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STRATEGIC EDGE

A Blueprint for Breakthroughs in Defense Innovation

Commissioned by Michael R. Bloomberg

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“The era of procrastination, of half-measures, of soothing and baffling expedients, of delays is coming to a close. In its place we are entering a period of consequences.”¹

– Winston Churchill, (1936)

“ Military history has taught us that it is the nation which encourages and leverages disruptive innovations first that has the upper hand. We no longer have an inherent advantage and must work twice as hard to re-establish it.”²

– Rep. Ken Calvert (CA-41),
Chairman, Defense Appropriations Subcommittee (Sep. 2023)

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Preface by Michael R. Bloomberg

For decades, America's strategic edge has depended on the ingenuity of its people and the strength of its institutions. As threats evolve and adversaries raise their ambitions, maintaining that edge requires a transformation in how the United States conducts business.

The stakes could not be higher. America's competitors are testing the limits of their industrial bases. To remain the leading global power and a trusted ally, the Defense Department must act decisively, or run the risk of falling further behind.

Throughout my career, both in and out of government, I have seen firsthand how difficult – and important – it is to drive change at large institutions. The professionals who helped produce this report all have experience as change-makers.

Contributors include former military officials, business leaders, academics, technologists, entrepreneurs, and venture capitalists. Together, we aim to provide a roadmap for action, one that can start with redirecting money away from decades-old legacy systems and toward a new, faster pipeline for the most innovative capabilities.

As we write in the following pages, greater instability and uncertainty abroad calls for an all hands on deck response here at home. Ensuring that our country can meet the speed and scale of modern challenges requires not just new technologies, but stronger ties between the public and private sectors.

By expanding its collaboration with non-traditional partners, strengthening its industrial base, and attracting both more private capital and top talent, the Defense Department can help ensure that the U.S. military remains the world's strongest – and the most trusted and valued ally for nations around the world.

Michael R. Bloomberg
Founder, Bloomberg L.P. and
Bloomberg Philanthropies

Executive Summary

Thesis

America's military and industrial strength to deter and defeat adversaries has eroded to its lowest point in decades. Preventing large-scale conflict demands the immediate mobilization of a national industrial base capable of rapidly producing lethal, software-enabled hardware at scale. The current political, technological, and financial environment offers an opportunity for transformation, but we must act quickly and decisively. Failure to act puts America at near-term risk of fighting — and potentially losing — the next war.

Background and Challenge

The foundation of military deterrence lies in the ability to deliver lethal hardware at a scale that compels adversaries to reconsider aggression. Following the Vietnam War, the U.S. adopted the "Second Offset," emphasizing low-volume, high-cost, and highly classified systems to counter Soviet numerical superiority. This focus on expensive and highly sophisticated technology created barriers to industry competition and stifled investment in high-volume production.

Simultaneously, U.S. commercial strategies prioritized technological innovation ideation — becoming the global "tech idea generator" — while offshoring manufacturing to nations with less stringent labor and environmental laws. America now struggles to build critical systems at scale, and this diminished domestic manufacturing capacity has created a national security crisis.

The combination of a diminished industrial base and an outdated defense acquisition process has left America unable to field necessary deterrence capabilities at scale. To address this, lawmakers and the DoD will have to implement significant reforms to meet four key goals:

1	Field Emerging and Critical Technologies by Creating an Alternative Pipeline	The U.S. must not only invest in or acquire cutting-edge technologies but also ensure they are deployed at scale and placed directly into the hands of warfighters, where they can deliver operational impact and strategic advantage. An alternative procurement pathway is urgently needed to incentivize the development and production of these critical technologies at scale, driving a national effort to manufacture and deploy them rapidly.
2	Restore U.S. Manufacturing as a Global Powerhouse	Innovation without scalable manufacturing is insufficient. To sustain leadership in any technology sector, a nation must also manufacture at scale. The U.S. must move away from custom-built production lines and invest in dual-use manufacturing technologies that harness AI for flexibility and are capable of producing commercial goods and seamlessly shifting to military production during conflict.
3	Attract, Train, and Retain Talent for Our Nation	Along with dual-use technologies, capital, and manufacturing, we must create a workforce with transferrable talent that can work in both public and private sectors, and understand the objectives of both. It is equally important to build a culture of innovation within the DoD and equip workers with the skills and incentives to support national security.
4	Shift DoD Resources to Innovative Programs and Unlock Private Capital	Greater resources are required for defense innovation. However, in a world of nearly \$2T deficits and \$36T debt, major increases in defense spending are highly unlikely. To remain competitive, lawmakers and the DoD must divest as much as 15% of the current budget from legacy systems and redirect resources to emerging technologies. By reducing technological and regulatory risks, the DoD can unlock commercial markets, attract private capital, and lower taxpayer costs while accelerating capability development.

For the past 80 years, the U.S. has deterred global conflict by maintaining a military with a decisive advantage over its competitors. Averting major conflict now and in the decades to come will require transformative change, which demands shifting current resources away from legacy programs to establish an alternative pipeline, outside the traditional procurement system, that enables rapid acquisition and deployment of technologies at scale.

The recommendations in this report can help the U.S. regain its competitive edge and prepare us to prevail in future conflict. The authors acknowledge that other actions may also contribute to achieving these strategic objectives.

One thing is certain: time and resources are in short supply.



Background

“ We have to increase our tolerance for risk at DoD and within Congress. We have to increase our tolerance for risk at the Pentagon. Build that into the legislation, and then what I’m really interested in...is how do you change the culture at the Pentagon, because the culture at the Pentagon is: Don’t stick your head up. Don’t innovate. Follow the rules. Follow the process, and you will be rewarded for that. You will not be rewarded for taking chances. We need to change that culture...”³

**– Rep. Adam Smith (WA-9), Ranking Member,
House Armed Services Committee (Feb. 2024)**

III. BACKGROUND

If America had the capability, capacity, and readiness to project power and deter adversaries from undermining U.S. interests, there would be no need to write this report. However, in its current state, the U.S. military force structure is poorly positioned to provide effective deterrence. Compounding this issue is a U.S. defense industrial base that, after decades of outsourcing manufacturing, struggles to rapidly produce the systems needed to address threats in a timely manner. In contrast, China's industrial capacity allows it to quickly mass-produce critical military hardware such as ships, fighters, and missiles.

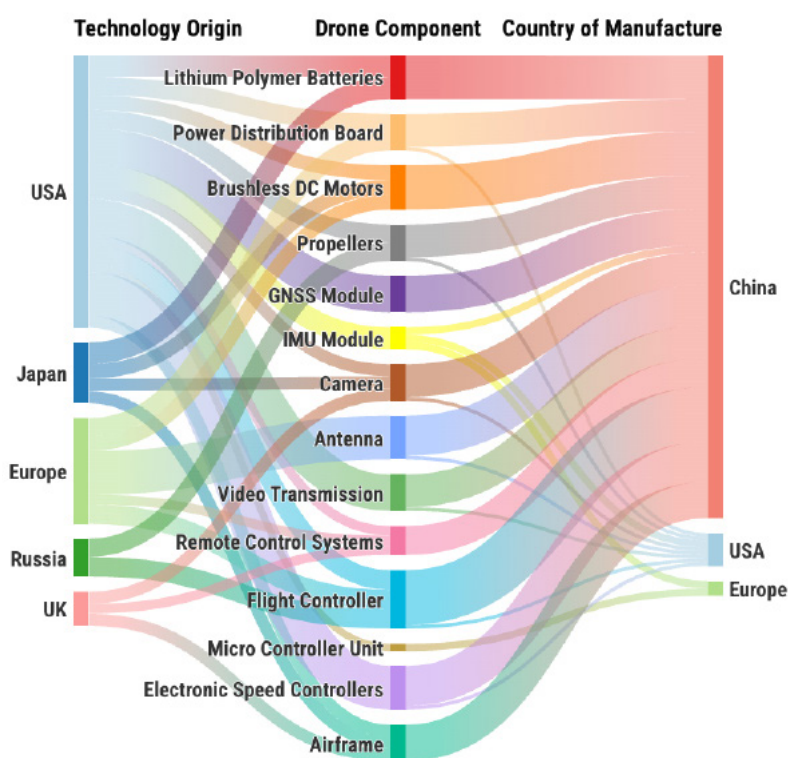
The U.S. has enhanced its legacy systems and built advanced software and sensors; however, outdated and bespoke manufacturing processes impede the military's ability to acquire and deploy newer technology in a timely and affordable manner. These constraints could be catastrophic in a crisis.

This report calls for bold innovation in national defense. Many analyses highlight the disparity in R&D investment, with 80% coming from the commercial sector and 20% from the government. But as the chart shows, this is not a technology problem — it is a manufacturing problem. While China dominates in technology manufacturing (for example, 70–80% of smartphones are produced in China), this is not an option for military equipment.⁴

If America is not leading in manufacturing “high-tech” hardware and fielding it at scale, America cannot lead in deterrence. Our reliance on foreign manufacturing

strengthens competitors' supply chains, workforce, and technological capabilities, many of which have increasing military applications. U.S. funding has unwittingly enabled China's rapid transition from technology development to hardware production, cementing its dominance in 37 of 44 emerging technology sectors critical to national security. Now, our strategic competitor is playing at the varsity level in the sport that matters the most to the security of the nation — turning ideas into hardware that can threaten enemy targets.⁵

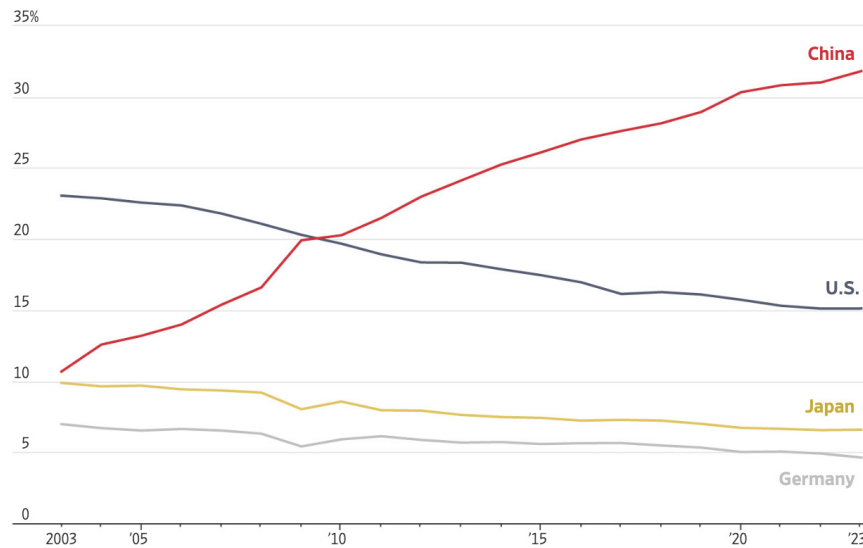
Technology Origin versus Country of Manufacture⁵



III. BACKGROUND

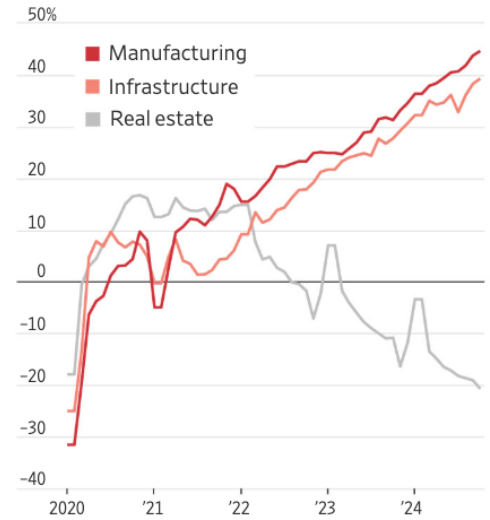
Share of Global Manufacturing and Associated Investment

Share of global manufacturing



Source: United Nations Industrial Development Organization

China fixed asset investment, percentage change since 2019*



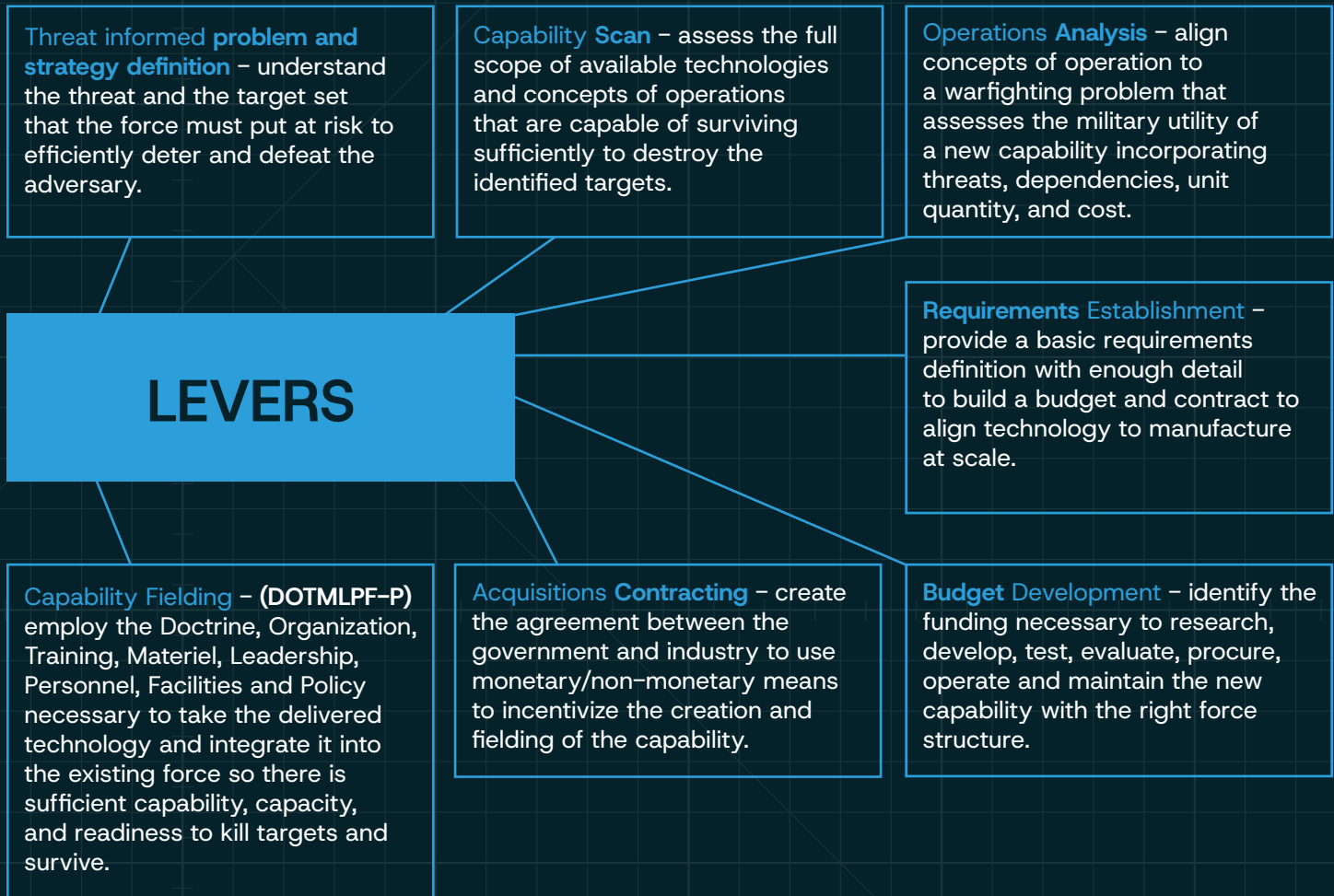
America's approach to offshoring production for short-term corporate gains has eroded its industrial base, intellectual property, and global technology leadership. America's inability to rapidly equip Ukraine demonstrates the severe limitations of its industrial base. Both defense primes and startups failed to respond effectively, highlighting a national security crisis in the industrial base.

On July 1, 2010, former Intel CEO Andy Grove wrote: "The first task is to rebuild our industrial commons. We should develop a system of financial incentives: Levy an extra tax on the product of offshored labor. Keep that money separate. Deposit it in the coffers of what

we might call the Scaling Bank of the U.S., and make these sums available to companies that will scale their American operations. Such a system would be a daily reminder that while pursuing our company goals, all of us in business have a responsibility to maintain the industrial base on which we depend and the society whose adaptability — and stability — we may have taken for granted."⁶

His advice went unheeded. The federal government has failed to sufficiently incentivize the retention of manufacturing talent, intellectual property, and production capacity. Despite numerous DoD innovation programs, progress has been inadequate.

The government adjusts these critical levers across the legislative and executive branches to create a force capable of deterring and defeating potential threats.



The responsibility for America’s weakened military strategic posture has been shaped by decades of shared decisions and actions across many stakeholders. Attempting to assign blame is a futile exercise that diverts valuable time and energy away from finding effective solutions. This report outlines the executive and legislative incentives necessary to mobilize the nation and shift America’s military strategic posture toward effective deterrence. Without bold action, the U.S. risks falling further behind in the competition that defines the security and stability of the modern world.

IV.

Specifications for Building Back Deterrence

**"I'm convinced we can
prevent the next war
by doing a better job
of being prepared for it."⁷**

**– Sen. Mitch McConnell,
Member, Senate Appropriations
Subcommittee on Defense (Aug. 2024)**

GOAL 1

Field Emerging and Critical Technologies by Creating an Alternative Pipeline

The Department of Defense's (DoD) ability to field emerging technologies is failing — not just because of the Planning, Programming, Budgeting, and Execution (PPBE) system, but due to a web of entrenched processes, fragmented priorities, and cultural resistance to risk. PPBE reform is essential, but it is not enough. The challenges are deeper, and the stakes are higher. Immediate action is needed to establish an alternative pipeline that prioritizes urgency, flexibility, and risk tolerance to deliver transformative capabilities at scale.

The current system's multi-year budgets and inflexible process are insufficient to keep pace with the rate of technological innovation. For example, the Fiscal Year 2025 budget under debate today was formulated before the emergence of generative AI like ChatGPT, highlighting the disconnect between budgeting timelines and technological progress. Despite efforts such as the Congressionally mandated PPBE Commission, there has been no significant reform, leaving the DoD unprepared to field disruptive technologies in time to maintain its advantage.

DoD must move innovation efforts out from under the PPBE, instead executing them under a new system that prioritizes urgency and flexibility. Risk tolerance in new technology development should be high without sacrificing standards, with the willingness to rapidly

fund and field efforts that are producing results, while aggressively pruning those that aren't. Speed to decision should be weeks, not decades. Speed from decision to action should be days, not years.

The ultimate goal is to ensure that the best solutions reach warfighters when and where they need them, in quantities that matter. Currently, this is not happening. Despite unparalleled access to cutting-edge innovation in the U.S., our warfighters often operate with outdated equipment while adversaries rapidly integrate advanced technologies into their military forces. This gap is not just frustrating — it is unacceptable. It weakens deterrence and leaves the U.S. at a disadvantage in an era defined by disruption.

Militaries, and especially the U.S. DoD, are inherently resistant to disruptive change, instead prioritizing incremental innovation. But we must be more afraid of irrelevancy than disruption. The U.S. has a competitive advantage in its robust commercial and academic innovation ecosystem, yet this advantage remains underutilized for national security purposes. Rapidly fielding disruptive capabilities would not only transform how the U.S. organizes, trains, and fights — it would also significantly enhance lethality in the field and make conflict less likely.

Key Challenges

Lack of Competition

Defense primes dominate major DoD programs with little incentive to deliver solutions on time, under budget, or beyond minimum requirements. The DoD is often held prisoner by primes who have no reason to change. Startups and nontraditional providers face significant barriers to entry, strongly disincentivizing revolutionary innovation.

Inadequate Requirements Process

Leaders setting requirements often lack awareness of emerging technologies and default to familiar, incremental solutions rather than embracing transformative advancements. While their experience is invaluable, it often results in a reliance on familiar, outdated solutions rather than disruptive advancements. This disadvantages the warfighter when facing a more adaptive and unencumbered opponent.

Absence of Clear, Centralized Demand Signal

Without centralized, prioritized needs shared by the DoD, industry lacks direction, leading to misaligned efforts and wasted resources. Further, acquisition executives sometimes avoid engagement and direct communication with industry to prevent the perception of a competitive advantage. As a result, startups face significant disadvantages, often forced to navigate DoD priorities blindly, with little to no guidance on the department's specific needs or desired systems.

Budgeting Constraints

Budgeting controlled primarily by the Services, combined with Congress's reliance on continuing resolutions, stifles innovation and delays deployment timelines. Services are often reluctant to reallocate funds, prioritizing the retention of their budgets over taking risks on new, nontraditional approaches that deviate from outdated, stove-piped systems.

Outdated Test and Evaluation Processes

Test and evaluation organizations struggle with disruptive capabilities. Linear rather than continuous testing methods are ill-equipped to assess algorithmic warfare, autonomy, or attritable platforms, slowing the fielding of critical capabilities. These processes often exaggerate the risks of deploying "good-enough" solutions, delaying innovation that could provide immediate operational advantages.

Risk-Averse Acquisition Culture and Lack of Incentives for Disruption

The DoD's acquisition culture prioritizes avoiding failure over embracing innovation, disincentivizing bold decisions and stifling transformative efforts. Despite having alternative authorities to accelerate processes, the default remains slow-moving, traditional programs of record that minimize risk and leave valuable solutions untapped. Combatant Commands depend on the Services which favor these incremental improvements aligned with entrenched doctrines and domains, resisting transformative changes that challenge the status quo. This lack of incentives extends to defense manufacturers, who, under cost-plus contracts, face no pressure to innovate or lower costs to reinvest, perpetuating a system that fails to deliver revolutionary capabilities.

Key Outcomes and Recommendations

Despite billions of dollars in appropriations, the current system is failing to deliver both new capabilities and legacy systems on time and within budget. A recent Government Accountability Office (GAO) report revealed that efforts to accelerate capability development have instead slowed the process. The DoD now takes an average of 11 years to deliver a new capability — 3 years longer than when these reforms began.⁸

Incremental reforms will not suffice; competition is essential. Establishing an alternate pipeline for new entrants and innovators will shift resources away from underperforming primes, creating a powerful incentive for them to improve.

OUTCOME 1	OUTCOME 2	OUTCOME 3
Field a Hedge Portfolio of Many Smart, Affordable, Modular, and Sustainable Systems ⁹	Restore Competition in our Defense Industrial Base	Bridge the Funding Gap for Non-traditional Companies

RECOMMENDATION 1.1	
Increase Authorizations and Appropriations for Rapid Fielding of Innovative Technologies	Congress should expand on the FY24 National Defense Authorization Act (NDAA) that created a \$1B hedge portfolio by seeking a ramp to a \$40B appropriation in support of rapid fielding of innovative technologies. This budget — driven by the services’ non-traditional innovation enterprises — would be used to address critical priority challenges such as but not limited to: low-cost, light-logistics, multi-domain drones, satellites and munitions; agile communications, computers and sensor nodes; and artificial intelligence agents and users. The goal is to rapidly experiment, exercise, and deploy in full-rate production, allowing developers to refine technologies in real-time to meet warfighters’ needs.
RECOMMENDATION 1.2	
Allocate 5% of Procurement Funds for Non-Traditional Companies	Allocate 5% of all departmental procurement budgets to companies that meet predefined criteria, determined by the offices of the Deputy Secretary of Defense and the Vice Chairman of the Joint Chiefs of Staff. Increasing the current 1% budget spend on non-traditional companies would send a clear signal that the DoD is committed to buying and fielding new technologies. It would encourage private and public capital markets to reinvest in defense technology companies that can deliver revolutionary technology to our warfighters. ¹⁰ This approach would cultivate a new wave of tech companies that might not otherwise enter the defense market, driving greater competition across the industrial base. This market expansion would spur innovation, lower costs, and enhance the quality and variety of technologies available to meet the Department of Defense’s evolving needs.

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

RECOMMENDATION 1.3

Create a Dedicated Intermediate Procurement Track for Non-traditional Companies

Non-traditional companies often find themselves lacking the long-term financial stability to advance their innovations to full-rate manufacturing to meet DoD demands. Addressing this funding gap is crucial to transforming promising technologies into deployed, effective capabilities. We suggest establishing a dedicated procurement track for companies transitioning from R&D to production. This track should incorporate flexible contract structures and a budget allocation to facilitate the scaling of proven technologies. Such an approach would enable the DoD to bridge the “valley of death” and provide a clear pathway to production for non-traditional companies, ensuring their innovations reach operational deployment.¹¹

RECOMMENDATION 1.4

Congress Designates, Empowers and Holds Accountable Senior Civilian and Military Officials Responsible for Delivering Disruptive Capabilities

The Armed Services Committees in Congress should designate a senior civilian official and a four-star military officer responsible for developing and fielding disruptive capabilities. These roles could be filled by the current Deputy Secretary of Defense and the Vice Chairman of the Joint Chiefs, but Congress should weigh whether these officials already have too many demands for their limited time.

Alternatively, the DoD could split the current Deputy Secretary of Defense role into two positions: a Deputy Secretary of Defense for Current Operations and a Deputy Secretary of Defense for Future Operations. This Future Operations deputy would lead a forum similar to the DMAG, building on and strengthening the successes of the Defense Innovation Working Group (DIWG) and Deputy’s Innovation Steering Group (DISG).¹² It would make recommendations to the Secretary of Defense on budget matters related to future force design and modernization.

The senior military official reporting to the Deputy Secretary of Defense for Future Operations would assess the future operational environment, develop warfighting concepts, design Joint Force structures, and identify critical operational challenges. This work would involve continuous modeling, simulation, and wargaming with input from all Services and Combatant Commands. The official would also be responsible for sharing operational challenges with industry, which would be designated by the Joint Requirements Oversight Council (JROC) where solutions are the ‘requirements’ to designated challenges.

To instill accountability, Congressional Defense Committees should regularly invite these two Deputy Secretaries to testify in closed sessions about their activities to field disruptive capabilities. At least once a year, these officials should also testify in an open session with each committee to discuss progress and expenditures.

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

RECOMMENDATION 1.5	
Build Robust Two-way Signaling Between Acquisition and Industry Professionals	Aligned with the designated senior civilian and military officials identified in recommendation 3, the DoD should encourage operators and acquisition professionals to actively engage with industry. Organizations should be encouraged to: 1) Publish annual priority lists in partnership with Combatant Commands and Service branches; 2) Act as a centralized interface for commercial companies, minimizing ambiguity and duplication across services; and 3) Establish feedback loops with industry, ensuring clear communication of evolving requirements. While adhering to ethical standards and avoiding unfair competitive advantages is essential, the tendency of bureaucracy to stifle open communication has historically resulted in vague guidance, obscured by legal language and complex documents. The DoD must engage more openly — speaking candidly, soliciting ideas, and providing actionable, meaningful feedback.

These recommendations for fielding technologies at speed and scale will only succeed with bold, accountable leadership. Resistance within the DoD is inevitable, and overcoming it will require unwavering commitment from strong leaders. Collaboration with the White House and Congress is equally essential, as alignment on the urgency of action is critical to securing the legislative and executive support needed for reform. With decisive leadership and clear accountability, our warfighters can take advantage of disruptive innovation and ensure the U.S. has the most capable and lethal military in the world.

GOAL 2

Restore U.S. Manufacturing as a Global Powerhouse

“It’s probably the number one thing I’ve been banging on about the last two years... a national mobilization of our defense industrial base. I don’t think what we’re doing now is remotely adequate for what we would need... we can’t produce munitions fast enough let alone things like attack submarines or penetrating bombers or satellites...”¹³

– Former Assistant Secretary of Defense for Strategy and Force Development, Elbridge Colby

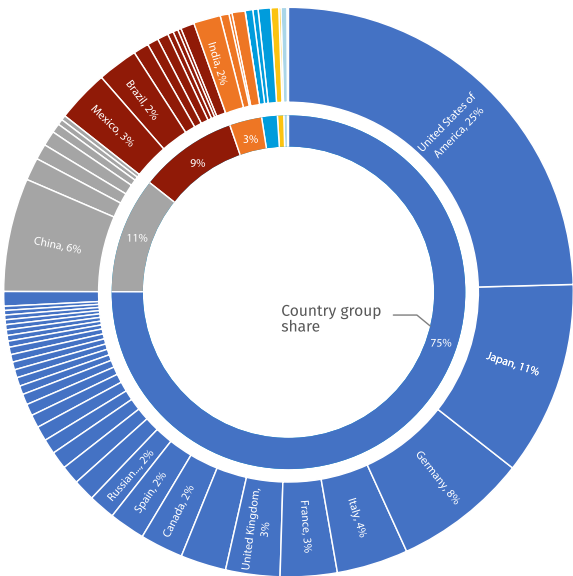
The United States is at a critical juncture in manufacturing. Once the source of American prosperity and military superiority, the nation’s industrial capacity has eroded due to decades of offshoring, underinvestment, and relentless pressure from public equity markets to boost short-term returns. As capital investment stagnated and supply chains stretched across the globe, U.S. manufacturing ceded ground

to competitors like China, whose share of global manufacturing is projected to reach 40% by 2030, according to the UN Industrial Development Organization in Figure 1.¹⁴ Indeed, it’s not just China that has surpassed the U.S. in manufacturing prowess and the use of advanced technology and investment, it’s also allies like South Korea and Japan who significantly outproduce U.S. manufacturers today, as a percentage of GDP.¹⁵

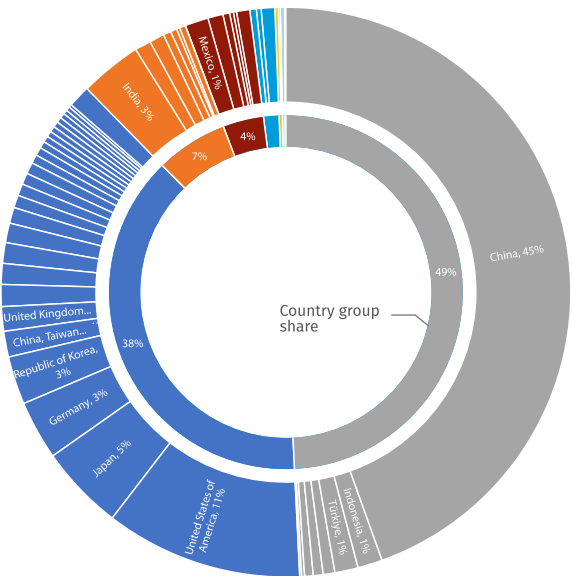
The U.S. decline in manufacturing capacity can be reversed, but urgent national action is needed to restore American deterrence. To reclaim its status as a global manufacturing powerhouse, a comprehensive effort akin to Freedom’s Forge for Advanced Manufacturing is needed, along with a new model for domestic contract manufacturing, requirements, and investment in raw materials and supply chains. If not addressed, China could dominate the advanced manufacturing market for critical technologies in just a few years, creating a global network of factories under its control. America cannot afford to lose this competition.

A Changing Structure of Global Industrial Production

Situation in 2000



Projection to 2030



- Country groups
- HICs
 - UMICs Africa
 - UMICs Asia-Pacific
 - UMICs EE
 - UMICs LAC
 - LICs & LMICs Africa
 - LICs & LMICs Asia-Pacific
 - LICs & LMICs LAC

Source: UNIDO elaboration based on UNIDO National Accounts Database
Note: Projections to 2030 are made based on historical average annual growth rates (between 2010 and 2019) and applied to the latest available observations (2024) up to 2030. LICs = Low-income countries; LMICs = Lower middle-income countries; UMICs = Upper middle-income countries; HICs = High-income countries; EE = Eastern Europe; LAC = Latin America and the Caribbean.

Key Challenges

Lack of Advanced Manufacturing Investment

The U.S. manufacturing ecosystem is failing to meet modern defense production demands, lagging behind global competitors in adopting advanced, automated processes. Those manufacturers that support the DoD operate on bespoke, low-volume systems that are optimized to maximize higher margins and shareholder returns and have little incentive to modernize manufacturing lines. As a result, the U.S. industrial base is largely incapable of building things at scale and requires significant DoD funding when asked to expand production rapidly.

U.S. manufacturers remain constrained by outdated processes, labor-intensive systems, and insufficient capital investment, all of which impede scalability and surge capacity in times of crisis. The lack of competition and focus on short-term returns have inhibited modernization efforts, creating a domestic manufacturing crisis that undermines both economic resilience and national security.

Significant regulatory barriers that deter innovation compound the problem, particularly in aerospace and defense. Government certification processes move too slowly, disincentivizing manufacturers from adopting advanced technologies or upgrading facilities. Furthermore, the U.S. typically does not build the machines needed for advanced manufacturing; they are often built in China, South Korea and Germany. As a result, the U.S. defense sector is no longer a driver of commercial innovation.

Dependency on Global Supply Chains

The U.S. defense sector relies heavily on foreign sources for critical materials and components such as rare earth elements, semiconductors, and strategic metals, creating vulnerabilities during geopolitical crises. The complex, fragmented nature of the supply chain, coupled with just-in-time manufacturing methods, further heightens the risk of delays and production bottlenecks. Moreover, with very few suppliers for certain essential components, any disruption or failure could severely impact production schedules and military readiness. Efforts to re-shore production and build more resilient, self-sufficient supply chains are ongoing but face high costs and long timelines, leaving the U.S. defense sector dependent on foreign sources for key technologies and materials.¹⁶

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

Aging Infrastructure

Decades of underinvestment have left production facilities outdated and power and transportation systems in critical need of modernization. Inefficient rail networks, outdated deep-water ports, and insufficient cargo-handling capabilities hinder the scalability of advanced technology production essential to national defense. As global competitors heavily invest in their industrial bases, the U.S. must revitalize its infrastructure, embrace automation, and upgrade its energy and transportation systems to remain competitive.

Skilled Labor Shortage

Manufacturing requires a workforce with specialized skills, but many workers in key industries are aging, and fewer young people are entering fields like advanced manufacturing and defense production. Without a robust pipeline of skilled workers to operate advanced machinery and processes, the U.S. will struggle to meet growing demand and maintain its capacity for innovation, and it will fail to produce cutting-edge hardware. This shortage limits America's ability to compete with nations like South Korea and China, where vocational and technical education and government investment in workforce development are central to economic strategies.¹⁷

Parts Obsolescence

If America goes to war today, it must fight with the multi-trillion dollar force it has purchased over decades — but much of the equipment in the current force is unusable due to the unavailability of replacement parts. For years, the DoD's system has allowed inflexible contracting, vendor lock on certain parts, and expensive bespoke supply chains. As a result, it is difficult and expensive to replace parts and fix legacy systems, with limited bids on contracts and significant capital investments required by industry to retool production. Many sub-suppliers have gone out of business, further exacerbating the problem. These massive maintenance costs divert resources from force modernization — and worse, undermine readiness of the current force with legacy systems that are unusable.

Key Outcomes and Recommendations

If America is not leading in the manufacturing of “high-tech” hardware and fielding it at scale, America is not leading in deterrence. While innovation reports often highlight the U.S. commercial sector’s leadership, these examples typically involve software, internet companies, or hardware designed for overseas production (e.g., Apple and Foxconn). This offshoring model cannot support a military force responsible for the security of America, particularly when supply chains flowing through adversary countries risk collapse in times of war.

Rather than following commercial practices, the DoD must act as a catalyst forging a new era in American manufacturing and reasserting American leadership. Failing to invest in manufacturing leadership would signal acceptance of America’s industrial decline and severely weaken deterrence. A paradigm shift requiring a whole-of-nation effort, unseen in decades, is essential.

While emergent technologies carry adoption risks, the DoD is uniquely positioned to mitigate these risks and provide a path to the Fifth Industrial Revolution through its massive technical, regulatory, and financial resources. Government backstops for high-value public works can effectively align government and industry strengths — with the government setting goals and industry delivering results.

By serving as an early adopter of advanced manufacturing technologies, the DoD can signal demand to industry, drive production expansion, and encourage investors to increase capital flow, eventually becoming a smaller consumer of a much larger advanced manufacturing market.

OUTCOME 1	OUTCOME 2	OUTCOME 3
Revolutionize the American Factory to Win Industry 5.0	Demand and Fund Surge Capacity	Reduce Reliance on International Supply Chains

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

RECOMMENDATION 2.1

Initiate Freedom's Forge 2.0 for Advanced Manufacturing in FY26

Fielding a hedge force and enabling the legacy force will only be possible if DoD immediately initiates Freedom's Forge 2.0 for Advanced Manufacturing. In a historic effort during World War II, American businesses rapidly switched from building cars to producing military equipment that ultimately won the war. By leveraging its unique role as a buyer, regulator, and technology developer, the DoD can attract substantial private capital and reduce the burden on taxpayers to build the factory of the future. Currently, DoD is a buyer and operator of factories that continuously rebuild the legacy force. They are called depots, and based on the diversity of parts needed, these depots must be the most agile and advanced in the world to ensure America's multi-trillion dollar legacy force is ready to fight. Depot modernization can reduce the taxpayer burden in the almost \$300 billion per year sustainment account, and at the same mitigate strategic risk by bolstering readiness in the legacy force. Once these factories are capitalized and adopted as depots, they offer a highly profitable technological leap, revolutionizing both defense and commercial manufacturing. DoD's current practices, combined with market dynamics, often result in many legacy part solicitations going unanswered by industry. Given the wide range of parts required, new depot factories must be designed to be the most agile and advanced in the world. To achieve this, the DoD must act as a catalyst for transforming manufacturing practices, enabling the United States to lead in Industry 5.0.

Beginning immediately, the DoD innovation and sustainment organizations must leverage flexible funding mechanisms and tools provided by Congress — such as SBIRs, OTAs, CSOs, DARPA Challenges, AFWERX Prime, and DIU Blue Manufacturing — to identify and fund companies capable of building the factory of the future. To accelerate progress, the DoD must incentivize compliance authorities and service labs to provide rapid technical and regulatory feedback to adopt these new manufacturing practices. Additionally, the project should embrace human-centric principles by involving depot employees early, leveraging their expertise, and providing upskilling opportunities to prepare them to operate these advanced facilities.

Finally, the White House and Congress must collaborate to launch Freedom's Forge 2.0 for Advanced Manufacturing at the depots with FY26 funding to achieve full operational capacity by FY27. If properly executed, a strategic public-private partnership, backed by an initial investment of a few billion dollars, could reshape the multi-trillion-dollar legacy force into one poised to win future conflicts. At the same time, it could revolutionize U.S. manufacturing, establishing a hedge force and restoring dominance in domestic commercial manufacturing.

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

RECOMMENDATION 2.2

Establish a Weapons Scalability Requirement and Civil Reserve Manufacturing Network

The DoD must establish a funding and requirements framework for manufacturing at surge rates. This would incentivize industry to have the capacity to scale production efficiently when needed, addressing the critical gap exposed during the Ukraine conflict. Leveraging Freedom's Forge 2.0 for Advanced Manufacturing, new dual-use factories can produce commercial goods during peacetime and pivot to weapons manufacturing during wartime, which would significantly reduce costs for both taxpayers and consumers. These "factories as a service" can be privately operated and will provide scalable production capabilities for defense startups and the broader industrial base (e.g., distributed Foxconn for the Hedge Portfolio).

The DoD must establish a Civil Reserve Manufacturing Network, which would allow the U.S. to quickly surge production during wartime by leveraging a commercial network of certified factories and provide government incentives to participating companies. We recommend establishing the framework for this network in FY25 to be funded in FY26. Similar to the Civil Reserve Airlift Fleet (CRAF), which leverages a commercial network of certified aircraft during critical operations, a Civil Reserve Manufacturing Network would allow the U.S. to quickly surge production during wartime by leveraging a commercial network of certified factories. As is done with the CRAF, government incentives would be provided to participating companies.

The new manufacturing network built for scalability will ensure future crises are met with ready-to-scale defense production, unlocking the full potential of U.S. and allied industrial bases. A distributed network of agile factories will foster a renaissance in American innovation, revitalizing industrial capabilities and creativity across a multitude of sectors far beyond defense.

America's manufacturing challenges represent both a threat and an opportunity. By aligning innovation with production, investing in advanced manufacturing technologies, modernizing our production lines, and building a skilled workforce, the U.S. can reclaim its position as a global industrial leader. These efforts will not only enhance military readiness and deterrence but also drive innovation and economic growth across the nation. This is not aspirational. It is an imperative. By focusing on outcomes and holding ourselves accountable to measurable progress, the United States can restore our industrial strength.

"And then you could say, "Look how many trillions we've spent on national security since the end of the Cold War. How did we lose deterrence? What happened to Pax Americana?" And when I look at the industrial base, I see that we've lost our way. We once had an American industrial base. Chrysler used to build cars and missiles. Ford built satellites until 1990. General Mills, the cereal company, built torpedoes. And today we live in a very different world. We have a defense industrial base, not an American industrial base."¹⁸

GOAL 3

Attract, Train, and Retain Talent for Our Nation

“Take away my people, but leave the factories, and soon grass will grow on the factory floors. Take away my factories, but leave my people, and soon we will have a new and better factory.”¹⁹

– Andrew Carnegie, Founder, Carnegie Steel Company

Successful innovation results in new capabilities being designed, manufactured, and sent out to the field. Those new capabilities help keep us out in front of the competition. The bigger margin of advantage we have, the less likely we are to be drawn into a conflict.

Innovation starts with ideas, and ideas come from people – really bright, driven people who challenge the status quo. These people are invaluable to any organization that intends to lead the field, and that includes within the Department of Defense. During the Cold War period, it was widely accepted that the DoD had the resources, the urgency, and the strategic focus to draw some of the most talented innovators from a wide variety of fields into the government. Today, the private sector – not the federal government – has the resources, focus, and culture that the best innovators are looking for.

In order to build a competitive talent base, the DoD needs to rethink how it manages its people.

Attract

The DoD must remain focused on the primacy of recruiting warfighters, but it also needs to attract individuals who excel at pushing boundaries, solving complex problems, and envisioning groundbreaking solutions to our technological challenges. The Department offers something very few places can: an opportunity to work on the nation’s most pressing security challenges with the most advanced technologies in the world while serving your country. While unfavored by some, a lateral-entry system could revolutionize the Department by allowing experienced professionals in fields like data science, biotechnology, and cyber defense to bring their skills directly into roles where they are most needed. This isn’t about bypassing tradition but enhancing it, complementing the seasoned expertise within the ranks with fresh perspectives from the outside. By presenting clear career pathways and opportunities to contribute meaningfully, the DoD can make a compelling case to attract the brightest minds.

Train

To develop and retain a pipeline of innovative talent, particularly STEM and tech professionals, the DoD must establish continuous training programs that offer tailored opportunities for skill enhancement and professional growth. By fostering an environment where learning never stops and innovation is tied directly to mission outcomes, the DoD can cultivate a workforce that is not only well-prepared but also energized by the opportunity to remain at the forefront of technological advancements.

Retain

The DoD must retain the innovation talent it already has within its ranks by fostering a culture that values creativity, recognizes high performance, and offers competitive incentives. This includes providing clear career advancement opportunities, aligning roles with meaningful mission outcomes, and ensuring that innovative thinkers feel supported, valued, and empowered to take calculated risks. To enhance the DoD’s ability to attract, train, and retain the brightest minds, we recommended changes in three critical areas.

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

Key Recommendations

RECOMMENDATION 3.1

Provide More Competitive Pay

Compensation is one of the most glaring disparities between the public and private sectors. Entry-level and mid-career private sector positions in critical fields like cybersecurity, artificial intelligence, and aerospace typically pay significantly more than their government equivalents. Without competitive pay and clear incentives, the DoD loses out on talent essential to driving innovation and maintaining technological superiority.

RECOMMENDATION 3.2

Incentivize and Reward High Performance

The problem isn't just pay. Bureaucratic inefficiencies and outdated workforce practices disincentivize high performance and make government roles unappealing to many top-tier candidates, including existing DoD employees. Leaders in the DoD lack the flexibility to address underperformance or meaningfully reward excellence in a timely and effective way, which leads to frustration among high performers and stagnation in teams. The result? A system that struggles to adapt, innovate, and retain the talent it desperately needs.

RECOMMENDATION 3.3

Protect Risk Takers

Addressing compensation gaps and outdated workforce processes won't be enough to get back on track. The DoD will need to foster a culture of innovation. The challenges faced by innovators within the DoD are systemic. A culture that prioritizes stability over disruption creates and reinforces an environment where innovation is stifled rather than celebrated. Those who take risks and fail – even when doing so is essential to progress – are often punished or held back in their careers. This discourages others from stepping forward with groundbreaking ideas.

The DoD will need to embrace and nurture a personnel system that rewards risk-taking and shields innovators from career-threatening repercussions. When leaders take bold risks and succeed, they should be promoted. When leaders take bold, calculated risks and fail, they should be protected. Attracting and retaining those with a propensity for collaboration, innovation, and a willingness to challenge the status quo is a must. These will be the individuals in DoD that drive necessary culture change across the Department and ultimately, support the overarching goal of ensuring our warfighters have the best technology in their hands.

Senior leaders must step out on a ledge and champion innovation at every turn. For DoD to be successful on any future battlefield, leaders must advocate for disruptive ideas and be willing to take heat for bold decisions. That means setting the tone with persistent and transparent communication, and signaling to the entire organization that risk-taking, failure, and learning are not only tolerated but encouraged. Without this constant communication and bold leadership, DoD will fail to bring in the innovative talent so badly needed, and will continue to lose to the private sector talented individuals who see greener grass on the other side of the fence.

GOAL 4

Shift DoD Resources to Innovative Programs and Unlock Private Capital Investment

Divesting to Re-Invest

“The answers coming out of the pentagon can longer be – just give us more money. It is simply not there to give...it’s not going to happen.”²⁰

– Rep. Mike Waltz, (FL-6), Member, House Armed Services Committee (Oct. 2024)

There is no doubt that the resources available to the DoD and our armed services are not sufficient to meet both current operating needs and future strategic and operational goals. But lawmakers are deeply divided on how to address the discrepancy.

The Department of Defense’s nearly \$900 billion annual budget is a massive resource, yet much of it is locked into maintaining outdated systems rather than advancing innovation. Budget documents show that nearly 40% of the DoD’s budget is allocated to operations and maintenance, much of which sustains legacy systems rather than modernizing critical capabilities.²¹ Similarly, a study by the Defense Business Board estimated that inefficiencies, including redundant administrative layers and misallocated resources, consume tens of billions annually.²² Given the shrinking tax base and ballooning national debt, a large increase in DoD budget seems unlikely.

A more variable alternative is a “divest to invest” approach, which would reallocate as much as 15% of current budget resources from legacy systems to new capabilities. This is a strategy that was used by the U.S. Marine Corps from 2019 to 2023, which resulted in the generation of \$15B over three years.

This over-reliance on antiquated platforms hampers agility and dilutes operational effectiveness at a time when the DoD must prioritize next-generation warfare technologies, such as advanced computing, artificial intelligence, hypersonic systems, and UAV capabilities. Currently, the Department of Defense operates its programs on an current incremental budgeting approach, which is a budgeting method that uses the previous year’s budget as a starting point, with small adjustments made to account for changes like inflation, market conditions, or organizational growth.²³

A shift is needed to a more disciplined, zero-based strategy that reviews all expenditures against mission-critical needs. While even 1% in immediate savings is both achievable and minimally disruptive, reinvestment of funds towards innovation and systemic reforms could unlock up to 15% of the budget. This will be a difficult task, and there will be real risk; however, reinvesting these funds into innovation will ultimately yield a global reduction in risk, and more importantly, remedy long-standing warfighter needs.

Key Challenges

Ends-Means Mismatch

Currently, DoD is being told that they must operate under a fixed topline; that they must modernize and field revolutionary innovation; and that they cannot retire legacy systems. These three imperatives cannot coexist, so innovation has been sacrificed for too long.

Lack of Authorities

The Services lack the authority necessary to substantively change or cancel any program-of-record. In essence, they lack the most fundamental of authorities – the ability to stop doing things that they conclude are wasteful, operationally unsuitable, or simply obsolete.

The Readiness False Choice

The prioritization of resources for availability-based readiness assessments, which address short-term risk, is preventing the resourcing of innovation, which addresses medium-to-long-term risk. Those seeking to resist innovation argue that they cannot due to “readiness demands,” which bias the current force over the future force; even when some of those current force elements are not operationally relevant in the context of the threat and our joint warfighting concept. This choice between current force readiness and future force readiness (modernization) is a false choice.

The Demand Signal Bias

When challenged during testimony or public comments as to why they don’t divest of certain legacy systems, service secretaries and service chiefs often cite “demand.” To be clear, like other antiquated processes in the DoD, the global force management process is one that is backward looking, and reflects on any given day demands that were registered two years in the past. Those demands are often driven by service components within combatant commands that have a motive and incentive for artificially inflating demands in an attempt to demonstrate relevance and secure more funding. In addition, demands cannot be registered for force elements or capabilities that don’t exist yet, thus, no CCDR can register a demand for hypersonic missile batteries, directed energy or high-powered microwave weapons batteries, etc., because they don’t exist yet. As a result, some can accurately argue that there is no demand for those new capabilities, thus preventing innovation.

Domestic Politics Over National Security

Major defense acquisition programs are nearly impossible to terminate or substantively modify once begun. With all legacy programs, there are many jobs on the line, which disincentivizes members of Congress to cut budgets or entire programs, even when they’re identified as no longer unnecessary or critical.

Key Outcomes and Recommendations

OUTCOME 1

Identify Capital to Reinvest in Defense Innovation

RECOMMENDATION 4.1

Stand Up a Zero-Based Review Defense Task Force

The Department of Defense should establish a Defense Task Force with the explicit mission of identifying and eliminating programs no longer aligned with defense strategy or the Joint Warfighting Concept, as well as systemic inefficiencies across programs, personnel, and administrative functions. This task force could be housed under the Office of the Secretary of Defense’s (OSD) Cost Assessment and Program Evaluation (CAPE) or within the newly-created Department of Government Efficiency to ensure it remains independent, focused, and effective. Armed with a clear, cross-departmental mandate and in partnership with Congress, the task force must have the authority to act decisively — streamlining duplicative programs, phasing out underperforming initiatives, and modernizing outdated legacy systems. Task force members must ask: Does this program buy down more risk than putting the same amount of money into revolutionary innovation?

RECOMMENDATION 4.2

Create a Task Force in Collaboration with Congress to Target Spending Misaligned to Strategy

A cooperative approach with Congress is critical to avoid the political pitfalls that could undermine budgetary reforms. This task force and Congress should prioritize transparency and bipartisan engagement, and be mandated to act very quickly with minimal bureaucracy. The task force and Congress together would reform how funds are allocated towards capabilities and not simply to programs-of-record, and ensure stakeholders see the reinvestment in action.

RECOMMENDATION 4.3

Implement Zero-Based Budgeting Across the DoD

A zero-based, bottom-up review for the U.S. Department of Defense (DoD) would be a comprehensive approach to evaluating the allocation of resources and programs. In this process, every function, initiative, and expenditure would begin with a “zero base” – rather than continuing from the previous year’s budget, forcing a fresh justification assessment of needs, priorities, and performance. The review would be driven by input from all Department levels, including program managers, operational commanders, and budget officers so that those closest to the programs and operational needs can help identify inefficiencies. Each program must demonstrate its value through quantitative and qualitative metrics to ensure that spending on mission-critical programs is prioritized over obsolete systems. This review process will increase accountability, reduce outdated and underperforming programs, and improve resource optimization, ultimately ensuring the DoD has the resources to invest in 21st century defense.

This is a strategy that has been used by major corporations such as Coca-Cola²⁴ and Unilever²⁵ to reduce unnecessary expenses and improve profitability. In both cases, the companies were able to cut costs and re-allocate funding toward investment in core priorities.

IV. SPECIFICATIONS FOR BUILDING BACK DETERRENCE

This report does not attempt to list each specific program that should be considered for divestment or re-scoping; instead, it focuses on achieving a clear, achievable target of 15% of the DoD budget that could be reallocated to align with the DoD current strategic priorities. The approach adopted by this report reflects the expertise of the contributors, who recognize that program-by-program reviews would be most impactful through a zero-based, bottom-up review led by the DoD and Congress.

“Advancements in artificial intelligence, biotechnology, quantum computing, and space, cyber, and electronic warfare, among others, are making traditional battlefields and boundaries increasingly irrelevant. To remain competitive, the United States must prioritize the development of emerging technologies over fielding and maintaining legacy systems. This will require significant changes to the Pentagon’s force structure, posture, operational plans, and acquisition system and must be complemented by a tough and fulsome review of legacy systems, platforms, and missions.”²⁶

– House Armed Services Committee,
Future of Defense Task Force Report 2020

Unlocking Private Capital

“To maintain its technological advantage over competitors, the Pentagon must continue to improve its ability to leverage private sector innovation at scale, including that from non-traditional companies, recognizing that the private sector, not the government, is now the leader in research and development investment.”²⁷

– Rep. Mike Waltz, (FL-6), Member, House Armed Services Committee (Oct. 2024)

Capital is innovation’s fuel. When it comes to defense and critical technologies, private investment in deep tech, defense-only, and dual-use solutions remains inconsistent. In this domain, venture capital drives early-stage breakthroughs in technologies like advanced robotics, while private equity provides the growth capital needed for scaling, especially in areas like critical minerals. Together, venture capital and private equity can transform ideas into operational capabilities, as showcased by companies like SpaceX and Anduril. However, gaps in funding and the inherent risks of defense innovation business often deter investors.

For investors, long-term, recurring revenue and demand signals are essential for funding R&D and ensuring predictable returns. However, when production contracts

are issued, they often favor large defense primes over innovative startups. The current DoD approach lacks the structure, profit potential, and clear pathways needed for venture-backed startups to compete effectively in large procurement programs, leaving these non-traditional companies at a disadvantage. Consequently, these smaller companies are either forced to pivot away from defense or fail, while the defense sector misses out on critical, game-changing innovations.

Private capital is a cornerstone of defense innovation, but systemic challenges prevent its full potential. By fostering stronger collaboration between investors and the DoD, reducing risks, and creating incentives for long-term investment, the U.S. can unlock private capital to build a resilient industrial base.

V.

Conclusion

“The competitive advantage that the United States military has long enjoyed is eroding... In just a few years, if we do not change the trajectory, we will lose our qualitative and our quantitative competitive advantage. The consequences will be profound.”²⁸

– Gen. Joseph F. Dunford Jr.,
19th Chairman of the Joint Chiefs of Staff, (Jun. 2017)

In 2017, the Chairman of the Joint Chiefs warned that without a change in trajectory, we would lose our warfighting advantage within a few years. Seven years later, this trajectory remains unchanged – as we enter a period that many believe contains an acute threat of conflict.

America’s diminished industrial base and outdated defense acquisition process has rendered our armed forces unable to field necessary deterrence capabilities. The inability to produce critical emerging technologies at scale amounts to a national security crisis that requires immediate action to preserve peace and restore deterrence.

The U.S. must regain its status as a global manufacturing powerhouse, investing in dual-use manufacturing technology – and the workforce to power it.

The DoD and Congress must create an alternative pipeline for acquiring cutting-edge technology and fielding it at scale, while encouraging industry competition to incentivize rapid deployment of new capabilities. This will require shifting DoD resources away from legacy programs toward emerging technologies, and unlocking private capital to finance development and production.

This will require collaboration between the DoD, Congress, financial institutions, and industry to align resources and priorities. Additionally, protecting innovative talent from bureaucratic retribution is crucial for fostering disruptive innovation.

These recommendations aim not to provoke conflict but to deter it. While some may find it difficult to envision large-scale conflict in the near future, strengthening our capabilities now will reduce the likelihood of war. Immediate action – this fiscal year – can restore deterrence.

VI.

Afterword by General (Ret.) David H. Berger

The warning signs have been flashing for at least 20 years that the U.S. military was being “out-innovated.” Warning signs, however – like the strange orange symbols that pop up on our vehicle dashboard or error messages on our cell phone – tend to get our attention only briefly. We wonder if it might indicate a major problem, but so long as the car still drives and our cell phone still works, we stop worrying about it. At least for now. We’ll keep an eye on it, but no need to panic.

Then came the swift, unsettling military advances by the People’s Republic of China (PRC) over the past 10 years. Followed by rapid military adaptation in the Armenia–Azerbaijan conflict. But it was the Russia–Ukraine conflict that finally drove home the reality of just how slow we had become in terms of moving an idea to a military capability and fielding it at scale. We had no choice but to accept we were lagging– by a lot. We couldn’t ramp up production of existing munitions and weapons systems fast enough to meet Ukraine’s demands along with those of our own military. We discovered critical vulnerabilities in our supply chains. We saw adaptation and innovation on the battlefield at a speed we had not seen before. A speed we could not match.

These discoveries were sobering, but even more shocking was the emerging evidence that we weren’t innovating fast enough here in the DoD. How fast is “fast enough” when it comes to military capabilities? There are two key parts to this: (1) the speed of technological development; and (2) the speed of our adversaries’ modernization. We found that we were behind in both, and the gap was growing.

China is the most consequential external threat to our national security. We argue that internally, the most consequential threat is our own failure to adapt our military capabilities to the rapidly changing environment we find ourselves in.

This report starts with the premise that we have used up the margin of advantage we once owned. We have tried to squeeze more speed out of our existing processes, but the tweaks simply are not enough. If we want to

regain our strategic advantage, we will need a separate, parallel track for innovation. By innovation, we mean not just an idea, not just a prototype – but actually fielding a capability at scale. And we need that parallel track now, not two or five years from now.

Creating a parallel track comes at a cost. Priming the pump for this secondary innovation track means we either get additional funding or take it out of hide. Realists know that we must take it out of hide, out of our current and proposed budgets. Starting with the 2025 DoD budget.

The group that Mike Bloomberg pulled together to compile this report is impressive by any measure, but perhaps most importantly in breadth of expertise and depth of experience. Each has worked within the innovation ecosystem to try and move faster to get capabilities out to our military formations. All were frustrated, yet also dedicated to finding a way to go faster and stay in front of our adversaries. They were – individually and collectively – rewarding to work with on this project.

Among the recommendations put forth in this report – and some are not new – none are more time-sensitive and impactful than strong leadership from the top. Leaders willing to risk their reputations to try new approaches. Leaders willing to back subordinates who want to try new approaches, not all of which will succeed. Leaders willing to truthfully say that we are not good enough today, but we could be tomorrow.

Some reports end up on a shelf, the effort complete once read. I sincerely hope this report helps drive a healthy debate that results in immediate action. This will require teamwork and compromise, but the consequences of inaction are simply too great to accept anything less than bold, decisive, immediate action. We owe nothing less to our Soldiers, Sailors, Airmen, Marines, and Guardians.

General (Ret.) David H. Berger
38th Commandant of the
United States Marine Corps

VII.

Annex – Additional Recommendations by Goal

GOAL 1

Field Emerging and Critical Technologies by Creating an Alternative Pipeline

1. **Expand the number and types of Program Elements with Colorless Money:** In FY24 Congress appropriated approximately \$500M of flexible “colorless funding” for a hedge portfolio. Congress realized that there were other means of providing oversight that did not require the arcane “color of money” frameworks, an oversight approach that often failed to provide real oversight. Given the growing size of the DoD budget that needs to purchase these rapidly evolving disruptive technologies, Congress must expand this flexibility by 100x and DoD must create digital platforms to increase transparency to Congress by 100x in the FY26 budget cycle. Those DoD organizations that are not ready to provide that digital transparency should not have that flexibility. This is the core of the recommendation that DoD needs an alternative organizational structure that is designed for these practices from the beginning instead of wishing that those accustomed to the 1961 model will eventually evolve. One important tertiary benefit of this approach is the necessity to do continuous teaming between the executive and legislative branches throughout the budget cycle.
2. **Provide Each of the Combatant Commanders Funds to Use to Accelerate the Rapid Fielding of New Technology.** Seek the authorization and appropriation of \$1B each to INDOPACOM and NORTHCOM, \$500M each to EUCOM and CENTCOM, and then \$250M each to SOUTHCOM and AFRICOM. This money is intended to be used to rapidly develop capabilities necessary to solve theater-specific operational problems.
3. **Advocate for Two-Year Defense Budgets.** As recently noted at the Reagan National Defense Forum by Senator King and others, Congress has the authority to authorize two-year budgets to create greater stability and communicate a consistent demand to industry. In an era of perpetual continuing resolutions, a two-year budget for DoD would send the necessary signal for many companies to get or remain in the market.
4. **Avoid Cost-plus Contracting.** Congress should re-establish the preference for fixed price defense contracts, and eliminate mandates for cost and pricing data (TINA). This should be explicitly directed in the next NDAA and appropriations bill.
5. **Implement Transparency Standards for Prime Contracts.** Require primes to disclose their selection criteria for subcontractors and provide justification for excluding non-traditional companies. Introduce measures to ensure subcontracting opportunities align with the DoD’s innovation objectives, holding primes accountable for fostering competition and innovation.
6. **Eliminate the Requirement for Combatant Commands to Develop and Submit Integrated Priority Lists (IPLs).** The Combatant Commands can advocate for future capabilities in the Joint process outlined above.
7. **Pair Teams to Operational Problems to Identify Disruptive Solutions.** For each operational problem, a cross-functional team will be formed, led by a senior official and composed of subject matter experts in warfighting, technology, acquisition, contracting, test and evaluation, and programming. This team will have the authority to talk to industry, conduct wargaming and experimentation, and recommend options for fielding to the senior officials identified above. At their discretion, these officials can remove people from the team, expand it, or direct specific support from a Service or Combatant Commander (including the assignment of personnel). The timeline for this activity should be no more than a year. If a Service wishes to designate a team to compete for solutions to an operational problem, that is encouraged.

VII. ANNEX – ADDITIONAL RECOMMENDATIONS BY GOAL

8. **Designate Experimental Units to Develop Initial Capability.** As solutions are developed to solve operational problems, the senior officials will scale the cross-functional teams into experimental units, again with the authority to direct specific support from a Service or Combatant Commander (including the assignment of personnel). These units will include officials with flexible contracting and acquisition authorities to execute initial buys of capabilities. As they do, these experimental units will engage in a rapid, iterative process of development and testing for the capabilities. These units will identify what an operational unit will need regarding organization, training, materiel, energy, intelligence, leadership, personnel, and facilities. When the capability is “good enough,” they will recommend deployment and describe what is needed to field at scale.
9. **Scale Experimental Units to Initial Operational Capability.** When the scaling decision is made, initial transition funding will come from the disruption portfolio, and a program office will be established with members of the experimental unit. As senior officials designate solutions for fielding, they will also decide how to stand up units to attain Initial Operational Capability (IOC). Each will be unique. If a capability is best used in a specific Combatant Command, it may be appropriate to build joint forces and assign them to the command. The same may be true for a particular Service. If a Service or Command agrees to take on a capability, it will receive transition funding from the portfolio for a sufficient period to ensure that the disruptive capability is fielded at scale.
10. **Shift from a Requirements-Based System to Problem-Based One:**²⁹ Direct the CCDRs to identify the top five operational problems they need solved in their PB posture statements. The intent is to overcome the requirements-based system that results in the next best version of an existing legacy-centric platform, system, or capability being identified by the services. Industry should be made aware of the pain points and be free to propose out of the box solutions.³⁰
11. **Require Non-Traditional Organizations in Final Round Contracts.** Direct that major procurements (over \$500M), where appropriate, include at least one non-traditional company in the final selection phase, provided there are two or more contenders. This strengthens fair competition and provides emerging companies with a chance to scale.
12. **Diversify the Defense Contracting Pool.** Expanding non-traditional participation in defense contracting is not for the sake of broadening the contractor base; it’s about leveraging the agility, creativity, and self-funded innovation of American startups and small businesses to meet defense needs more effectively, breaking away from the traditional cost-plus, no-risk prime contractor model. By implementing a dedicated track for non-traditionals, the DoD can ensure that emerging technology firms and the broader commercial market can progress beyond experimental phases and secure sustainable production contracts for dual-use technologies. By building a more adaptable, inclusive contracting model, the DoD has an unprecedented opportunity to redefine defense innovation and stay ahead of emerging threats.
13. **Establish Direct Engagement Mechanisms with Emerging Companies.** Create a DoD-wide “Innovation Liaison Office” tasked with building relationships with non-traditional firms. This office would serve as an intermediary to: 1) Streamline introductions to relevant program offices; 2) Install an Authority to Operate (ATO) concierge service that assists with navigating compliance requirements; and 3) Advocate for non-traditional firms during acquisition reviews and milestone decisions.

GOAL 2

Restore U.S. Manufacturing as a Global Powerhouse.

1. **Establish an Advance Manufacturing Hub.** Develop one or more centralized hubs akin to Foxconn's model, dedicated exclusively to defense production and innovation. Located near key logistics infrastructure, the hub would bring together advanced manufacturing facilities, defense contractors, and R&D centers to enable rapid production scaling, technology integration, and supply chain efficiency under a single ecosystem. Federally funded but operated through public-private partnerships, it could ensure coordination and efficiency in high-demand scenarios.
2. **Relocate SBIC CT to be Run under OSC with Funds Appropriated by Congress and Narrow Interpretation of FCRA.** The Small Business Administration (SBA) SBIC Critical Technologies program should move from being run by the SBA to being run by OSC. This shift would remove small business constraints on employees and revenue and enable the capital providers licensed under SBIC CT to work with mid stage companies (revenues between \$7.5M – \$100M). This would better align funding priorities with the DoD and NSA objectives, addressing gaps mentioned above that limit the licensed funds' ability to support companies during their most vulnerable stages. While OSC's partnership with SBA to execute SBIC CT program is off to a strong start, the SBA small business limitation will keep capital from reaching midsize critical technology or supply chain companies. Currently, restrictions under the SBA's NAIC rules exclude companies with more than 500 employees or revenue exceeding \$7.5M – precisely when they hit their most vulnerable stages. This misalignment limits SBIC CT investors' leverage to only the earliest stage companies, instead of when a startup company reaches that critical mid stage of the valley of death.
3. **Introduce a Defense Innovation Tax Credit.** Provide long term capital gain tax credits for investors in companies working on critical defense technologies. This would incentivize long-term investment in riskier start up companies due to their industry of focus which take longer to mature and may produce lower returns than other areas of technology. The DoD could designate the companies with a certificate and the tax credit would be limited up to companies with \$1,000,000,000 in revenue (the investment must have been made prior to the company reaching \$1,000,000,000 in GAAP revenues).
4. **Establish A Defense Manufacturing Reserve.** Develop a federal program that identifies, modernizes, and maintains underutilized industrial facilities capable of pivoting quickly to defense production during national emergencies. Incentivize private-sector participation through tax breaks and contracts to maintain idle capacity.
5. **Invest in Distributed and Advanced Manufacturing Technologies.** Support the adoption of advanced modular manufacturing techniques, such as 3D printing and robotics, to enhance the scalability and flexibility of existing production lines for defense applications. This minimizes lead times and creates resilient supply chains by ensuring the U.S. can produce components. Historically, except for a few innovative companies (i.e., SpaceX and Tesla), the U.S. industrial base has opted for a distributed supply chain which consequently exhibits limited control over costs control or manufacturing processes or first principles. There has been little incentive, especially in the defense industrial base (aerospace, shipbuilding and space) to think creatively about better ways to produce manufactured goods. The DoD must identify a mechanism to incentivize U.S. manufacturers to incorporate advanced manufacturing and automation, consider greater vertical integration where it makes sense, and mitigate and eliminate risks within their supply chains through the expanded use of additive manufacturing.
6. **Continue SBIR Reform.** As long as SBIR exists, it must be optimized to quickly onboard new entrepreneurs and vet them for scaling the best technologies. Empower and invest in SBIR professionals to devote more time to helping high-quality SBIR awardees develop internal DoD proponents. With internal and senior DoD support, these technologies will have a chance of scaling to a program of record.

7. **Provide Incentives for Domestic Manufacturing Jobs.** Bolster domestic manufacturing jobs by offering tax incentives and grants to companies that produce critical defense-related goods within the United States. Implementing preferential procurement policies that prioritize domestic manufacturers in government contracts would further encourage businesses to invest in U.S.-based facilities. Additionally, the DoD could establish public-private partnerships to provide workforce training programs, ensuring a skilled labor pool for high-tech manufacturing sectors essential to national security.
8. **Build A Defense Production Workforce.** Partner with universities, vocational schools, and apprenticeships to create specialized training programs that address defense-specific manufacturing needs, ensuring a steady pipeline of skilled workers to support surge capacity.

GOAL 3

Attract, Train, and Retain Talent for Our Nation

1. **Address Inefficient and Rigid HR Practices.** Implement performance-based evaluations and incentives, rewarding high performers while providing pathways to exit for underperforming employees. While we believe that structural reform is appropriate, the urgency of the situation demands immediate action: DoD should create a culture where managers and leaders are incentivized to leverage all existing opportunities to implement a meritocracy. This means rewarding high performers with pay raises, promotions, and bonuses, and using all existing HR authorities to allow low performers to either improve or find themselves seeking employment elsewhere.
2. **Overhaul Clearance and Onboarding Process.** The prolonged security clearance process continues to undermine the government's ability to attract top talent.³¹ With timelines averaging over a year, the government risks losing exceptional talent to the private sector, where opportunities are more immediate and lucrative. This is particularly egregious for startups, where the time required to obtain security clearances can exceed the runway available before funding runs out. DoD should actively prioritize startup clearances and facility clearances, ultimately investigating and adjudicating 90% of startup clearance requests in 45 days or fewer. The government should begin the process of leveraging AI and advanced technology to comprehensively reform the clearance process to lower cost, improve effectiveness, and reduce the burden on cleared personnel.
3. **Implement Competitive Reform.** The United States government is sorely in need of a new talent management system to attract and retain outstanding personnel. Further, the current system incentivizes longevity over performance and preferentially attracts risk-averse personalities. While this may be desirable for many government functions, it does not serve the interests of achieving revolutionary innovation. The government should pursue reforms to allow the hiring and retention of world-class performers in acquisition and key technology fields at all levels.
4. **Reward Performance over Longevity.** Congress should aggressively pursue efforts to ensure that performance, rather than longevity, is the primary driver for compensation decisions. High performers should be highly incentivized to stay and low performers should be treated accordingly. Jobs that require cutting-edge technology insights should consider the adoption of the DARPA 5-year employment practice that restricts staff tenure. This would incentivize achieving success in a limited time and help to prevent the establishment of entrenched bureaucratic thinking.

VII. ANNEX – ADDITIONAL RECOMMENDATIONS BY GOAL

5. **Launch Government-driven Public Service Campaigns.** Public service campaigns should further emphasize the meaningful work and societal impact of government roles. Drawing parallels with the “Space Race” era, this modern campaign could inspire a new generation to view public service as a prestigious and rewarding career. Further, maximizing celebrating success within government—whether a groundbreaking AI project or rapid defense deployment—can help restore employee pride and improve public perceptions. The current interest in government efficiency can be leveraged to support this pride. Government service should be seen as a path for a select, driven few to contribute at the highest levels to the most important missions on the planet.
6. **Develop Future Talent.** Congress should consider a new National Defense Education Act with a goal of training a new generation of scientists, engineers, welders, and factory workers that can support the defense industrial base (DIB).
7. **Authorize Use of 529 Savings Accounts for Vocational Training.** Our existing state-sponsored 529 education savings accounts could be updated to allow investments to cover vocational training such as coding bootcamps, HVAC technician training and electrician training. The AI sector could partner with state governments to build chatbots that raise awareness of 529 savings accounts and help people create them. Together, the vocational training and developer hubs will scale our new, AI-ready industrial workforce.
8. **Leverage the Special Government Employee Program.** DoD should expand the SGE program to encourage startups and non-traditional companies to nominate at least one SGE to support the government’s ability to scan and deepen its industry and investor perspectives. These SGEs can do real work for the government at no charge to the government and are incentivized to participate to get a clearer understanding of government processes. This becomes an equal opportunity for all companies who have won a competitive contract with the government. This approach mobilizes a broader industrial base and enables real-time collaboration within clearly established legal and ethical norms. Barriers to entry for these initial contracts have been reduced radically in the last several years based on DoD SBIR reform processes. These SGEs, equipped with applicable clearances, would act as direct liaisons between their companies and DoD for data exchange on industrial supply chain and foreign influence that arise from nefarious international investment. This program is cost-neutral, uses existing frameworks, and provides an immediate solution to enhance DoD’s access to private sector talent and capabilities. The target scale should be thousands of SGEs. To be effective, a digital onboarding and management program that minimizes time and friction is essential. DIU and AFWERX have already funded a system that provides a strong baseline.
9. **Leverage Guard and Reserve Talent.** The Undersecretary of Personnel and Readiness should identify Reserve and National Guard members with key skills and insights in private business. These should be tracked, and a pilot program should be instituted to place them in duties where these skills can be leveraged.
10. **Create a Defense-Innovation Entrepreneur and Investor Conference.** Establish an annual conference targeting representatives from the startup community, the VC, PE, growth equity, and DoD leadership to facilitate regular dialogue, address challenges, and align investment priorities. This council would host quarterly forums where private investors and DoD officials can discuss emerging trends and funding needs, and would develop a roadmap for aligning private capital investments with national defense priorities. This should include entrepreneurs, they start the companies and are often more in touch with what upcoming needs are.

GOAL 4

Shift DOD Resources to Innovative Programs and Unlock Private Capital

1. **Direct the CCDRS to Identify Areas of Acceptable Risk.** If one accepts that the Combatant Commanders know which force elements and capabilities from the Joint Force are the most relevant and which are the least effective, then securing their identification of those is essential to any divestment under-taking at the lowest possible risk to mission. Like the alternate pipeline, this act should further create competition between the services and the CCDRS that would result in better outcomes, and force the services to defend structure and spending on capabilities deemed irrelevant to the priority theater. Furthermore, service chiefs should be required by the NDAA to identify which programs of record they would modify, or which AAOs they would cut if granted the authority in their annual PB posture statements.
2. **Establish a Critical Technology and Supply Chain Fund.** Create a sovereign-like fund dedicated to finance critical defense infrastructure, an idea that has received bipartisan support over the past few years. Although the government should refrain from interfering in well functioning markets, intervention is necessary in sectors critical to national security, especially those that struggle to attract private investment (e.g., critical materials, small motors, batteries). This fund would provide patient capital, offer co-investment opportunities to share risks with private investors, and deliver targeted support to low-growth industries vital to national security. It would also assist U.S. manufacturers in upgrading their capabilities and adopting advanced technologies.
3. **Undertake a BRAC-like effort within DoD.** Congress has demonstrated little appetite to engage in another round of base realignment and closure since the last effort in 2005. As a result, DoD should engage in its own effort, and provide Congress a report of all bases and stations that it would recommend be closed or consolidated with other facilities. Earlier efforts resulted in billions-of-dollars in annual savings. This effort should result in nothing less.
4. **Eliminate Programs the DoD has Repeatedly Opposed Continuing.** The Department of Defense has consistently identified programs it considers inefficient, redundant, or outdated, recommending their termination to free up resources for higher-priority, next-generation capabilities. However, Congress often overrides these recommendations, keeping programs alive due to parochial interests, lobbying pressures, or concerns over local job stability. This has led to billions of dollars being wasted on systems the military itself no longer wants or needs, including outdated weapons platforms, redundant initiatives, and excess personnel costs tied to underperforming programs.

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Acronym List

- AAO – Authorized Acquisition Objective
- AFRICOM – United States Africa Command
- AI – Artificial Intelligence
- ATO – Authority to Operate
- BRAC – Base Realignment and Closure
- CAPE – Cost Assessment and Program Evaluation
- CCDR – Combatant Commander
- CDAO – Chief Digital and Artificial Intelligence Office
- CENTCOM – United States Central Command
- DARPA – Defense Advanced Research Projects Agency
- DIU – Defense Innovation Unit
- DMAG – Deputy’s Management Action Group
- DoD – The Department of Defense
- DOT&E – Director Operational Test & Evaluation
- DOTMLPF-P – Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities and Policy
- EUCOM – United States European Command
- FY – Fiscal Year
- GAAP – Generally Accepted Accounting Principles
- GAO – Government Accountability Office

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ACRONYM LIST

- INDOPACOM – United States Indo-Pacific Command
- IOC – Initial Operating / Operational Capability
- IPL – Integrated Priorities List
- JROC – Joint Requirements Oversight Council
- JS J7 – Joint Staff J7 (Directorate for Joint Force Development)
- JS J8 – Joint Staff J8 (Force Structure, Resources, and Assessment Directorate)
- MDAP – Major Defense Acquisition Program
- NAIC – North American Industry Classification System
- NDAA – National Defense Authorization Act
- NORTHCOM – United States Northern Command
- O&M – Operations and Maintenance
- ONA – Office of Net Assessment
- OSC – Office of Strategic Capital
- OUSD (A&S) – Office of the Under Secretary of Defense for Acquisition and Sustainment
- OUSD (R&E) – Office of the Under Secretary of Defense for Research and Engineering
- PB – President’s Budget
- PE – Private Equity
- PPBE – Planning, Programming, Budgeting, and Execution
- R&D – Research and Development
- RDT&E – Research, Development, Test and Evaluation
- SBA – Small Business Association
- SBICCT – Small Business Investment Company Critical Technology initiative

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ACRONYM LIST

- SBIR – Small Business Innovation Research program
- SCO – Strategic Capabilities Office
- SGE – Special Government Employees
- SOUTHCOM – United States Southern Command
- STEM – Science, Technology, Engineering, and Mathematics
- STTR – Small Business Technology Transfer program
- TINA – Truth in Negotiations Act
- VC – Venture Capital