



DEFENSE INNOVATION BOARD

ALIGNING INCENTIVES TO DRIVE FASTER TECH ADOPTION

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Preface

"It seems to be a law of nature, inflexible and inexorable, that those who will not risk cannot win."

- John Paul Jones

A Clear and Present Danger

The Department of Defense (DoD) faces an existential challenge: its incentive structures are broken, consequently obstructing innovators from adopting new technologies faster, or at all — demanding urgent reform.

Incentives are the intrinsic and extrinsic motivators that drive talent to take calculated risks, think critically, and move faster to develop and deliver capabilities to support the warfighter. Without swift and widespread cultural change in the ways the Department incentivizes talent to innovate, our national security remains at risk, leaving us vulnerable to being surpassed by our adversaries. We faced a similar challenge during the Cold War era, however, during that time our national security efforts demonstrated bold risk-taking, rapid research endeavors, and large-scale development.

While today the incentives challenge demands a similar commitment to pushing boundaries, fostering creativity, and rapidly advancing technology, instead, it is exasperated by hesitation, cumbersome processes, misaligned rewards, lack of top cover, and maintenance of the status quo. Our adversaries are consistently enhancing their strategic capabilities and, by moving faster, are narrowing the technological gap. To out-innovate adversaries and maintain our position as the world's strongest fighting force, we must fix our incentives structure.

In January 2024, the Defense Innovation Board was tasked by the Undersecretary for Research and Engineering to address the challenge of aligning incentives to drive faster tech adoption by identifying what incentives structures exist today, pinpointing where they are misaligned and why, and offering a set of recommendations on how to fix them to drive faster tech adoption and unleash innovation in the Department.

The Defense Innovation Board defines innovation as "the swift development, integration, and deployment of new systems and technology at a scale that maximizes warfighter capabilities". This definition and application of innovation is also championed by the 2023 National Defense Strategy (NDS) Section 236 focusing on Innovation, the National Defense Science and Technology Strategy, and is underscored by the 2025 National Defense Strategy Summary priorities.

The overarching finding lies in our inability to design effective incentive structures that promote the urgency, seamless integration, timely and rapid deployment of new technologies to support warfighters. In the same vein, the study uncovered the lack of processes that enable warfighters to create bespoke solutions tailored to their unique operational needs.



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Executive Summary

DIB Study Findings:

In examining the Department's current state, a series of systemic challenges became evident, collectively fostering an environment of risk aversion and complacency. From entrenched bureaucratic norms that stifle proactive urgency, to a leadership vacuum that fails to provide top cover and generate innovation, each issue identified—from talent mismanagement to disconnected acquisition practices—threatens the Department's mission readiness and adaptability. Below is a summary of the key findings which are expanded upon in Sections 1 and 2 of this study.

Avoiding Risk, Perpetuating Complacency, and Preventing Speed. Proactive urgency does not exist at scale in the Department, with prevailing attitudes diverting accountability, adapting to legacy bureaucratic expectations and systems, and avoiding calculated risk—all to the detriment of the warfighter.

Lacking Top Cover, Underleveraging the Frozen Middle, and Rewarding the Status Quo. Without bold leadership that provides top cover to innovators, establishes and enforces standards of excellence, recognizes achievement, as well as provides support for those who strive but fall short—the frozen middle will continue to be underleveraged and hence encouraged to preserve the status quo.

Lacking Innovation Career Pathways and Mismanaging Talent. Rather than establishing professional innovation officers, empowering and assigning novel career pathways, or adapting to the expanding mission-driven private sector opportunities with which the Department vies for talent—the Department misperceives itself as being the premier avenue for “public service” and maintains an archaic, 20-year career track for servicemembers and civilians alike; this no longer a competitive approach to talent management in the 21st century.

Lack of Understanding of How Industry Works. Industry and the Department speak virtually different languages and seemingly operate completely differently, and because of the convoluted nature of defense acquisitions along with primes' influence, the Department is not a good customer, nor will they be without developing actual business acumen, while synchronizing and better collaborating with industry—especially with the startup ecosystem, where the most cutting-edge tech resides.

Detaching Innovation from the Mission and Flying Blind. The acquisition ecosystem is still far detached from and, in many cases, cannot collaborate with the warfighter to meet their needs—resulting in disjointed efforts around innovation, scale, and importantly, speed. The concept of innovation is often bolted on versus baked into programs and without metrics for people innovation readiness levels, to supplement technology readiness levels, efforts to increase speed and scale are akin to flying blind to an unknown destination.

This study's independent findings were similarly observed in the report by the Atlantic Council on Innovation Adoption and the PPBE Reform Commission Report published in 2024. These would include:

ATL Council Report — Commission on Defense Innovation Adoption

Challenges:

- Outdated R&D Model with overly program-centric and lengthy timelines, inflexible execution, and expansive valleys of death.
- Fewer companies providing defense solutions.
- Hamstrung workforce with a limited understanding of emerging technology.



- Cumbersome reporting from DoD to Congress.

Recommendations:

- Leverage warfighting insights and industry experimentation practices to demonstrate the value of commercial capabilities to meet operational needs.
- Purposeful experimentation of scaling SBIRs and a modern information-technology capability portfolio management in order to modernize requirements processes.
- Communicate demand signal to leverage commercial-sector innovation and private seed funding to deliver unique commercial capability.

Commission on Planning, Programming, Budgeting, and Execution Reform

Challenges:

- The current PPBE process lacks agility, limiting the Department's ability to respond quickly and effectively to evolving threats, unanticipated events, and emerging technological opportunities.
- Current strategic and resource allocation guidance documents are frequently consensus-driven, often late to need, and sometimes fail to provide actionable direction to the DoD Components.

Recommendations:

- Before making major decisions, closely align budgets to strategy for the Joint Force over multiple years "based on explicit criteria of national interest," to deliver faster capabilities to the warfighter and that account for "choices among explicit, balanced, and feasible alternatives".
- Enable accountable leaders in acquisition, operational, and support organizations to foster innovation and agility by improving the ability to react to changing threats.
- Use commonly accepted, modern business systems and a dedicated, appropriately skilled staff with shared and accessible data to support decision making that reduce duplicative efforts, and better communicate information inside the DoD and to Congress.
- Appropriately signal near and long-term technological and infrastructure priorities to the industrial base, enabling both non-traditional and traditional vendors to supply capabilities to the DoD.
- Provide Congress and the American people greater visibility into, and understanding of, key defense resource decisions.

Recent NDAA demonstrate promising DoD-Congressional collaboration, specifically in Sec. 232 of the FY23 NDAA, in which Congress tasked the Department with producing a "Strategy and Plan for Strengthening and Fostering Defense Innovation Ecosystem". Additionally, in FY24, Sec. 808 tasked the Department with developing a pilot program for reforming intellectual property management; Sec. 811, which is a directive to "...develop and implement a streamlined requirements development process for the Department of Defense, to include revising the Joint Capabilities Integration and Development System, in order to improve alignment between modern warfare concepts, technologies, and system development and reduce the time to deliver needed capabilities to warfighters."; and the elevation of the Defense Innovation Unit to "report directly to the Secretary without intervening authority".

This study complements the Atlantic Council and PPBE Commission reports, by collecting testimonials and specific vignettes supporting the study findings and highlights a set of practical and actionable recommendations and tools for implementation by the Secretary of Defense and Department leadership across all Services and combatant commands.



Study Recommendations

The findings of this study identify several critical areas in need of reform, with a particular emphasis on transforming the incentive structures that are byproducts of a malign Department culture that supports the status quo. While aligning incentives will not fix all the issues present in the Department, it will go a long way and is a step towards successfully yielding and allocating skills and needs. The recommendations are strategically designed to synchronize incentives with the swift integration of technological advancements, thereby enhancing warfighter support. To this end, the Defense Innovation Board (DIB) recommends that the Secretary of Defense directs leaders to foster an innovative culture and evaluates compliance accordingly. This cultural transformation should empower middle management to embrace and champion innovation, facilitated by the adoption of the following recommendations:

Embrace risk. Embracing risk is key to innovation; it involves a calculated approach to uncertainty, learning from failures, and fostering a culture where risk-aware behavior is encouraged to drive mission success. Failing fast becomes part of our culture.

Provide top cover. To cultivate a thriving innovation ecosystem within the Department, leaders must create a supportive environment that values new ideas, encourages risk-taking, and fosters a culture of collaboration and learning from failures.

Stop rewarding mediocrity. To revolutionize the Department's approach to innovation, a shift from rewarding mediocrity to recognizing and incentivizing creativity and calculated risk-taking is essential, fostering a culture where innovation is not just encouraged but tangibly valued, rewarded, and promoted.

Accelerate speed. The Department must embrace the same urgency and adaptability demonstrated in reacting to battlefield conditions to accelerate innovation and technological advancement, ensuring that the warfighter is equipped with critical capabilities to outpace adversaries.

Create a career path for innovators. To counteract the high turnover of innovators in the Department, recruit the same, and foster a culture of sustained innovation. Establish a structured career path that not only rewards risk-taking but also aligns personal growth and promotion with mission-critical objectives.

Track people innovation readiness levels. To foster a culture of innovation within the Department of Defense, it is essential to recognize that innovation centers around people, not just technology. By measuring and tracking people innovation readiness, the DoD can empower its workforce to create new ideas, products, and services that add value for the warfighter, while also identifying areas for growth and development.

Align the mission to drive innovation. Craft a vision for innovation within each command that resonates with the National Defense Strategy and establish actionable goals that embody this vision.

Learn from the best. Cultivate a culture of learning by reinforcing the mindset that we're all learners, making learning enjoyable, empowering decision-makers, and seeking input from a 'creative brain trust'—a pillar of peer-based innovation



Study Methodology and Structure

The study research methodology triangulated academic research, industry practice, and DoD practices. The study received valuable insights from over 68 primary DoD stakeholders, 35 key interviews and panels involving academia, industry, and DoD stakeholders. Additionally, it reviewed more than 55 periodicals. Through interviews, the study engaged the diverse perspectives and frontline positions in the innovation ecosystem and collected firsthand accounts from the voices of DoD innovators who were both burned out by the toil of the bureaucracy yet still passionate about driving change. To note, all interviews conducted for this study adhere to Chatham House Rules. Participants' identities and identifying information have been removed to ensure confidentiality.

The study structure, in addition to the Executive Summary, includes three sections, followed by the conclusion and appendix with several templates for consideration. Section 1 outlines incentives as they are and what they should be, Section 2 delineates the challenges around incentives and why they exist, and Section 3 offers eight practical and actionable recommendations so that Department Leaders and their teams can embark on their own implementation journeys. The included appendix serves as a repository for supporting materials that supplement this study on incentives and innovation within the Department of Defense. It is designed to provide valuable context and insights through various sections.



Section 1. The Current State of Incentives: As Is vs. Desired

Interviews with Department officials across all echelons revealed two distinct structures influencing tech adoption and culture, both intrinsic and extrinsic motivators, directly impacting individuals. Key areas included promotion systems, innovation-focused career trajectories, and top cover support for risk-taking, to name a few.

The study underscores the significance of strategic-level incentives, which are crucial drivers that directly influence the Department and its wider network of partners to embrace innovative technologies and methodologies. These incentives are pivotal for fostering a culture of innovation and expediting the adoption of cutting-edge technologies and processes, ensuring that the Department is agile and responsive to emerging threats and opportunities.

However, while these current incentives exist or should exist in theory, as shown in Figure 1, in practice they most often become as disincentives, listed here:

Figure 1. Department-Wide Actual Disincentives Around Innovation

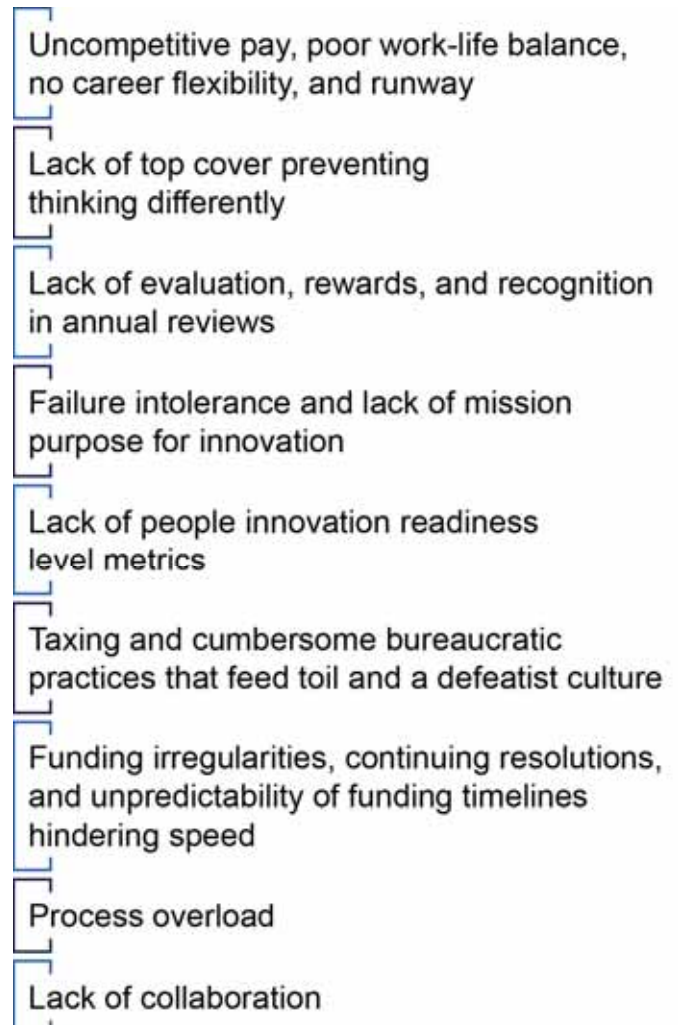
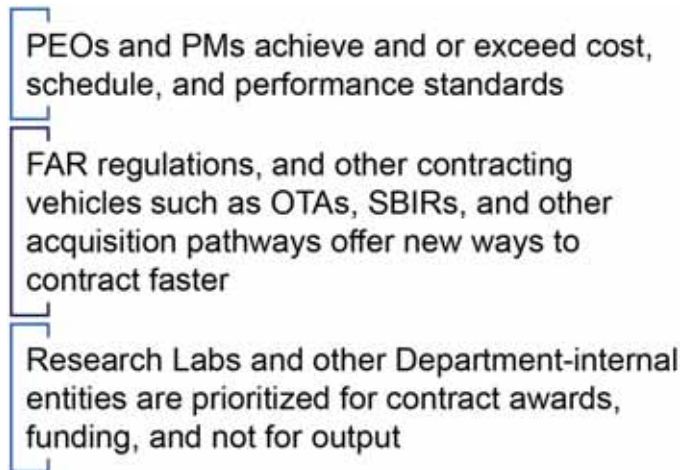


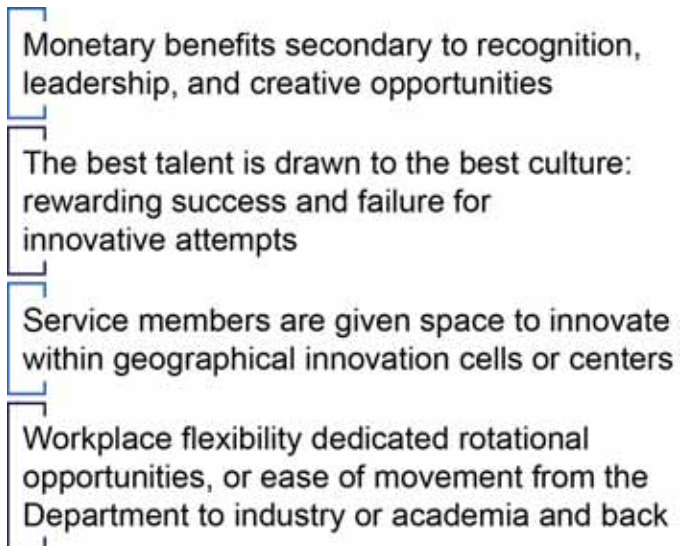
Figure 2 delineates an array of strategic incentives encapsulating feedback from interviews defining what incentives should be in the Department and if present how they are expected to facilitate the integration, and adoption of innovative technologies, and processes at the strategic level.

Figure 2. Strategic Echelon Desired Incentives Across the DoD



Similarly, Figure 3 presents the study's qualitative data gathered from interviews and identifies several key incentives expected to foster the Department's innovative ecosystem growth at the tactical level.

Figure 3. Tactical Echelon Desired Incentives Across the DoD



Section 2. The Bad and the Ugly: What is Not Working and Why

"Had Wernher von Braun been a PM, we would have never gone to the moon."

- Principle at a leading national defense technology consulting firm

Foundational to military operations is the principle of "mission command", defined by the US Army as "the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations". The Department's acquisition ecosystem is far removed from front line operations, and mission command is absent.

In every interviewed organization and at every echelon, we observed this paradox: the Department of Defense is tasked to "provide combat-credible military forces needed to deter war and protect the security of our nation", a charge which necessarily may require combat—yet in the acquisition of the capabilities needed to fight and win the riskiest of all endeavors, war, this study found absolutely zero appetite for sticking one's neck out and taking risks, like that which is asked of our service members in the field. ***This is not just a paradox, but utterly antithetical to the Department's mission and unacceptable for supporting the warfighter.***

While this study revealed many specific examples of bureaucratic ineptitude, tolerance for mediocrity but not for risk, and uncovered decisions were either deflected to another organization, made with the least possible chance of being held responsible for perceived failures, and which resulted in defeating innovative and creative people only to see them exit the government—what it ultimately uncovered is that ***the Department generally stands in its own way when it comes to aligning incentives to drive faster tech adoption.***

Avoiding Risk, Perpetuating Complacency, and Preventing Speed.

As General Douglas MacArthur famously proclaimed, “There is no substitute for victory”; victory can only be achieved by supporting the warfighter, and in doing so— *there is no substitute for speed*.

Contrary to this maxim, the Department is instead a plodding leviathan with a systemic aversion to risk and a lack of urgency that has led to a culture of sustaining the status quo. This environment is characterized by a preference for familiar solutions and partnerships, often at the expense of exploring potentially superior, albeit riskier, new technologies. Many acquisition professionals prefer to leverage the same process and documentation they used in a previously approved capabilities instead of exploring alternative contracting vehicles and novel technologies, both of which unavoidably inject new risks. One industry stakeholder boldly stated, “the system has escaped scrutiny for the past 20 years; it has been perfectly designed to solve the wrong problems”. Another senior acquisition official working within the Department said defense primes, when identifying disruptive technology from startups or other non-traditional companies, will “buy it or bury it”, as their incentive is to satisfy shareholders and maintain their largest legacy contracts; it is self-evident that both the Department and defense primes prefer to maintain the status quo, which in turn perpetuates complacency, prevents speed and undermines the warfighter’s ability to do their job—to fight and win.

Whether disruptive or not, the sluggish nature of technology transition is often found in technology readiness (TRLs) levels. These serve as standards for evaluating the maturity of technologies for widespread adoption in acquisition programs and range from 1 (lowest) to 9 (highest). TRLs 4 to 7 (Figure 4), but most acutely from 6 to 7 within Department of Defense RDT&E Budget Code 6.3, are where technology is expected to scale. Interviewees across the Department and industry made particular note of RDT&E Code 6.3, specifically

because “it is seen as the pool of knowledge necessary for the development of future military systems.” In other words, while programs with TRLs in stages 6-7 are vital in establishing military viability and paving the way for emergent technology—they receive less than 10% of total RDT&E dollars (according to a February 2024 report from the Congressional Research Service). While not precisely linear and regardless of the project’s potential, it is in this essential pool of funding for TRLs 6 to 7 real calculated risk must be taken- and yet, neither funding is allocated, nor risk and speed are embraced.

Figure 4. TRL Table

4	Component and/or breadboard validation in laboratory environment
5	Component and/or breadboard validation in relevant environment
6	System/subsystem model or prototype demonstration in a relevant environment
7	System prototype demonstration in an operational environment

Source: NASA.gov

During interviews, several participants commented that special innovation processes, programs, and organizations, such as Replicator, Rapid Defense Experimentation Reserve (RDER), Strategic Capabilities Office (SCO), and others with great potential— are referenced so habitually that without fully developed and visible roll-out plans, they are at risk of being reduced to conduits of the Department’s innovation fatigue. One requirements officer said of his own acquisition workforce “If you cut us in half, we’d still have twice as many people as we should”, adding, “there isn’t even a list of joint prioritized requests, we don’t even know ‘what is your number one priority?’ and there is no singular warfighter tasked with or authorized to answer that question.”

Adding to this is the personal nature of conducting business with the Department, in which a PEO's lowest risk transaction is one with an established partner, often aligned with and vetted through research labs who, like primes, are incentivized to be insider innovation gatekeepers. Besides the preference for existing solutions, primes' partiality for sole-source sustainment, or as one stakeholder characterized it, a "subscription-based" model, outweighs speculative but potentially superior options. For the largest contracts with the greatest number of stakeholders, one interviewee illustrated the clamor for funds as "endlessly hanging ornaments on a Christmas tree until it almost falls over," with another saying, "for something like the F35— it's not just the airframe, it's the childcare center, the gym, and all the rest that's attached to the funding, that's needed for approval."

Lacking Top Cover, Underleveraging the Frozen Middle, and Rewarding the Status Quo.

Successes related to innovation are neither measured nor rewarded, and failures are always admonished. Oftentimes, failure appears inescapable as service members and civilians alike cannot identify a singular person who is the final decision maker, with authorities appearing to be almost deliberately unclear to obfuscate accountability. Where authorities *were established*, the disincentive became clear: increasing efficiency of process illogically increases the risk of losing money or is seen as additional work, and those with actual budgetary authority risk being fired for an investment perceived to be risky, but face far less consequences for a safe, expensive solution (usually from a historically or professionally connected entity). Coupled with a misplaced reward system that undermines morale, fosters a "that's not my job" mentality and hampers innovation, this lack of clear leadership accountable and support has resulted in a trend of dissatisfaction and attrition among warfighters and acquisition workforce alike.

Interviewees across all levels expressed frustration at senior leadership's unwillingness

to support junior innovators and the unnecessary (yet effective) obstacles created by middle managers. This is demonstrated by PEO ineptness, archaic or structurally disjointed financial and budgetary structures, and detrimental business relationships, all of which are underpinned by risk and were consequently, often used as excuses for inaction. More to the point, many instances existed in which senior leaders (SES and general officers) were eager to spearhead organizational change and provide top cover support to intrepid junior innovators (GS 12, O3s and below) — but it was the aptly named "frozen middle" (GS 13-15) coined in the 2019 DIB Software Acquisition and Practices report (SWAP), that stymied such initiatives.

In the over five years since the SWAP report's publication, the frozen middle, although "patriotic and dutiful," remains a pervasive impediment. GS 13-15 employees comprise approximately a third of general schedule employees; their implicit incentive is to not only ensure the system carries on as is and avoid deviation from established practices, but that their careers will also be judged by their success in doing so. *The frozen middle, like a glacier— moves slowly and engulfs the fertile soil of innovation below.*

Moreover, virtually every interview echoed senior leadership's aversion to providing top cover for junior innovators, or the numerous middle managers needlessly standing in the way. One interviewee, a senior airman who is also a deputy for the DoD Chief Digital Office, explained that the current leadership and recognition structure in the DoD is broken, and if we continue to embrace a bureaucratic system that limits talent and skills, the next generation will have fewer opportunities, meaning that we have failed them.

The Department cannot be held solely to blame, to do so would be a dishonest distraction from the role Congress plays not just in oversight, but crucially, funding. Examples abound of Congressional imposition related to their constituent obligations, which understandably can take precedence; however, continuing



resolutions and budgetary approval delays inexcusably hamstringing Department and military leadership's ability to both receive funding on time as well as flex funding from inefficient or failed projects to those with promise. Among the most significant instances of Congress and the Department collaborating during the Cold War was the Aegis Combat System, which identified emergent threats to naval operations, and was subsequently developed on a rapid timeline in order to protect formations from missiles and other airborne threats. More recently, the Joint Improvised Explosive Defeat Organization was stood up to meet the enormous impact IEDs had in combat operations and stands out for its Congressional allocation of colorless money to enable the Department to swiftly produce the Mine-Resistant Ambush-Protected (MRAP) vehicle, thus saving countless lives in theater.

Lacking Innovation Career Pathways and Mismanaging Talent.

Careers in public service must be viewed as more than just a job—they are vocations. In addition to superior benefits, the most successful companies with whom the Department competes for talent, also have mission statements that connect employees to causes greater than themselves and, in many cases, have a greater impact on humanity.

“Pay versus passion” embodies the nature of service members and civilian’s decision about current career progression requirements and is perhaps the starkest disincentive: regardless of its merit or potential, service members and civilians are simply not incentivized to forge their own path—or are completely unable to. Rather, the incentive is to fall in line and prepare for their next assignment in two to three years if unsatisfied with their current one.

Critically, junior service members and civilians in many cases reported never receiving adequate training, or that they simply did not know what they needed to do until a crisis arose. This situation is particularly endemic to the acquisition workforce who is instructed to follow regulations to the letter, e.g., overuse of boilerplate language that impose requirements

completely out of scope or irrelevant to the project, due to the risk associated with the burden of integrating more precise FAR, organizational, and other legal considerations. Such risks to one’s career typically do not come with commensurate pay or top cover from management to allow employees to innovate, test process improvements, and master their trade. Consequently, junior service members and civilians succumb to learned helplessness, leading to burnout or apathy, with a disconnect from the broader mission adding to feelings of detachment.

In one instance, a junior infantry officer leveraged his engineering background to build up their brigade’s innovation cell, requiring them to deviate from the traditional development timeline, having only their senior rater’s support but none from human resources command (HRC). The risk posed in this case was HRC determining they had not met key development times and would not be considered for another assignment or even be passed over for promotion. In another instance, an Innovation Officer in the Air Force talked about service members feeling that they are not promotable and put their rank in jeopardy if they go down an innovation path. Talented and skilled soldiers who were working within an innovation cell are transferred to work as shopkeepers or other staff positions per their rigid career expectations and is representative of how valuable knowledge and potential technological advancements are lost. Significantly indicative of the talent exodus the Department is experiencing, a survey—carried out by a former industry interviewer who has since ascended to a senior leadership role within the Department—highlighted the transition of ex-service members to roles at Google. In the survey, they were asked to rank on a scale of 1 to 10, their change in satisfaction, from the beginning of their service to when they left, relative to the intrinsic incentives of autonomy, mastery, and purpose: “Mastery increased, autonomy decreased, but most stark was purpose, which dropped from a 9 to a 2.” When asked what bled them of their purpose, “... the bottom line was toil”. The senior



leader in the Department concluded “Toil kills purpose faster than mission can rebuild it.”

Not Knowing How Industry Works.

Throughout the course of this study, respondents cited funding challenges as singularly the most harmful to innovation and adoption.

“Startups prefer partnering with investors over government as the latter is more akin to feeling *indebted* to rather than being *invested in* their success.” Adding to their statement, this principle at a defense venture capital firm, continued, “It’s only because I understand the influence of primes, that I tend to avoid them and so should the Department, but they’re usually the only ones that can absorb the lead times and other unique constraints imposed by the Department, unlike when I invest with smaller companies who know I want them to succeed.”

In the frenzy for the billions of Research, Development, Test, and Evaluation (RDT&E) funding annually given to the DoD, stakeholders are not only faced with a notoriously cumbersome two-year request window, in many cases, they must also appease service labs who are incentivized to leverage their influence and authority to bridle funding and garner recognition for successes.

AFRL – Air Force Research Lab:

\$4.5 billion ([FY 21 Annual Report](#))

NRL - Naval Research Lab:

\$1.1 billion ([FY22 Annual Report](#))

ARL / DEVCOM – Army Research Lab:

\$259 million ([FY22 Annual Report](#))

At strategic echelons, a retired general officer with intimate knowledge of each branch’s research lab, as well as the RDT&E ecosystem broadly, explained “Service Laboratories must be held accountable for how they spend public investment funds in S&T. These organizations are responsible for spending the majority of DoD investment in S&T. At their best, they promote healthy tech growth, seed academic work in key areas, and incentivize private investment in dual-use tech. At their worst, they exhibit

dangerous bureaucratic tendencies: funding large amounts of outdated infrastructure, extracting exorbitant ‘taxes’ on development contracts given to entrepreneurial companies, and exhibiting a ‘not invented here’ mindset. Given the record of transition over the past decade, this mindset cannot be justified.”

At the tactical level, a junior officer and spark cell founder noted the hurdles their service’s lab imposed on promising ideas: “... every time we would bring them an idea that within our unit, had proved to be successful, the lab would throw a new hoop in the air for us to jump through. Even if we did, the lab still stood in the way between us and a PEO or other funding authority that could scale our idea, as if it was because our idea didn’t come from the lab itself, they wouldn’t let it go any further.”

Industry must likewise scramble for “Decimal dust,” as characterized by one interviewee, which is what remains with the end of the Integrated Priority List (IPL) process, leaving little flexible or colorless budget for innovation. Accordingly, industry stakeholders expressed exasperation at the federal budgetary process that for years has subjected them to the unpredictability and uncertainty of continuing resolutions, which they note have claimed countless Phase 1 and 2 proposals.

Phase I. The objective of Phase I is to establish the technical merit, feasibility, and commercial potential of the proposed R/R&D efforts and to determine the quality of performance of the small business awardee organization prior to providing further Federal support in Phase II. SBIR/STTR Phase I awards are generally \$50,000 - \$250,000 for 6 months (SBIR) or 1 year (STTR).

Phase II. The objective of Phase II is to continue the R/R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the project proposed in Phase II. Typically, only Phase I awardees are eligible for a Phase II award. SBIR/STTR Phase II awards are generally \$750,000 for 2 years.

Source: SBIR.gov

As one business owner stated, “the Department has no idea how to run a business, you cannot know how to do business with the Department



until you own one yourself” and “the real winners of SBIRs are all the consultants.” Indicative of this observation is indeed the blossoming subcontracting, grant writing, and consultant industry whose existence is predicated upon the challenges facing small businesses to secure SBIR funding.

To quantify this point, total SBIR awards have increased from \$1.8 billion in FY03 to \$4.5 billion in FY23, with the DoD receiving just over \$1 billion and \$3.2 billion respectively. By comparison, FY23 generated \$123 million consultative service fees, or it cost \$1 to secure every \$26 dollars of defense SBIR funding. Although the Department’s share of SBIR funding has decreased from 56% to 48% between FY03 and FY23, over the same period, SBIR consulting firms collected over \$1 billion in fees—the Department’s entire SBIR allocation in FY03!

As the saying goes, “In a gold rush, it pays to sell shovels.”

Detached Innovation from the Mission.

“Measuring what matters,” a senior airman involved with AI acquisition argued when explaining how misguided the metrics used by the Department are for determining project viability. Since innovation and speed matter, they should be measured.

Another principle at an OSD program assessment entity added “Cost, schedule, and performance are no longer sufficient; the Department has a lot of output performance metrics, but we need to be just as concerned with what’s going into a project. If we’re only evaluating if a project is meeting these criteria, we can lose sight of bigger questions of if it’s worth it at all.”

Functionally, requirements officers, acquisition officers and PEOs, and the warfighter, operate in almost entirely separate spheres – “you get what you asked for, not what you want” and “everyone has a no vote; few have a yes.” The disconnect affects all aspects of innovation and adoption, creating technical debt in which research and development move faster than

policy, leading to funding gaps, delays, and ultimately not getting the best technology to the warfighter efficiently.

The requirements process bears this out being fundamentally inflexible, iteratively ineffective, and its branch-specific forecasting methods are detached from the continuous experimentation needed to meet the continuously changing needs of the warfighter; incentives simply do not exist to seek out problems and design requirements to solve them. Most acutely and due to the siloed nature of the process, where a single person is commonly the sole decisionmaker (rather than joint, cross-functional teams including PEOs, acquisitions officials, and warfighters), requirements are: inadvertently developed to be unscalable beyond one specific instance; JCIDs’ interpretation is either too removed or is needlessly involved, to identify granular needs; the solution will take too long making it irrelevant or insufficient; exclusive of superior options or providers; or apply inappropriate funding authorities that halt the process or fall short of quoted resourcing.

Those rare instances where there is alignment among stakeholders on a solution, if it is new or considered risky, PEOs are disincentivized to be the first ones to sign off on the project – even if it is already common practice, widely fielded in the private sector, or another service.

One pilot’s account of this real-world disconnect occurred while conducting missions in Syria during Operation Inherent Resolve, when he voiced his frustration that “if we’re sending guys out to clear a compound or enemy area, we don’t want 500lb bombs, we want 2000lb bombs. But that just isn’t the case a lot of the time, because these requirement or acquisition officers in DC have the final say on what we get.”

Epitomizing acquisitions, requirements, and PEO detachment from the mission and, most of all, the firsthand needs of the warfighter, was a semi-annual test and evaluation exercise that took place over the course of a decade. The then junior officer who participated in these training scenarios explained that one system in



particular stood out as the most vexing to not see any change reflecting his and his soldier's feedback. The system under evaluation was intended to replace a legacy tracking device mounted in most vehicles, and as a part of the upgrades included a chat function, akin to instant messengers with independent boxes for each echelon e.g., squad-level, platoon-level, company-level. It was nearly always operational when all other forms of communication failed; however, there was a caveat— it lacked a copy-paste function. This simple capability meant that an otherwise cutting-edge new system still required an operator to write down certain precise report criteria such as grids or enemy disposition, frequently while on the move, effectively rendering its reliability as the only feature that made it better than a radio; this function's significance and the need to make this simple improvement could not have been more obvious. Years later, in a different testing scenario at a different base, the junior officer encountered the same system again. Contractors had been assigned to the exercise to train other soldiers on the system's functionality, yet he found himself conducting the training himself after seeing how poorly even the trainers hired by the system's company knew it's operation. Over the over six years since his first exposure to the system to that training event, in which he executed nearly nine months of rigorous tests mimicking combat and personally wrote six different reports highlighting the copy-paste's importance—the modest feature remained absent.

While many of these challenges are not new, are known to the Department, and have been highlighted by others, the Defense Innovation Board has eight practical and actionable recommendations that will capture the leader's attention, offer them a path for action, and provide their teams the practical steps to get there.

Section 3. Recommendations: Practical Approaches to Fixing Incentives

Incentivizing behaviors rather than outcomes, as explained by a Department acquisition official, naturally promotes organic change and a “create, maintain, destroy” mentality. Therefore— to better align incentives for delivering technology faster into the hands of our warfighters, the Defense Innovation Board recommends that the Secretary of Defense directs Department leaders, military and civilian, drive culture change by empowering their teams and transforming the current neutral, dismissive tone to force multipliers of innovation. These eight recommendations are meant to accelerate innovation by: aligning mission to drive innovation, create career paths for innovators, provide top cover, embrace risk, stop rewarding mediocrity, taking an MRAP approach to innovation that prioritizes those in which can enhance lethality or save lives, track your people innovation readiness and adoption inefficiencies, and learn from the best.

Embrace risk.

“Risk is measurable, controllable, and not something to be feared.”

- Rob Ceravolo, Retired Navy Fighter Pilot

Embracing risk means navigating uncertainty, making decisions that balance potential dangers and rewarding the risk-takers. Embracing the negative consequences that may arise in risk-taking does not equate to recklessness or pursuit of failure; it is, instead, an understanding of failure as an inevitable aspect of life and a commitment to learning from setbacks. Risk can be measured, and each Service should have a documented process of how they measure and embrace risk. Risk can be measured by performing a risk analysis, where the potential risk is identified, analyzed, and assessed, and from there monitor the process and document the goodness of the risk before the result is even known. The key is to become risk-blind, or to take out the fear in risk-taking by showing how it is measurable, thus making it a more



approachable concept that leads to taking action and less focused on potential losses.

Every leader within the DoD must encourage risk-aware behavior and the lessons that come from making mistakes. Risk management is an important organizational practice that identifies, analyzes, and prioritizes risks and then takes steps to mitigate and manage the risks that organizations face each day. Risk management also entails defining the risk appetite of the organization, or how much risk the organization is willing to take. By being aware of the possible risks, recognizing the advantages of taking action, and being willing to learn from failure, we embrace risk-taking as a crucial and necessary form of improving DoD actions (Figure 5).

Figure 5. Incentive Cycle



To do so, first acknowledge the activity needed to reduce risk and elevate the tolerance to early failure by sharing anything pertinent, and iteratively throughout the development. Instead of striving for a completed product that could take years to materialize, driven by inflexible requirements, think in terms of a Minimum Viable Product (MVP) and focus on continuous improvement. Next, define the risk appetite of the team. Leaders must ask how much risk is the team willing to take to be innovative? What constitutes 'good risks' and how will you

measure them? It is also essential to recognize that not all risks will lead to successful outcomes and emphasize the importance of learning from failures and applying those learnings to future endeavors. Encourage team members to take intellectual risks by motivating them to propose innovative ideas, challenge existing processes, and experiment with new approaches. Finally, foster empowerment and accountability. Leaders can empower their team by providing top cover where everyone feels comfortable taking risks without fear of negative consequences. Changing leadership is also an important part of culture change and key to promoting an environment where leaders and those in power have the skills and passion to do their job successfully while willingly taking necessary risks.

Leaders can align accountability measures with risk-taking and innovation by holding your team accountable for their decisions and requiring them to provide supporting data and sound reasoning. AFWERX, the Air Force's pioneering innovation initiative, serves as a compelling example of how risk-taking can pave the way to success. Prior to the establishment of AFWERX, the application of innovative ideas was neither recognized nor incentivized by leaders for the mere reason that risk was synonymous with failure, and only those who avoided failure were promoted. As a result, Air Force leaders took a calculated risk to bridge the gap between non-traditional industry customers and military members. This allowed an environment that encouraged the pursuit of innovative technology and enabled servicemembers to utilize their talents in a creative space. As highlighted by one of the co-founders for AFWERX in this study, despite facing numerous project failures in its early stages, AFWERX has emerged as the Air Force's leading innovation institution, inspiring other innovation cells to adopt a similar structure across various services. To give a further example of their success through risk-taking behavior, AFWERX assumed the task of designing a helmet in which \$14 million had already been spent over three years on external prototyping; within 7 months and at under \$1

million, AFWERX was instead able to crowdsource, obtain funding through multiple vendors, and leverage a full-scale of resources to successfully build this helmet.

Provide top cover.

"The most dangerous phrase in the English language is, 'We've always done it this way.'"

- Adm. Grace Hopper

For innovation to thrive in the Department, leaders must cultivate an organizational environment that embraces new ideas by rejecting doing things in the same way, allows for space to act, and provides people the right environment to offer ideas and suggestions without concern for appearing ignorant or being put down. Leaders who provide top cover play a vital role in creating a space that empowers individuals to take calculated risks, share ideas, collaborate, and learn from failures. Innovation leaders need to encourage and reward others to innovate. First, highlight the importance and urgency of innovation and need to consistently motivate your team to utilize and hone their innovation skills, which they will have developed through 'Innovate to Win', self-assessments, and curated learning pathways. Subsequently, align strategy, policy, and leadership behavior to validate innovation commitment. Leaders need to openly model and practice the values of trust, openness, and transparency. Leading by example is vital for fostering innovation readiness within the workforce. Innovation leaders, especially those categorized in the "frozen middle", also need to complete their own self-assessment to self-evaluate their innovation skills, review their innovation readiness report, and results to discern their strengths and opportunities for improvement.

By completing their innovation skills curated learning pathways, leaders pave the way for their teams to follow, and start transforming the 'frozen middle narrative' to "force multipliers" for innovation and speed to tech adoption.

To better address the concept of top cover, it is essential to recognize that it often operates on an individual-to-individual basis, which still requires each Service to have a robust

entrepreneurial ecosystem and a founder ethos to ensure that innovation is not solely reliant on knowing the right individuals. During the time of the 2018 Assistant Secretary of the Air Force for Acquisitions, Technology and Logistics term, through various initiatives - including AFWERX for investing, Kessel Run, Space Camp, Kobayashi Maru for coding, Tesseract for logistics, the Rapid Sustainment Office (RSO) for sustainment, and CloudOne / PlatformOn for cloud and platform solutions – Airmen and Guardians were able to establish informal organizations, name them, brand them, thus creating their own identity as is akin to the Silicon Valley playbook. It must be noted that while not every initiative succeeded, many did, statistically creating an ecosystem of creative problem-solving that was protected on high by the Assistant Secretary of the Air Force for Acquisitions, Technology and Logistics, providing the necessary top cover to take risks and succeed, or learn from failure and keep trying. These protected efforts were not based on personal acquaintance, but on the Airmen and Guardians' entrepreneurial merit and impact.

When this initiative began, General Dave Goldfein could have easily halted it due to the unconventional naming conventions, branding, and informal attire, which did not conform to United States Air Force regulations. There were officers, enlisted personnel, and civilians working together in hoodies and addressing each other by first names – a practice that initially shocked traditionalists. However, this did not undermine the Air Force's traditions or the integrity of its chain of command. On the contrary, everyone reverted to the formal structure when uniforms were worn, reinforcing the existing hierarchy. Even so, it was with hoodies on that this startup mentality harmonized with the Air Force's iterative operational concepts, like the Observe, Orient, Decide, Act (OODA) Loop, and its general enthusiasm for new technology. It also provided junior officers and enlisted personnel a means of expression. Consequently, each Major Command (MAJCOM) developed its own



startup. Fostering an entrepreneurial ecosystem within the Services is vital for sustained innovation. The reward is not liquidity the way it is in Silicon Valley, but its impact, recognition and the ability to be creative. The Air Force's experience demonstrates that with appropriate top cover, such ecosystems can flourish without compromising traditional values and structures. The primary objective was to safeguard the ecosystem itself to foster innovation and creative thinking. This is how we can change culture that can then rid the system of the current bureaucracy constraints.

Another prime example of how top cover leads to effective innovation is the support NavalX, a key innovation cell in the Navy, received from the Hon. James "Hondo" Geurts during its formation. Established in the 2019–2020 timeframe, NavalX was supported by Mr. Geurts, the Navy's senior acquisition official. He provided top cover to the leaders who rotated in from other parts of the Navy to help build it. This top cover included communicating the importance and urgency of innovation in the Department, consistently emphasizing the need to "protect its mavericks," and removing obstacles the team faced with setup of personnel recruitment on a rotational assignment from their parent command to develop the team. NavalX wants to train its members on how to think differently, which is how Capt. Casey Plew, the Director, introduced design thinking practices to define problems and get technologists involved in solving them. Additionally, they have Tech Bridges. Operating in 18 regions, Tech Bridges is meant to incentivize individuals and future Navy and Marine soldiers to turn ideas into action. By providing a pathway for startups, universities, and other small businesses and labs to collaborate with the Services, more solutions are created through informed action and creative outlets.

Stop rewarding mediocrity.

"Ambition without self-discipline is pointless."

– Michelle 'MACE' Curran

Far too often the Department rewards mediocrity and complacency. However, implementing a system of rewards and recognition to promote innovation among individuals and teams could significantly enhance the Department's value by cultivating higher-level skills and talents. A well-structured recognition system can motivate people to find solutions to problems, bring new ideas, try new approaches, and take wise risks. A rewards system may include monetary and non-monetary rewards such as time off, which shows people they and their contributions are valued and supported by the organization.

Individuals are inspired by two types of motivators: intrinsic motivators which emanate from the individual and their locus of control, and extrinsic motivators, which emanate externally to the individual, including the team and the workplace. Key intrinsic motivators include autonomy, mastery, purpose, recognition through feedback, and challenge. Key extrinsic motivators include rewards and recognition, career advancement opportunities, collaboration, and teamwork.

Individuals are often more motivated by recognition from immediate managers, leadership attention - such as one-on-one conversations - and a chance to lead projects or task forces, rather than by monetary rewards such as salary raises or bonuses. More than 200 DoD innovation cells, including SOWFEX, TANG, and Army Futures Command motivate their innovators by providing them with ample space and flexibility to practice mastery of their innovation skills and autonomy in their projects while providing the reassurance these innovators need to experiment and ask questions, and the visibility of their efforts to the hands of the warfighter.

To foster innovation, it is essential to create individual performance goals for innovation and align them with the team and command innovation goals. Next, DoD Leaders can create an award category for innovation if it does not already exist and define financial incentives to drive innovation performance. Additionally, leaders must articulate "good failure," or failure



that provides learning opportunities, recognize and reward it, with advancement opportunities through rotations and mentoring/coaching. Leaders can tailor awards to the individual and their preferences (e.g., time off awards for new employees) as well as create leadership and immersion opportunities within innovative environments within the Department or in industry and academia.

A great example of innovation driven rewards currently practiced in the Department are “kill bonuses” established by the Chief Information Officer, and Director of Digital Capabilities at the US Air Force Research Laboratory. “Kill Bonuses” reward innovators who identify a project that is a bottleneck for the Department. Individuals who identify a project that slows the Department and burns funds otherwise needed for new, more value-adding initiatives can be awarded with on-the-spot cash awards starting at \$1,000. Those individuals who recommend terminating their own because it no longer serves the Department are rewarded immediately with a bonus starting at \$5,000. These types of rewards are vital to setting the tone and promoting a culture of innovation.

Accelerate speed.

“Make everything an MRAP.”

- Brigadier General (Ret.) USMC Michael Brogan

The same sense of urgency that we adopt on the battlefield, where lives are at stake, is needed today when the intellectual capital of the Department is on the line. To out-innovate our adversaries and win the next war, we must infuse this urgency into all our programs of record. Building on what was discussed in an earlier DIB Study from July 2023, [“An Innovation Strategy for the Decisive Decade,”](#) the DoD must accelerate its pace. The current rate of technological transition to the warfighter is too slow, hindering our ability to stay ahead. Urgency is essential to accelerate technology and advancements, ensuring that critical capabilities reach the field swiftly. The MRAP program, initiated in 2007 due to the increasing threat of improvised explosive devices (IEDs) during ongoing operations in Afghanistan and

Iraq, stands as a shining example of the DoD ‘getting out of its own way’ to support the warfighter. As a result, the development of MRAP vehicles reduced casualties and better prepared the warfighter for battle. This approach requires the following elements:

Embracing Urgency and Adaptability: The urgency to address the threat posed by improvised explosive devices (IEDs) in Iraq and Afghanistan drove rapid acquisition and deployment. Approximately 28,000 MRAP vehicles were developed in the span of three years. The MRAP program demonstrated remarkable adaptability, with production ramping up swiftly to meet demand. The first 4,066 trucks from the initial approved JUONS were delivered approximately thirteen months after the awarded nine initial IDIQ contracts. This agility provided better protection against IEDs, reducing casualties. The MRAP program moved from a decision to buy the vehicles to production is less than a year. The [FY2012 MRAP](#) Overseas Contingency Operations Budget (OCO) request which was granted was \$3.195 billion for repairing, sustaining, and upgrading MRAPs.

Improving Collaboration and Industry Engagement: The DoD rapidly communicated and collaborated closely with industry partners, leveraging their expertise in vehicle design and manufacturing. From the initial Congressional request to manufacturing and hiring, it took a total of 3 to 4 months to move this process along swiftly. By involving multiple manufacturers in parallel, the program ensured a diverse range of MRAP variants, each tailored to specific mission requirements. This collaborative approach expedited production and delivery.

Practicing Risk Mitigation and Testing: Rigorous testing and evaluation were critical. The MRAP underwent extensive survivability assessments, including blast tests. The program prioritized risk mitigation, leading to continuous improvements. Lessons learned from early deployments informed subsequent modifications, enhancing vehicle survivability.



Create a career path for innovators.

“Innovation’ is a philosophy without a focus, a mission without an objective”

- Gen Christopher Mahoney, 37th Assistant Commandant, Marine Corps

According to a stakeholder within the DoD innovation ecosystem, 40% of innovators working at the Department leave after an average of four years. Further, statements collected throughout the study also highlight the attrition rate between 15-25% after two years in programs, such as Air University’s Project Mercury, which trains innovators to uncover, define, and tackle with innovative ideas and critical thinking real life national security challenges across the Department. The issue is not a lack of dedication to the Department’s mission but burnout due to lack of top cover, the cumbersome bureaucracy, and the stale processes. Seeing their efforts as merely Sisyphean, innovators often face burnout.

While some leaders within the Department go to bat for innovators like the Navy’s James “Hondo” Geurts, and Dr. William Roper, retired Head of Acquisition for the US Air Force, the majority of leaders fail to provide top cover to innovators who strive to create change for the warfighter but fail to see any tangible scalable outcomes from those efforts. This challenge highlights the Department’s stark reality that innovators are not incentivized even though they are inspired by the Department Mission. Without the prospect of top cover, recognition, and to a lesser degree a reward and the ability to fail, most individuals are hesitant to take significant risks. Consequently, many leave the Department to pursue the mission from different angles, launching start-ups or joining think tanks.

To stem this loss, and retain and attract talent, the Department should establish clear career pathways and placements for innovators. On this topic of retaining talent, the Service Chiefs need radical authority to change pay-banding and to hack the Guard and Reserve systems to have access to top technical talent. Career paths imply and include innovation as a

personal development plan requirement and evaluation element. DoD leaders can trailblaze efforts to create a credible, practical, and recognized career path for innovators. Such career paths not only enhance employee engagement and satisfaction but also improve talent retention rates, facilitate succession planning, bolster employer branding, enable effective talent management aligned with business performance results, and reduce employee turnover. Career paths require a baseline of current skills through a self-assessment and, starting with an innovation competencies model, an assessment, and a learning pathway to empower every member of your team to self-assess and flex their innovation skills. DAU has created an end-to-end program, called [“Innovate to Win”](#), that can serve as a starting point to help establish an initial career path for your innovators. The program includes an empirical research-based innovation competencies and skills model vetted by innovators within the DoD, OPM, GSA, industry, and academia; a self-assessment and personalized results report, and a personalized, AI-powered learning pathway for each workforce member completing the self-assessment.

As innovators embark on their journey and placement in key billets, the innovation career path, leaders will need to develop and cultivate more advanced career paths that align innovation skills with business outcomes in support of the warfighter. In addition, when it comes to promoting the right leaders who will embrace a healthy level of risk and encourage others to innovate, we should set a couple of 1-star billets that do get promoted to a higher rank because of their ability to feasibly take risk. Leaders can be measured by if and how they innovated and get promoted from there. If there is no risk-taking, then there is no eligibility to promote. Indicatively, leaders can establish two distinct innovation career paths - one for Research Development Specialists (Figure 6) and one for Acquisition & Technology Transition Specialists as seen in Figure 7. Effective career paths need to be integrated with other talent



development and retention mechanisms such as providing top cover, rewarding, and recognizing innovators, providing a continuous learning culture, and ensuring promotion with increased responsibilities, as described in the relevant recommendations of this section.

Figure 6. Research and Development (R&D) Acquisition and Technology Transition

Entry Level

Collaborate on research projects, contribute to technology assessments, gain hands-on experience (e.g., in cybersecurity, AI, aerospace)

Thinking Innovatively: Strong analytical skills, growth mindset, futures thinking

Mid-Level

Lead R&D teams, manage projects, oversee technology transitions from lab to field, engage with academia and industry

Collaborating Innovatively: Strong collaboration, networking, and communication skills

Senior Level

Shape strategic R&D priorities, influence policy, drive innovation across DoD, lead interdisciplinary efforts

Cultivating Innovation: Strategic planning, influencing, advisory skills

Figure 7. Acquisition and Technology Transition

Technology Transition Analyst

Assess readiness of emerging technologies for deployment, identify transition pathways

Thinking Innovatively: Understanding of acquisition processes

Program Manager (PM)

Oversee acquisition programs, manage budgets, integrate new capabilities into existing systems

Collaborating Innovatively: Project management, stakeholder engagement

Strategic Advisor

Influence policy decisions, advocate for agile acquisition practices

Cultivating innovation: Navigating complex organizational structures

Track people and innovation readiness levels.

"Innovation is in our DNA, it's who we are: You leave it better than you found it."
- Gen Joseph Lengyl, 28th Chief, National Guard Bureau

Currently, the Department of Defense centers innovation around technology, which is far too narrow and insufficient. Innovation is fundamentally about people, and to foster innovation it is essential to measure and track the innovation readiness of individuals and teams. As defined by the Defense Acquisition University, innovation readiness refers to the abilities and skills of individuals and teams to generate new ideas, products, technologies, and services that solve problems and add value for the warfighter.

Innovate to Win, for the first time in DoD's history, has created a metric to measure and therefore manage and scale People Innovation Readiness Levels. This metric can provide individuals, agencies, and commands key insights and a baseline on how confident the workforce is in their innovation skills at a given time. The metric highlights strengths as well as opportunities for further learning to strengthen individual and team innovation readiness. The Workforce Innovation Readiness metric also can provide insights into the skills the Department will need to hire in order to out-innovate the adversary.

Figure 8. Innovation Readiness Dashboard



Source: Defense Acquisition University



DAU developed the Innovation Readiness Dashboard as a Minimum Viable Product (MVP). Though rudimentary, it is scalable and can become a powerful tool for talent acquisition and development. The Dashboard MVP provides an overall Innovation Readiness Score for the organization, based on its employees' self-assessment responses (Figure 7). The score is calculated on a five-point scale with 1 the lowest and 5 the highest score. The closer an Overall Innovation Readiness Score comes to 5, the more confident an organization self-assesses its innovation readiness. In the indicative example of Figure 4, conducted as a pilot with 308 participants from DAU, the scores mean that, on innovation, the DAU respondents feel most confident about their growth mindset, collaboration, and lifelong learning skills. The lowest score is 3.7 for networking, which means that, in aggregate, the respondents were least confident in that area. This offers supervisors an opportunity to gauge the strongest and weakest skills of individual workforce members and select those with the appropriate strengths for specific projects.

People Innovation Readiness Level helps the DoD determine how to develop the workforce it needs and make other sound data-driven decisions while offering leaders the ability to measure and manage how the workforce navigates technological advances, embraces cultural transformation, demonstrates resilience, and collaborates with our allies and partners to solve problems and scale innovation. More specifically, the metric enables the following elements.

Navigating Technological Advancements. Technological advancements from artificial intelligence and autonomous systems to cybersecurity and space capabilities are reshaping the defense landscape. The DoD must equip its workforce with the skills and an innovation mindset to navigate these advancements and effectively integrate them into operational strategies.

Embracing Cultural Transformation. DoD workforce readiness requires a cultural transformation that encourages critical thinking,

collaboration, creativity, risk-taking, and out-of-the-box thinking. This readiness to embrace innovation will attract and retain top talent, which promotes growth and innovation.

Exercising Agility and Resilience. The global security landscape is becoming increasingly complex and unpredictable, with rapidly evolving technologies, unconventional threats, and geopolitical shifts. A workforce with strong innovation readiness and agility will be able to think creatively, develop unconventional solutions, and adapt swiftly.

Improving Productivity and Throughput. Measuring people innovation readiness levels enables the DoD to allocate resources efficiently and effectively to drive faster tech adoption and increase productivity.

Collaborating With Our Partners and Allies. Engaging with external stakeholders and partners—including industry, academia, and international allies—amplifies innovation potential, brings fresh perspectives, offers cross-pollination of ideas, and accelerates the adoption of emerging technologies. Collaborative efforts between DoD and the private sector can drive technological breakthroughs that benefit both national defense and civilian applications.

The Procurement Administrative Lead Time (PALT) Metric. To better gauge tech adoption inefficiencies in the DoD innovation landscape, the study recommends implementing the Procurement Administrative Lead Time (PALT) metric, which can facilitate the identification of inefficiencies in the adoption process of innovative technology or processes. PALT can be used to measure the time taken for an organization to adopt innovations, tracking each stage from awareness to full integration. Moreover, PALT aligns with the Department's efforts to improve the management of award lead times (GAO, 2024), while maintaining a technological edge in national defense by ensuring new capabilities are implemented quickly and effectively. For guidance, please refer to the example provided in the appendix.



Align your mission to drive innovation.

"Each innovative effort reveals new insights to follow or warnings about what not to follow."

- Dr. Brian "Beam" Maue

Understanding why innovation is important to the team and organization builds purpose. Defining a compelling vision for innovation can help explain your intentions and create a sense of purpose that aligns with the National Defense Strategy. Setting goals for innovation provides a sense of direction, motivation, and a clear focus, and highlights what is important.

These key points enable leaders to align the efforts their team to drive innovation at the Department of Defense: Defining what innovation means for your command; Establishing clear connections of innovation to the broader mission of the Department; Reviewing the National Defense and National Defense Science and Technology Strategies of 2023, distilling all the sections that relate to innovation, and tying the command's innovative vision to those most relevant. Also, reviewing the National Defense Authorization Act 2023, Sections 236 and 2024, which are specific to the Innovation Ecosystem.

A prime example of a DoD innovation cell defining a compelling vision and setting goals for innovation is the US Navy's Tactical Advancement for the Next Generation ([TANG, 2021](#)) initiative. TANG's vision is focused on being "Human-centered. Mission Focused". This vision drives their purpose and mission with passion and dedication in a successful manner. The TANG team meets semi-annually to discuss the outcomes that the warfighters need to be better and faster in the front lines. From there, they walk back the outcomes, from the "what" to the "how", which are goals and steps needed to get to that outcome. TANG has been able to shorten the required time for developing and deploying new technologies using applied design methodologies, allowing the DoD to take appropriate action to counter threats in a faster, precise manner. An example of TANG's technological success can be depicted with their informing future cockpit designs for the Marine

Corps, which designed tools for mission planners that accelerated performance at speed and scale for the warfighters. Another example of their work is the use of Xbox controllers to operate submarine periscopes, which reduces training time and enhances ease of use for this technology. For more information on TANG, please visit the official website of [Tactical Advancements for the Next Generation](#).

Learn from the best.

"There's a way to do it better. Find it."

- Thomas Edison

In today's rapidly changing world, DoD workforce innovation readiness is vital. By nurturing a culture of innovation, equipping personnel with the skills to leverage technological advancements, promoting agility and resilience, and fostering collaboration, the DoD can ensure that our national defense remains at the forefront. Investing in continuous learning and professional development programs is essential.

Leaders bear the responsibility of nurturing a culture of learning within their teams and organization to adapt to and stay ahead of the rapid changes that surround us. It starts by motivating the individuals who constitute the organization or team and inspiring a mindset toward continuous learning. The next step is to establish the organization as a learning entity. It is important that leaders use the tools and resources that they have readily available. Within this study, a former Army Chief Innovation Officer explained that many Contracting Officers are insufficiently prepared for unique contracting situations, such as with acquiring Artificial Intelligence and Advanced Analytics. As a remedy to what is predominately a training shortcoming, they suggested OUSD publish a memo to reinforce and clarify non-FAR based contracting mechanisms so that contracting officers can use it as an authoritative source to indicate legal validity of under-utilized mechanisms.

Existing knowledge quickly becomes obsolete in a rapidly changing world, as do requirements. Therefore, upskilling is important. However, it is



not sufficient. Leaders need to stimulate critical thinking and learning that creates new knowledge. That occurs in an organization that encourages experimentation, prudent risk-taking, and the exploration of new methods. This fosters the kind of innovation and creativity that leads to new products, services, and processes and drives competitive advantage.

DoD leaders should establish mentorship programs which can be a powerful tool for promoting a learning culture. Senior members can share their knowledge and insights with less experienced members, providing them with a valuable learning opportunity. Key steps include creating an environment where asking questions and expressing curiosity are not only acceptable but actively encouraged. This could be facilitated through regular Q&A sessions, suggestion boxes, or an open-door policy. Second, encouraging feedback and reflection and regularly soliciting feedback and promote self-reflection. This could take the form of performance reviews, 360-degree feedback, or simply creating a space for individuals to reflect on their learning journey.

Finally, creating engaging spaces for failure by encouraging experimentation and accepting failure as part of the learning process leads to innovation and growth. A culture where mistakes are seen as learning opportunities encourages risk-taking and creativity.

Pixar stands out as an exemplary organization that fosters a vibrant culture of learning, largely thanks to its robust educational institution, [Pixar University](#). Pixar University offers required training as well as optional classes for different disciplines. Pixar President Ed Catmull (2014) said, “Pixar University helps reinforce the mindset that we’re all learning, and it’s fun to learn together.” Pixar supports its directors by empowering them to make decisions and take care not to undermine their authority. Directors take development into their own hands by asking for help from a “creative brain trust” of filmmakers, a pillar of their peer-based process. While defense is quite different from movie making, a culture of critical thinking, curiosity

and learning and ubiquitous and necessary in national defense and supporting capabilities for the warfighter.

Conclusion

The Defense Innovation Board’s recommendations call for a complete paradigm shift within the Department of Defense, echoing the urgency of the 2022 National Defense Strategy and providing a foundation to implement the 2025 National Defense Authorization Act.

These recommendations emphasize the need for rapid development, integration, and deployment of innovative systems and technologies. The crux of the challenge lies not in identifying what must be done but in how to effectively align incentives to expedite technological adoption. To address the overarching issue of designing effective incentive structures, the Department should revolutionize its approach to fostering innovation. By aligning mission objectives, fostering a career path for innovators, and embracing risk and collaboration, the Department can catalyze the development and seamless integration of cutting-edge solutions that empowers warfighters to craft bespoke solutions tailored to their unique operational needs is paramount.

Finally, by rewarding and recognizing the trailblazers and mavericks, who drive innovation, tracking readiness and addressing adoption inefficiencies, and assimilating lessons from the most successful practices, the Department can significantly enhance its capabilities. The implementation of these recommendations is pivotal to ensuring that our warfighters are equipped with the most advanced technology, thereby securing success on the battlefield, and affirming the DoD’s commitment to this decisive decade of defense innovation in support of the warfighter.



Appendix

This appendix serves as a repository for supporting materials that supplement this study on incentives and innovation within the Department of Defense. It is designed to provide valuable context and insights through various sections. The first section delves into the academic research on incentives and innovation. By examining existing literature and studies, the section aims to provide a deeper understanding of best practices and potential pitfalls in this area. Next, the study presents a comprehensive communication plan. This plan is crucial for disseminating information about the incentive structures across the DoD. The third section provides a detailed timeline for release. This timeline outlines when specific communication activities will occur, ensuring a coordinated and effective rollout of the incentive program. Lastly, the study explores the Performance-Adjusted Long-Term (PALT) metric by proving a scenario to guide leaders on its application and use.

Academic Research on Incentives and Innovation

This section delves into the intricate relationships between intrinsic and extrinsic motivators that influence the adoption of innovative technologies within organizations, particularly focusing on the Department. It explores how intrinsic motivators such as mastery, autonomy, and psychological safety, along with extrinsic motivators such as reward systems, recognition, and purpose, shape an environment conducive to innovation. This underscores the importance of aligning these motivators with the Department's modernization goals for sustained technology use, thereby offering valuable insights for fostering a culture of innovation and technological adoption.

Intrinsic motivators, such as mastery, autonomy, and psychological safety, play a crucial role in the adoption of technology and in fostering innovative environments. Mastery, defined as the desire to continually improve and learn challenging tasks and skills, is a significant driver for the adoption of new technologies, as it fosters a culture of continuous learning and innovation (Teyhen et al., 2014, Autio, 2019). Having the autonomy to make choices, take risks, or experiment with unorthodox processes can significantly affect motivation by empowering individuals to take ownership of their work, thereby encouraging the exploration and adoption of innovative technologies (Zheng et al., 2024). Finally, the concept of psychological safety is pivotal in enhancing intrinsic motivation. A supportive environment can significantly bolster an individual's willingness to engage in risk-taking and embrace innovation (Caro-Gonzalez, 2024).

This permissive backdrop is not only conducive to personal growth but also critical for the successful integration and sustained use of new technologies. By fostering a culture where individuals feel secure in experimenting and contributing unique ideas, organizations can unlock the full potential of their technological advancement. Therefore, understanding and leveraging these intrinsic motivators can be instrumental in promoting the successful adoption of technology within the DoD. However, it is important to note that while intrinsic motivators can drive the initial adoption of technology, the alignment of these motivators with the DoD's modernization goals is crucial for sustained technology use.

Parallel to internal factors, extrinsic motivators such as reward systems, recognition, and purpose within the DoD mission are central tenets of innovative tech adoption. Reward systems, such as bonuses or promotions, provide a tangible incentive for individuals to think outside the box and embrace new technologies (Al Darmaki, Omar, and Ismail, 2019). They create a direct link between innovation and personal gain (Eisenberger and Shanock, 2003), encouraging individuals to push boundaries. Recognition, on the other hand, appeals to the human desire for esteem and validation (Armstrong, 2012). Public acknowledgment of an individual's innovative ideas not only boosts their morale but also inspires others to emulate their creativity. Lastly, a clear and compelling purpose can be a powerful motivator. When individuals understand how their innovative efforts contribute to a larger goal, such as solving a pressing societal issue or advancing their field, they are often more motivated to adopt new



technologies and think creatively. Together, these external motivators create an environment that nurtures innovation and technology adoption.

Communications Roll-out Plan

The role of the communications plan is to provide situation analysis, an understanding of the program's objectives, the stakeholders involved, and the context of the campaign. As such this communication and rollout plan provides a clear and concise timeline to distribute the incentive structures across the DoD. To fulfill the intent of the study, the plan provides clear communication goals by aligning with the program's mission and differentiating between strategic and tactical goals. Measurable objectives are established, ensuring they are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART).

The plan first identifies primary and secondary audiences and adapts messages to address their specific needs and concerns. Next, concise, consistent, and compelling messages are developed, highlighting the program's value, impact, and benefits. Appropriate communication channels are subsequently chosen, considering face-to-face briefings for strategic-level communication and digital platforms for tactical-level updates. A detailed timeline is then created, aligning communication activities with program phases, and allowing for flexibility to accommodate changes at the tactical level. The plan also includes provisions for crisis communication and feedback evaluation to monitor communication effectiveness and adjust the strategy as needed.

1. Situation Analysis:

- Understand the program's objectives, stakeholders, and context.
 - Consider the strategic and tactical implications of the program's objectives.
- Analyze existing communication channels, resources, and constraints.
 - Include a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to better understand the program's context.
- Identify potential risks and challenges.

2. Goals and Objectives:

- Define clear communication goals aligned with the program's mission.
 - Differentiate between strategic goals (long-term, big picture) and tactical goals (short-term, specific actions).
- Establish measurable objectives (e.g., increasing awareness, fostering collaboration, or ensuring timely updates).
 - Ensure objectives are SMART (Specific, Measurable, Achievable, Relevant, and Time-bound).

3. Target Audiences:

- Identify primary and secondary audiences (e.g., military personnel, contractors, policymakers, and the public).
 - Identify the communication preferences of each audience group.
- Tailor messages to address their specific needs and concerns.

4. Key Messages:

- Develop concise, consistent, and compelling messages.
 - Develop separate messages for strategic decision-makers and tactical implementers.
- Highlight the program's value, impact, and benefits.



5. Channels and Platforms:

- Choose appropriate communication channels (e.g., websites, social media, newsletters, briefings, and press releases).
 - Consider face-to-face briefings for strategic-level communication and digital platforms for tactical-level updates.
- Leverage existing DoD platforms and networks.
- Consider classified and unclassified channels.
 - Use secure and encrypted channels for sensitive information.

6. Timeline:

- Create a detailed timeline with milestones, deadlines, and key events.
- Align communication activities with program phases (e.g., planning, execution, and evaluation).
 - Align the timeline with DoD's strategic planning cycle.
 - Allow for flexibility in the timeline to accommodate changes at the tactical level.

7. Content Creation:

- Produce high-quality content (articles, videos, infographics, etc.) that informs, educates, and engages.
 - Create content that addresses both strategic vision and tactical details.
- Coordinate with subject matter experts and program leads.

8. Spokespersons and Briefings:

- Designate official program spokespeople.
 - Create content that addresses both strategic vision and tactical details.
 - Schedule separate briefings for strategic and tactical audiences.
- Conduct regular briefings for internal and external audiences.

9. Crisis Communication Plan:

- Prepare for potential crises (e.g., delays, budget issues, or security breaches).
 - Schedule separate briefings for strategic and tactical audiences.
- Define roles, responsibilities, and escalation procedures.

10. Evaluation and Feedback:

- Monitor communication effectiveness using metrics (e.g., reach, engagement, and sentiment).
 - Schedule separate briefings for strategic and tactical audiences.
- Gather feedback from stakeholders and adjust the strategy as needed.



Timeline Overview

PALT Scenario Example

The following presents a scenario where the PALT metric can be used to measure the adoption of an innovative technology. It is important to note that to effectively implement these metrics, it is recommended to develop a comprehensive communication plan in parallel.

Scenario: The Department decides to implement a new cybersecurity technology to safeguard critical systems. The objective is to have the technology fully embedded and operational across the Department within one year.

Pre-Adoption Phase: The time from the decision to adopt the new technology to the completion of the procurement process is measured. This includes the drafting of requirements, solicitation of bids, and finalizing contracts.

Implementation Phase: The duration from contract award to the technology being ready for use is tracked. This involves installation, configuration, and addressing any security concerns.

Training Phase: The time from the technology being ready for use to personnel being trained and proficient in its application is recorded. This includes both formal training sessions and on-the-job learning.

Integration Phase: The period from the end of training to the technology being integrated into the DoD's standard operating procedures is monitored. This measures the adoption rate across different departments.

Optimization Phase: The time from integration to when the technology is used at its full potential, with all features being utilized and contributing to the DoD's mission, is noted. This includes continuous feedback and iterative improvements.



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