability area and repurposes organizations, funding, and resources to implement.
 - Identify the right charismatic leader who embodies these characteristics: high technical acumen, proven product manager, well-defined vision, extensive personal network in warfighting and industry communities, commitment to a five-year tenure, and an intangible “wild card” quality. Provide statutory protections to extend top cover beyond the length of time of political appointees for the new organizations to disrupt entrenched mindsets on major systems, operations, and force structures employed for decades.
 - DoD leaders continually discuss and iterate on the new model with key stakeholder organizations across the DoD and congressional defense committees.

Success Measure: Congressional buy-in, with a small set of targeted projects identified for each organization and underway in FY 2024 to prepare for rapid scaling in FY 2025 with capabilities initially fielded by FY 2027.

Notional Example: Navy leadership, in its commitment to autonomous systems, bundles PEO Unmanned and Small Combatants, Task Force 59, Unmanned Task Force, and the director of unmanned systems into a new naval autonomy organization with authorities and flexibilities similar to SDA and related rapid-innovation organizations.

RECOMMENDATION 10:

The Vice Chairman of the Joint Chiefs of Staff (VCJCS) and services establish a team to collaboratively modernize JCIDS and service requirements processes by September 2024.

Addresses Challenges 2, 4, and 5

The DoD’s JCIDS is a complex, disjointed bureaucracy across Joint Staff and the services. The DoD requires a streamlined, tailored requirements framework and processes that iterate operational needs and threats with technology solutions, while also aligning requirements, acquisition, and budget systems.

- VCJCS and services charter a team or multiple teams to modernize DoD’s requirements enterprise to include:
 - Design a requirements framework that better incorporates bottom-up capability requirements from the warfighter and addresses joint strategic capability concerns. It must align service/agency and JROC core processes while allowing some tailoring and flexibility.
 - Enable a requirements system that breaks from the mindset of locking down all requirements up front to a dynamic model that enables software-intensive commercial solutions and emerging technologies that meet

changing or evolving warfighting needs to iteratively shape capability developments.

- Overhaul, streamline, and tailor requirements documents based on capability size, urgency, product vs. service, and hardware vs. software. Develop new process to rapidly validate the military utility of a commercial solution instead of the traditional JCIDS.
- Aggressively streamline capability requirement development, coordination, and approval timelines from operational commands, through component commands, and Joint Staff. Impose tripwires for exceeding six months for software and twelve months for hardware to get senior leader involvement.
- Develop enduring overarching requirements for capability portfolios. Include a set of mission impact measures to focus investments and acquisitions to continuously improve.
- Retire the outmoded DoD Architecture Framework and focus on application programming interfaces per DepSecDef's data decree, architectures, and standards to enable interoperability. Strike the right balance between enterprise, service, and portfolio orchestration with flexibility for program and industry solutions.
- Modernize the analysis of alternatives processes to enable a more streamlined and iterative approach that values prototypes, experiments, minimum viable products, and commercial solutions with warfighter and other user feedback over lengthy headquarters staff analysis.
- Better integrate threat and technology assessments early and throughout the process.
- The team must include external change management experts and collaborate with industry (traditional and nontraditional) and the DoD S&T community to get their input and feedback on providing options to inform DoD requirements.
- Develop a career path, structure, and improved training for DoD requirements managers.
- Publish new policies, guidance, and templates in dynamic online formats instead of five-hundred-page PDFs.
- Congress directs the Government Accountability Office to assess the DoD's requirements management processes, policies, and practices to include timelines; alignment to the DoD budget and acquisition processes, mission outcomes, portfolio management; and harnessing commercial technologies.
- The Senate Armed Services Committee and/or House Armed Services Committee hold hearings with the VCJCS and the service chiefs on modernizing DoD requirements processes to enable greater speed, agility, and innovation.

Success Measure: Joint Staff and service stakeholder organizations collaboratively develop a modern approach to managing defense requirements. The new requirements system integrates the key elements outlined above by September 2024.

Notional Example: The Air Force establishes an uncrewed aerial systems (UAS) portfolio requirements document that aggressively streamlines all future UAS requirements, bakes in interoperability standards, and enables many novel commercial solutions.

CONCLUSIONS AND NEXT STEPS

This interim report is focused on providing elected officials and senior DoD leaders with actionable recommendations that can be enacted promptly. The Commission discussed and acknowledged broader, strategic matters that will take time to flesh out and implement. These include establishing a more fulsome capital market engagement strategy, harnessing a modern workforce, and exploring digital transformations of enterprise systems to enable broader reforms and opportunities.

The Commission's final report, which is planned for September 2023, will expand upon these ten recommendations to include a broader set of reforms to strengthen defense innovation adoption. It will include case studies that highlight successes in adopting dual-use technologies within short time frames. After all, living through the "decisive decade" means that Americans deserve decisive capabilities to provide for the common defense, in this decade.

BIOGRAPHIES



The Hon. Mark T. Esper, PhD
Board Director and Co-Chair of the Commission, Atlantic Council; 27th US Secretary of Defense

The Honorable Mark T. Esper is a partner and board member of the venture capital firm Red Cell Partners and a board director at the Atlantic Council. He was sworn in as the 27th Secretary of Defense on July 23, 2019, and served in that capacity until November 9, 2020. He previously served as acting secretary of defense from June 24, 2019, to July 15, 2019. Esper was confirmed as the 23rd secretary of the US Army in November 2017.

In the private sector, Esper was vice president for government relations at the Raytheon Company. He earlier served concurrently as executive vice president of the US Chamber of Commerce's Global Intellectual Property Center and as vice president for European and Eurasian affairs from 2008 to 2010. From 2006 to 2007, He was chief operating officer and executive vice president of defense and international affairs at the Aerospace Industries Association.

In addition to his work in the private sector, Esper served in a range of positions on Capitol Hill and in the Defense Department. He served as legislative director and senior policy advisor to former Senator Chuck Hagel. He was a senior professional staff member on the Senate Foreign Relations and

Senate Governmental Affairs committees, policy director for the House Armed Services Committee, and national security advisor for former Senate Majority Leader Bill Frist. During the President George W. Bush administration, he served as deputy assistant secretary of defense for negotiations policy at the Pentagon. He was national policy director to the late Senator Fred Thompson for his 2008 presidential campaign and was a Senate-appointed commissioner on the US-China Economic and Security Review Commission.

Esper began his career in the US Army. He is a 1986 graduate of the United States Military Academy and received his commission in the infantry. Upon completion of Ranger and Pathfinder training, he served in the 101st Airborne Division and participated in the 1990-91 Gulf War with the "Screaming Eagles." He later commanded a rifle company in the 3-325 Airborne Battalion Combat Team in Vicenza, Italy. He retired from the Army in 2007 after spending ten years on active duty and eleven years in the National Guard and Army Reserve. After leaving active duty, he served as chief of staff at the Heritage Foundation think tank.

He is a recipient of the Department of Defense Medal for Distinguished Public Service. Among his many military awards and decorations are the Legion of Merit, a Bronze Star Medal, the Kuwait Liberation Medal, Kuwait Liberation Medal-Saudi Arabia, and the Combat Infantryman Badge. Esper holds a PhD from the George Washington University.



The Hon. Deborah Lee James
Board Director and Co-Chair of the Commission, Atlantic Council; 23rd US Secretary of the Air Force

The Honorable Deborah Lee James is chair of the Defense Business Board and board director at the Atlantic Council. Previously, she served as the twenty-third secretary of the US Air Force and was responsible for the affairs of the Department of the Air Force, including the organizing, training, equipping, and providing for the welfare of its nearly 660,000 active-duty, National Guard, Reserve, and civilian airmen and their families. She also oversaw the Air Force's annual budget of more than \$139 billion. James has thirty years of senior homeland and national security experience in the federal government and the private sector. Prior to her Air Force position, James served as president of Science

Applications International Corporation's (SAIC's) technical and engineering sector, where she was responsible for 8,700 employees and more than \$2 billion in revenue.

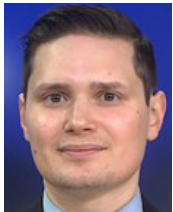
For twelve years, James held a variety of positions with SAIC, including senior vice president and director of homeland security. From 2000 to 2001, she was executive vice president and chief operating officer at Business Executives for National Security, and from 1998 to 2000 she was vice president of international operations and marketing at United Technologies. During the Bill Clinton administration, from 1993 to 1998, James served in the Pentagon as assistant secretary of defense for reserve affairs. In that position, she was senior advisor to the secretary of defense on all matters pertaining to the 1.8 million National Guard and Reserve personnel worldwide. In addition to working extensively with Congress, state governors, the business

community, military associations, and international officials on National Guard and Reserve component issues, James oversaw a \$10 billion budget and supervised a one-hundred-plus-person staff. Prior to her Senate confirmation in 1993, she served as an assistant to the assistant secretary of defense for legislative affairs.

From 1983 to 1993, James worked as a professional staff

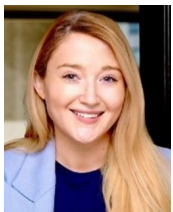
member on the House Armed Services Committee, where she served as a senior advisor to the Military Personnel and Compensation Subcommittee, the NATO Burden Sharing Panel, and the chairman's Member Services team.

James earned a BA in comparative area studies from Duke University and an MA in international affairs from Columbia University School of International and Public Affairs.



Eric Lofgren
Professional Staff Member, Seapower and Acquisition Lead, US Senate Committee on Armed Services; Author, Commission on Defense Innovation Adoption, Atlantic Council

Eric Lofgren is a professional staff member and the seapower and acquisition lead for the United States Senate Committee on Armed Services. His work on this Commission was completed while he was a research fellow at the Center for Government Contracting in the George Mason University (GMU) School of Business, where he performed research, wrote, and led initiatives on business, policy, regulatory, and other issues in government contracting. He manages the daily blog *Acquisition Talk* and produces the *Acquisition Talk* podcast, on which he interviews leading experts in the field. Lofgren was an emergent ventures fellow at GMU's Mercatus Center. Prior to joining GMU, he was a senior analyst at Technomics Inc., supporting the Defense Department's Cost Assessment and Program Evaluation office. He has also supported government analyses for the Government Accountability Office, Naval Sea Systems Command, Canada Public Works, and the Office of the Deputy Assistant Secretary of the Army for Cost and Economics.



Whitney M. McNamara
Vice President, Beacon Global Strategies; Author, Commission on Defense Innovation Adoption, Atlantic Council

Whitney McNamara is a vice president at Beacon Global Strategies. Prior to that, McNamara worked in the Office of the Secretary of Defense for Research and Engineering, where she served as the S&T portfolio lead at the Defense Innovation Board, whose mission is to provide the secretary of defense, deputy secretary of defense, and other senior leaders with recommendations on emerging technologies and innovative approaches that DoD should adopt to ensure US technological and military dominance. Before that, McNamara was an emerging technologies policy subject matter expert supporting the Department of

Defense's Chief Information Officer (CIO). Prior to that, she was a senior analyst at national security think tank the Center for Strategic and Budgetary Assessments, focusing on emerging technologies, future operating concepts, and informationized warfare in the context of long-term technological and military competition with great powers.



Peter Modigliani
Defense Acquisition Lead, MITRE Corporation; Author, Commission on Defense Innovation Adoption, Atlantic Council

Peter Modigliani is a defense acquisition leader within the MITRE Corporation enabling the DoD and intelligence community to deliver innovative solutions with greater speed and agility. He works with acquisition and CIO executives, program managers, the Section 809 Panel, congressional staffs, industry, and academia to shape acquisition reforms, strategic initiatives, and major program strategies. Modigliani champions digitally transforming the acquisition enterprise to modernize and accelerate operations. He launched MITRE's digital acquisition platform, AiDA. Prior to MITRE, Modigliani was an Air Force program manager for C4ISR programs and an assistant vice president with Alion Science and Technology, supporting the Air Force Acquisition Executive's Information Dominance division.



Stephen Rodriguez
Senior Advisor and Study Director of the Commission on Defense Innovation Adoption, Forward Defense, Scowcroft Center for Strategy and Security, Atlantic Council

Stephen Rodriguez is a senior advisor with the *Forward Defense* program at the Atlantic Council's Scowcroft Center for Strategy and Security and founding partner of One Defense, a next-generation strategic advisory firm that leverages machine learning to identify advanced software and hardware commercial capabilities and accelerate their transition into

the defense industrial base. He is also a venture partner at Refinery Ventures, an early-scale fund investing in dual-use technologies across the country. Rodriguez began his career at Booz Allen Hamilton supporting its national security practice. In his capacity as an expert on game-theoretic applications, he supported the US intelligence community, Department of Defense, and Department of Homeland Security as a lead architect for wargames. He subsequently was a vice president at Sentia Group, an artificial intelligence company, and served as chief marketing officer for NCL Holdings, an international defense corporation. Rodriguez serves as a board director or board advisor of ten venture-backed companies—Duco, Edgybees, Hatch Apps, HighSide, Omelas, Uniken, Ursa Major Technologies, Vantage Robotics, *War on the Rocks*, and Signal Labs—as well as the nonprofit organizations Public Spend Forum and Training Leaders International. He is also senior innovation advisor at the Naval Postgraduate School.



Clementine G. Starling
*Director, Forward Defense,
Scowcroft Center for Strategy
and Security, Atlantic Council*

Clementine G. Starling is the director of the Atlantic Council's *Forward Defense* program and a resident fellow within the Scowcroft Center for Strategy and Security. In her role, she shapes the Center's US defense research agenda, leads *Forward Defense*'s team of nine staff and forty fellows, and produces thought leadership on US security strategies and the evolving character of warfare. Her research focuses on long-term US thinking on issues like China's and Russia's defense strategies, space security, defense industry, and emerging technology. Prior to launching *Forward Defense*, Starling served as deputy director of the Atlantic Council's Transatlantic Security team, specializing in European security policy and NATO. From 2016, she supported NATO's Public Diplomacy Division at two NATO summits (Brussels and London) and organized and managed three senior Atlantic Council task

forces on US force posture in Europe, military mobility, and US defense innovation adoption. During her time at the Atlantic Council, Starling has written numerous reports and commentary on US space strategy, deterrence, operational concepts, coalition warfare, and US-Europe relations. She regularly serves as a panelist and moderator at public conferences. Among the outlets that have featured her analysis and commentary are *Defense One*, *Defense News*, *RealClearDefense*, the *National Interest*, *SpaceNews*, NATO's Joint Air and Space Power Conference, the BBC, National Public Radio, ABC News, and *Government Matters*, among others. Starling was named the 2022 Herbert Roback scholar by the US National Academy of Public Administration. She also served as the 2020 Security and Defense fellow at Young Professionals in Foreign Policy. Originally from the United Kingdom, Starling previously worked in the UK Parliament focusing on technology, defense, Middle East security, and Ukraine. She also supported the Britain Stronger in Europe campaign, championing for the United Kingdom to remain within the European Union. She graduated with honors from the London School of Economics with a BS in international relations and history and is an MA candidate in security studies at Georgetown University's School of Foreign Service.

Mark J. Massa is an associate director in the *Forward Defense* program. His work focuses on nuclear deterrence strategy and policy. He holds an MA in security studies and a BSFS in science, technology, and international affairs from Georgetown University.

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To produce this interim report, the authors conducted more than fifty interviews and consultations with current and former officials in the US Department of Defense, congressional staff members, allied embassies in Washington, DC, and other academic and think tank organizations. However, the analysis and recommendations presented in this interim report are those of the authors alone and do not necessarily reflect the views of individuals consulted, Commissioners, Commission sponsors, the Atlantic Council, or any US government organization. Moreover, the authors, Commissioners, and consulted experts participated in a personal, not institutional, capacity.

LIST OF ACRONYMS

ATR: Above threshold reprogramming	OSD: Office of the Secretary of Defense
BLI: Budget line item	OT: Other transaction
CAS: Cost Accounting Standards	PE: Program elements
CDAO: Chief Digital and Artificial Intelligence Officer	PEO: Program executive officer / office
DARPA: Defense Advanced Research Projects Agency	RDER: Rapid Defense Experimentation Reserve
DepSecDef: Deputy Secretary of Defense	RDT&E: Research, development, testing, and evaluation
DIU: Defense Innovation Unit	S&T: Science and technology
DoD: US Department of Defense	SAE: Service acquisition executive
FFRDC: Federally Funded Research and Development Center	SBA: Small Business Agency
FY: Fiscal Year	SBIR: Small Business Innovation Research program
GSA: General Services Administration	SDA: Space Development Agency
IRAD: Independent research & development	SOCOM: US Special Operations Command
JCIDS: Joint Capabilities Integration and Development System	STRATFI: Strategic Funding Increase
JROC: Joint Requirements Oversight Council	UAS: Uncrewed aerial system
MCWL: US Marine Corps Warfighting Laboratory	USD(A&S): Under Secretary of Defense for Acquisition and Sustainment
MILPERS: Military personnel	USD(R&E): Under Secretary of Defense for Research and Engineering
NDAA: National Defense Authorization Act	USD: Under Secretary of Defense
NDC: Nontraditional defense company	VC: Venture capital / venture capitalist
O&M: operation and maintenance	VCJCS: Vice Chairman of the Joint Chiefs of Staff
OSC: Office of Strategic Capital	

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