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Ending Innovation Tourism

Rethinking the U.S. Military's Approach to Emerging Technology Adoption

CSET Policy Brief

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Executive Summary

As commercially developed, dual-use technologies transform the national security landscape, policymakers have called on the Department of Defense to bring more private sector innovation into the military. Recently, the DOD has attempted to engage tech companies through an array of "innovation" offices and programs scattered across the Office of the Secretary of Defense (OSD) and the services. While these efforts have yielded numerous engagements, they have not driven innovative capabilities into the major systems and platforms that make up the bulk of the military's force structure. This is not a failure of the offices themselves, but rather a failure of the department's leadership to integrate them into the broader DOD acquisition ecosystem.

Innovation offices can play a critical role in linking the commercial tech industry and defense industrial base, but only if their activities inform and support the military's broader purchasing decisions. However, under the DOD's current organizational structure, defense *innovation* is disconnected from defense *procurement*. This division limits innovation offices' ability to affect technological change across the military and excuses procurement offices from integrating cutting-edge capabilities into major systems and platforms. The effectiveness of innovation offices is further limited by their placement in the research and development (R&D) chain of command. A research office cannot perform a procurement job.

We find the military's current approach to engaging with small tech companies, or nontraditional vendors, is more akin to innovation tourism—with the DOD sampling the local fare of the United States' various tech hubs—than a bona fide strategy for bringing emerging technologies into the department. To integrate the activities of innovation offices into the broader defense procurement pipeline, the DOD must change the incentives that drive its acquisition ecosystem. We propose DOD leaders take the following steps to begin building a more effective innovation ecosystem:

1. Define innovation goals and increase transparency.
2. Share and use market intelligence across the acquisition ecosystem.
3. Create safe spaces for collaboration.

These proposals are not comprehensive. Rather, we intend them to serve as short-term solutions to spur emerging technology adoption. Solving the military's technology adoption problem is impossible without an overhaul of its acquisition process, and the realities of our present political and national security environment will likely prevent lawmakers from enacting such broad-based reforms in the near term. In the meantime, a major near-peer competition is in full swing. The DOD must act immediately to implement a true innovation strategy using the authorities it currently has at its disposal. The country cannot allow perfection to be the enemy of progress.

A few isolated organizations and programs alone cannot transform the culture and technological capabilities of the entire U.S. military. Unless the DOD adapts its acquisition strategy and the incentives of the organizations responsible for carrying it out, its capabilities will lag behind the state of the art, particularly in digital technologies, and its competitive advantage will continue to erode.

A Brief History of Defense Innovation

In the aftermath of World War II, the U.S. government constructed an innovation ecosystem that would support the country's technological dominance for more than half a century. In 1946 and 1950, the Office of Naval Research and the National Science Foundation were established, followed by NASA and the Advanced Research Projects Agency in 1958. From the 1940s to the 1960s, domestic government funding for R&D increased more than tenfold.[1]

In the postwar period, most global R&D was conducted within the borders of the United States, most U.S. R&D was funded by the federal government, and most federal R&D dollars were doled out by the military. In 1960, roughly one-third of worldwide research

funds were devoted to U.S. national defense.[2] Those dollars flowed primarily into universities, government labs, and private contractors, which produced a steady stream of new technologies that were leveraged to support the United States and its allies during the Cold War. While many of their inventions remained exclusive to the military, others, like GPS and the internet, filtered into the commercial sphere. Through this R&D ecosystem, the defense industrial base cemented the technological dominance of the U.S. military, and its innovations helped stimulate the growth of the domestic economy.

But as the Cold War came to an end, the nature of innovation in the United States underwent a fundamental shift. The country's commercial tech industry, itself a beneficiary of military research programs, began to boom. As personal computers proliferated and internet adoption increased, businesses and consumers replaced militaries as the tech industry's primary customers. The defense industrial base, once a top destination for the world's brightest scientists and engineers, began losing talent to Silicon Valley and other domestic and international tech hubs. By the beginning of the twenty-first century, the military had lost its grip on the U.S. innovation ecosystem. In 2018, the federal government accounted for just 22 percent of the U.S. R&D funding, with less than half devoted to defense.[3]

For decades, national security experts have urged the military to bring more private sector technology into the defense industrial base. In February 2001, future Secretary of Defense Ashton Carter wrote "tomorrow's defense innovations will largely be derivatives of technology developed and marketed by commercial companies for commercial motives."[4] To maintain technological dominance in this new paradigm, he argued, the DOD needed to accelerate its procurement process and make requirements easier for commercial businesses to navigate. "If the U.S. military cannot 'run faster' than other militaries, it cannot sustain the technological lead that is the key to its preeminence." The September 11 attacks occurred seven months later, ushering in a new security environment with a far broader definition of "other militaries." Carter's admonition became even more urgent. If technologies available to state and non-state

adversaries on the commercial market could challenge those in the DOD's arsenal, the consequences for national security would be dire.

The U.S. military already had relationships with a few of the biggest U.S. tech companies. Firms like Dell, IBM, Microsoft, and Oracle had entered the defense business before the war on terror began, and as it ramped up, their contracts grew more lucrative. A few younger companies like Palantir entered the market by capitalizing on the U.S. national security community's interest in digital surveillance.[5] However, most tech companies had little incentive to do business with the DOD. One reason was technical: technology used on the battlefield must meet performance thresholds that far exceed those in the commercial space. The military cannot afford to "move fast and break things" in situations where U.S. service members' lives are on the line. The other reason was procedural: it can take years for the military to finalize requirements, establish a contract, and evaluate a delivered capability. This makes the DOD an unattractive customer for cash-strapped startups operating on tight schedules and large tech companies working on annual technology update cycles. Established defense contractors and tech companies can endure lengthy procurement timelines and differentiate products for commercial and military customers, but startups lack the resources to overcome these barriers. If the military wanted access to commercial technologies, experts argued, it would need to meet the innovators halfway.

If you were to design an organization to be the exact opposite of a tech startup, the end result would look a lot like the DOD. While young tech companies strive to be freewheeling, fast-moving, and disruptive, the military is rigid, regimented, and risk-averse. The department's technology acquisition process is no different.

If the DOD wants to buy a large piece of equipment like a ship, plane, or tank (often called a "platform" or "system"), it must go through a lengthy process of defining requirements, reviewing offers from hopeful vendors, and selecting a supplier. The vendor who wins the contract (the "prime contractor" or "prime") will typically delegate different parts of the project to other vendors

("subcontractors"). The various vendors work in tandem to build their specific components of the platform or system, and the prime is then responsible for piecing them together into a battle-ready end product. Many of the larger acquisition programs—known as "programs of record"—rely on funds appropriated by Congress for that specific procurement.

The primary concern of the DOD and vendor staff who lead these acquisition programs is delivering products on time, on budget, and according to pre-approved specifications. As such, DOD procurement officials tend to award contracts to primes they know and trust, and primes do the same when selecting subcontractors. Combine this insular marketplace with the aforementioned technical and procedural barriers, and you are left with a business environment that many small tech companies find unappealing and, in some cases, impenetrable.

An effective defense innovation strategy would seek to assimilate commercial tech companies—and the cutting-edge products they develop—into the military's procurement pipeline. Nontraditional vendors would win contracts when procurement officials effectively enforce open architectures, or they could serve as valuable subcontractors, partnering with established defense primes to incorporate breakthrough software capabilities into major platforms and systems.[6] By combining bleeding-edge commercial software with best-in-class military hardware, the DOD can harness the full might of U.S. industry in the service of national defense. In recent years, however, this has proven to be a challenge.

New Industries, New Offices

Over the last decade, the DOD has attempted to bridge the gap between the commercial and defense markets by standing up "innovation" offices across OSD and the services. Perhaps the most well-known is the Defense Innovation Unit. Headquartered in Mountain View, CA, DIU was created to serve as a DOD outpost in Silicon Valley from which the military could engage with the country's most promising tech startups. Its staff of mostly military officers was charged with scouting new technologies, establishing

relationships with the companies that built them, and guiding those companies through the testing, evaluation, and procurement process.[7] Since its 2015 launch, DIU has opened satellite offices in Austin, Boston, as well as in the Pentagon located in Arlington.

DIU is not alone in this mission. As of March 2021, MITRE listed 28 different DOD organizations dedicated to building business relationships between the military and private sector innovators.[8] Most of these groups, like NavalX, AFWERX, and the Army Applications Lab, were founded within the last decade. The expanded defense innovation universe also includes dozens of small business programs, other transaction consortia, and federal support agencies.[9] We refer to these groups collectively as "innovation offices."

Each innovation office works differently. Some conduct prize challenges, others act as networking forums, and many run accelerator programs, helping companies prototype new technologies for military use. However, their end goal is largely the same: develop or acquire cutting-edge technologies and make them available for military use.

While their exact methods differ, the offices generally follow a process of scouting or soliciting new commercial technologies, testing and evaluating defense-specific prototypes, and creating fast-track contracting vehicles for successful prototypes. For example, DIU runs accelerator programs focused on specific technologies with national security applications.[10] Once accepted to the program, companies are awarded R&D contracts to develop and test their proposed solution with assistance from DIU. Those with successful prototypes become eligible for bigger, more lucrative contracts with other military agencies and services. From start to finish, the process typically takes one to two years to complete. This speed to market is one of DIU's major selling points.[11]

By many measures, DIU has succeeded in its mission—it has delivered an array of new commercial technologies to military clients and shepherded dozens of tech companies from applicant to active contractor. However, even DIU Director Michael Brown

admits the organization is “just scratching the surface” of the military’s broader innovation problem.[12]

Indeed, upon closer inspection, it becomes clear that DIU and other innovation offices have impacted only small slivers of the military’s force structure. While they have delivered dozens of one-off tools, they have not transformed the major platforms and systems that account for the vast majority of military warfighting capabilities. This is not a failure of the offices themselves, but rather a failure of the department’s leadership to integrate them into the broader DOD acquisition ecosystem.

Innovation in Isolation

Unlike programs of record, which are managed and funded through the military’s procurement ecosystem, the activities of DIU and other innovation offices are managed and funded as R&D. This placement completely disconnects them from the procurement ecosystem, with separate chains of command, budget processes, and authorities. As a result, their ability to directly affect change in the military’s fielded systems and platforms is limited. Innovation offices can sprinkle R&D dollars across the commercial tech industry, but they are unable to commit to the high-volume, high-dollar deals that would make defense contracting an attractive and sustainable business model for a young startup. In effect, the offices behave like tourists, visiting new shops, spending some money, and moving on to the next destination. But just as selling a few souvenirs will not sustain a local business, winning a few small R&D contracts will not keep a young tech company permanently afloat.

The military’s current form of engagement with commercial companies—a practice more akin to innovation tourism than bona fide strategy for bringing cutting-edge technology into the DOD—does not deliver the wholesale modernization it promises. Unless the DOD adapts its acquisition strategy and the incentives of the organizations responsible for *procurement*—where modernization is actually implemented—its capabilities will lag behind the state of the art, particularly in digital technology, and its competitive advantage will continue to erode.

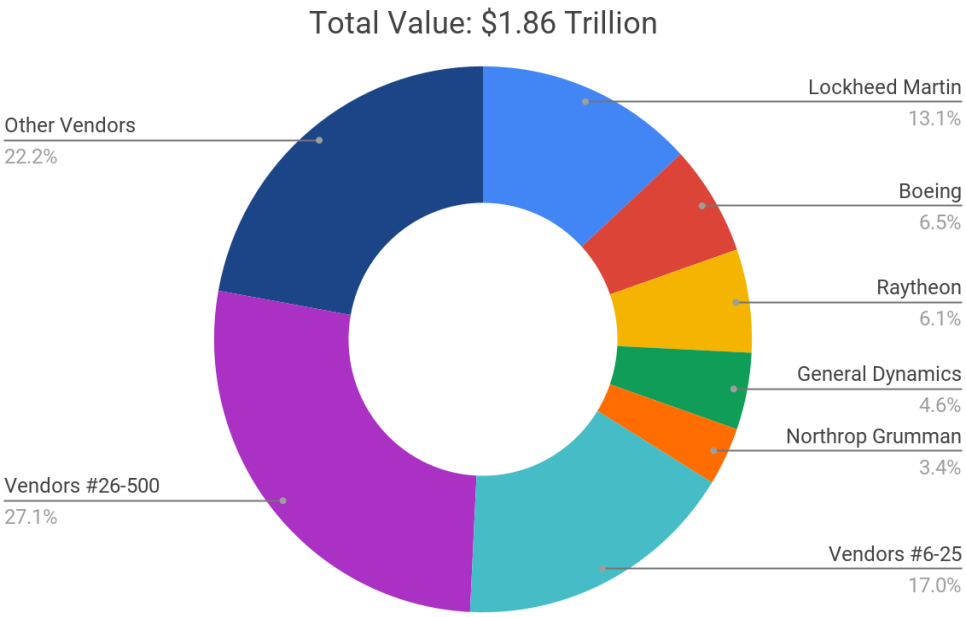
DIU and its counterparts disclose few details on the technologies they help develop and the military customers that buy them. Still, a couple inferences can be made based on the information available to the public. First, it appears the offices have transitioned only a limited number of technologies to large-scale procurement, and only a fraction of those have actually made it into the field.[13] Second, and perhaps more importantly, many of the transitioned products appear to be bolt-ons to existing military infrastructure. In other words, they are accessories for today's legacy tech, not breakthrough capabilities for tomorrow's platforms and systems. Again, we do not intend to disparage innovation offices—they have largely succeeded in executing the strategy set out by DOD leaders to the best of their abilities. The problem is that the current organizational structure of the DOD acquisition ecosystem restricts them to innovating around the edges.

Understanding the limitations of the current approach requires some basic knowledge of the defense acquisition process. The DOD technology ecosystem is quite complex, but for the sake of this paper, we will divide it into three broad categories: *platforms*, *systems*, and *components*. The ships, planes, tanks, and other big pieces of technology that people often associate with the military are generally classified as *platforms*. These platforms (e.g. an Arleigh Burke-class destroyer) are equipped with many different *systems* (e.g. the destroyer's Spy-6 radar), which are, in turn, made up of many different *components* (e.g. the radar's transmit/receive module, antennas, etc.). For a piece of technology to work properly, each of its constituent parts must function properly within the context of the whole. The DOD generally awards contracts for platforms and systems that provide specific capabilities, and leaves the sourcing and integrating of components to the prime contractor.

Constructing a military system or platform requires a significant amount of money, familiarity with existing military force structure, lots of testing and certification requirements, and an intimate understanding of the DOD's unique operational requirements. It also requires business longevity, as the department will need the vendor to support the product for its entire life cycle. As a result,

many of the contracts for major systems and platforms end up falling to a handful of established defense companies. Between fiscal years 2016 and 2020, the DOD paid out $1.86 trillion to hundreds of thousands of different vendors. However, the top five hundred contractors received more than three-quarters of those funds ($1.45 trillion), and just 25 of those vendors accounted for more than half the total spend ($947 billion). The top five firms—Lockheed Martin, Boeing, Raytheon, General Dynamics, and Northrop Grumman—raked in a combined $630 billion, roughly one-third of the military's total spend (Figure 1).[14]

Figure 1: Total DOD Contracting Spend by Parent Vendor (FY 2016–2020)



Source: Bloomberg Government.

In general, small tech companies lack the resources, knowledge, and industrial capabilities to build military platforms and systems, though many produce software and hardware components that can benefit those projects. These components can sometimes be integrated into a platform or system that is already built—many of the programs run by innovation offices aim to do just that. However, retrofitting existing technologies with new widgets can make sustainment more challenging, create potential cyber

vulnerabilities, and complicate the overall operability of the system. Components intended to function within larger systems and platforms should be developed in tandem with those technologies as often as possible in order to be most effective. If you were an automobile manufacturer who wanted to improve the performance of your vehicles, you would not want to wait until the vehicles came off of the assembly line to make changes.

To build their cutting-edge components into major systems and platforms, nontraditional vendors would need to work with the contractors and procurement officials leading those efforts. Innovation offices like DIU can play a critical role in fostering these relationships, but only if their activities are coordinated with the military's procurement programs. Today, however, innovation offices conceive, develop, and test capabilities with whatever customers volunteer to work with them. This siloed approach to acquisition can work in some situations, like when a product has a short life cycle or has minimal interaction with other military infrastructure or systems.[15] But by detaching the development of cutting-edge capabilities from the production of major systems and platforms, the DOD has effectively divorced defense *innovation* from defense *procurement*. This divide is further exacerbated by innovation offices' placement in the R&D chain of command—the officials leading innovation efforts have a limited view into the activities of the procurement managers (PMs) and program executive officers (PEOs) charged with delivering fieldable military solutions, and vice versa. And because innovation offices are scattered across different agencies and services, collaboration among themselves is a challenge.

Beyond the problem of organizational silos, innovation offices also lack the financial resources necessary to drive wholesale modernization across the DOD. Most offices are funded out of the department's science and technology accounts. These accounts represent a small fraction of the research, development, test and evaluation (RDT&E) budget, which is itself just one component of the department's total acquisition budget. In fiscal year 2021, the DOD acquisition budget was approximately $248 billion, with about $137 billion allocated for procurement (direct spending on

programs of record) and roughly $111 billion dedicated to RDT&E. Only about 15 percent ($16.9 billion) of the RDT&E budget went to science and technology accounts, which fund a wide array of early-stage R&D activities, including innovation activities.[16] DIU, the military's marquee innovation office, was allocated just $66.9 million, less than 0.03 percent of the DOD's total acquisition funds.[17] A group of small, disconnected, sparsely funded offices housed under the research enterprise cannot be expected to transform the culture and technological capabilities of the entire DOD acquisition system.

That said, allocating more money to DIU and its counterparts will not solve the military's commercial technology acquisition problem. Innovation offices cannot change the larger military culture and promote widespread adoption of cutting-edge technology if they are isolated from the DOD's procurement ecosystem. To drive technology transformation at scale, the DOD must rethink the incentives, requirements, and authorities of both innovation offices and procurement officials, and pursue policies that ensure collaboration between the two.

A Vision for Defense Innovation

Given the realities of warfare, a large portion of defense innovation will necessarily focus on advancing military hardware (e.g., weapons platforms, combat vehicles, and aircraft). The responsibility for developing these next-generation platforms and systems will likely fall to established defense contractors, which possess industrial capabilities and a familiarity with the military's force structure that commercial tech companies generally lack. While an overhaul of the DOD acquisition process—which experts have advocated for decades—may reduce these barriers to entry, we do not expect to see these reforms enacted over the next decade. As such, the DOD must clear a pathway for innovative startups to enter the defense ecosystem within its current policy and financial constraints.

Below, we offer three proposals for how the DOD can improve its innovation pipeline in the near term. With these targeted changes, the DOD can shift from being an innovation tourist handing out a

few research dollars, to incentivizing an ecosystem that funnels state-of-the-art solutions into its main procurement pipeline and ensures military platforms and systems are delivered ready-made with best-in-class components.

Define Innovation Goals and Increase Transparency

First, we propose the DOD set two clear goals for its innovation and acquisition activities:

1. Develop and disseminate knowledge of commercial technology capabilities and the true state of the art to inform military acquisition.

2. Funnel cutting-edge hardware and software into programs of record that drive deeper change in fielded military systems.

No office can accomplish these goals single-handedly. Each organization within the acquisition ecosystem has a role in promoting the adoption of cutting-edge technologies, from the innovation offices themselves to the PMs and PEOs running programs of record across the services. To ensure each group plays its part, DOD leaders must articulate specific expectations for how each entity will serve the department's two broad innovation goals and revise responsibilities and authorities as needed.

The DOD should also take steps to make its innovation ecosystem more transparent. While the diversity and independence of today's innovation offices give them the freedom to take risks and "fail fast," it also makes it harder for non-traditional vendors to engage with the military. By creating a single "entry point" for prospective entrepreneurs and startups, and increasing transparency of innovation activities across the department, the DOD can help vendors access the right resources, choose the right partners, and more effectively navigate the acquisition ecosystem. Furthermore, increased transparency would prevent disparate offices from unknowingly duplicating efforts and engaging in counterproductive competition.[18]

Share and Use Market Intelligence Across the Acquisition Ecosystem

Second, we propose that the DOD not only incentivize innovation offices to share their knowledge of the commercial tech market with procurement officials, but also require procurement officials to utilize that information when drafting solicitations. This would entail three policy changes:

1. Require PMs and PEOs to use market intelligence gathered by innovation offices to identify state-of-the-art capabilities and incorporate them into solicitations and contract specifications; and when they do not, require them to document and justify their decision.[19]

2. Require innovation offices to compile data on business engagements and assessments of the commercial technology market into a federated platform.

3. Require innovation offices to share market intelligence with PMs and PEOs, and assist them in incorporating relevant insights into contract specifications.

Through their commercial engagement efforts, innovation offices like DIU accumulate a significant amount of information on the commercial tech marketplace. If leveraged across the DOD and broader national security community, this valuable market intelligence could both guide future innovation activities and assist procurement officials in integrating more state-of-the-art capabilities into future platforms and systems. Today, however, procurement officials are not required to seek out and use these insights when drafting requests for information or solicitations, and innovation offices are not required to share this knowledge with the other organizations in the innovation ecosystem. The DOD cannot transform its technology capabilities if the organizations responsible for buying transformative capabilities are not required to collaborate closely with the offices exploring the technology landscape, and vice versa.

Driving adoption of emerging technologies at-scale requires a systematic, incentive-driven approach to information sharing and usage. At any given time, the DOD is typically running around one thousand programs of record. All of the big ones—and many of the small ones—have their own PM or PEO. Small offices like DIU do not have the capacity to individually engage with every official, understand the unique needs of each program, and identify opportunities to leverage cutting-edge capabilities. Furthermore, PMs and PEOs have no apparent incentives to work with innovation offices to glean insights on the commercial market. An organization as large as the DOD—which controls roughly 45 percent of the U.S. government's discretionary budget—cannot rely on impromptu conversations, serendipity, and old-friend networks to diffuse knowledge across the acquisition ecosystem. However, that is where things stand today.[20]

Incentivizing federated information collection and sharing through innovation offices—and explicitly requiring procurement officials to utilize that information—would benefit the DOD in multiple ways. First and foremost, spreading knowledge of the commercial tech market would help the department tailor solicitations to include existing state-of-the-art capabilities. Additionally, it would also make the DOD a more shrewd customer, empowering PMs and PEOs to dissuade vendors from pursuing research projects in previously commercialized areas and incentivize engagement between contractors and nontraditional vendors when doing so accelerates the uptake of innovative capabilities. This information-sharing system could take the form of a searchable database, CRM platform, or other application that lets PMs, PEOs, and other officials quickly identify cutting-edge technologies that are relevant to their programs and the vendors that supply them. If implemented properly, such a platform would help acquisition offices leverage the market intelligence gained through innovation offices while minimizing bureaucratic bloat.

Spreading knowledge across the acquisition ecosystem will require buy-in from both innovation offices and procurement offices, and DOD leaders must hold them all accountable. If collaboration between these offices is not explicitly mandated and tracked in

performance evaluations and promotions for both sides, then the acquisition culture simply will not change. Many have pushed for such incentives in the past, but they have yet to be implemented. In our view, requiring PMs and PEOs to utilize the expertise of innovation offices is the most simple and effective way to drive the adoption of emerging technologies across the DOD. If the department fails to create such policies on its own, Congress should consider directing action.

Create Safe Spaces for Collaboration

Third, we propose the DOD take concrete steps to encourage more healthy engagement between established defense primes and nontraditional tech vendors. This may come in multiple forms, including but not limited to:

1. Consortia built around foundational technologies like quantum computing, artificial intelligence, or synthetic biology.

2. Co-funded prize challenges or "technology rodeos" with individual primes in areas of mutual interest.

3. Vendor-led accelerator programs for innovative companies that lack the resources to confidently partner with primes and federal agencies.

Today, many small companies have developed a fear of working with the large defense primes, either due to past negative experiences or rumors they will have their intellectual property stolen. Many primes are also hesitant to bring on subcontractors with little experience in defense, as they often have unrealistic expectations of specifications and requirements, profit margins, and timelines. Given the realities of defense acquisition, small companies and large defense primes must collaborate in order for cutting-edge commercial capabilities to be integrated into major military platforms and systems. Today, however, innovation offices do little to foster those relationships—nor is it their mission to do so.

In this climate of mutual mistrust, the DOD has a responsibility to encourage more healthy engagement between established defense primes and innovative, nontraditional tech vendors. It is critical that DOD leaders work with Congress and the defense industrial base to create "safe spaces" for small businesses to work with large defense primes. Whatever form those spaces take, creating an environment in which startups and entrepreneurs can comfortably engage with major defense contractors will be essential to bridging the gap between commercial and defense innovation. This is a conversation that must start today, and Congress, DOD, and the primes must come to the table ready and willing to consider change.

Conclusion

The security and strength of the United States in the years ahead will hinge on the military's ability to keep pace with rapid advancements in technology. As commercially developed, dual-use technologies transform the national security landscape, the DOD must harness the full potential of the U.S. innovation ecosystem to maintain the country's competitive edge. This will require close collaboration with established defense contractors and the wide array of small companies pushing the boundaries of digital technology.

The DOD has long recognized the need to work with innovative commercial vendors, but its engagement efforts have thus far failed to bring about the wholesale modernization they intended. Innovation offices have delivered a handful of useful tools, but they have failed to drive emerging capabilities into the major systems and platforms that make up the bulk of the military's force structure. This is not a failure of the offices themselves. Rather, it is a failure of DOD leadership to move beyond the relatively easy job of innovation tourism and implement an actual innovation strategy that holds the procurement system accountable for innovation in fielded systems and links them to innovation activities. It is unrealistic to expect a few small organizations and programs to transform the culture and technological capabilities of the entire DOD by themselves.

The current structure of incentives, requirements, and authorities is insufficient for today's rapidly evolving technology landscape. It is time to stop vacationing in the commercial tech market and start establishing serious, long-term business relationships around major DOD contracts. We propose leaders take the following steps to begin building a more effective innovation ecosystem:

1. **Define innovation goals and increase transparency.**
    a. Set clear goals for DOD innovation activities.
    b. Define and articulate expectations for how each innovation and procurement office will serve those innovation goals and revise authorities as needed.
    c. Increase transparency across the innovation ecosystem and create a single entry point for prospective vendors.
2. **Share and use market intelligence across the acquisition ecosystem.**
    a. Require PMs and PEOs to survey market intelligence to identify state-of-the-art capabilities and incorporate them into solicitations and contract specifications; and when they do not, require them to document and justify their decision.
    b. Require innovation offices to compile data on business engagements and assessments of the commercial technology market into a federated platform.
    c. Require innovation offices to share market intelligence with PMs and PEOs, and assist them in incorporating relevant insights into contract specifications.

3. **Create safe spaces for collaboration.**

    a. Establish consortia, prize challenges, accelerator programs, or other forums that encourage healthy engagement between established defense primes and innovative, nontraditional tech vendors.

We recognize that our proposals are not comprehensive. Even if the DOD unifies its innovation and procurement activities, small companies that want to do business with the military would still face high barriers to entry. Reducing those barriers will require a series of major reforms of the current acquisition ecosystem, which many experts have discussed in countless articles over many decades.[21] For instance, the 60-year-old Planning, Programming, Budget, and Execution system that the DOD still uses to allocate resources is poorly suited to the rapid, flexible, dynamic process of commercial innovation. Major acquisition efforts can take years to complete, and the military is largely unable to adjust program requirements to accommodate new technological advancements. Without relaxing these requirements and allowing for flexibility at different stages in the program, the platforms and systems the military acquires will consistently lag behind the state of the art.

While we encourage policymakers to pursue broad-based acquisition reforms, we also recognize the realities of our present political and national security environment. It seems unlikely that any significant progress toward overhauling the DOD acquisition process will be made in the near future, and in the meantime, a major near-peer competition is in full swing. Given that reality, the DOD must act immediately to implement a true innovation strategy using the authorities it currently has at its disposal.

The country cannot allow perfection to be the enemy of progress. We need to come home from vacation, stop the innovation tourism, and get serious about driving the adoption of cutting-edge, fielded platforms and systems across the military, and we need to do it now.

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[14] CSET analysis of Bloomberg Government data, April 2021.

[15] Two of the initiatives that DIU highlighted in its 2020 annual report fit this category: Blue sUAS, which provided easier access to small commercial drones, and Rapid Analysis of Threat Exposure, which equipped commercial wearables with illness detection software. Both technologies are relatively inexpensive and replaceable, and their integration with major military platforms and systems is minimal. For more information, see: "Annual Report 2020" (Defense Innovation Unit, 2021).

[16] Will Thomas, "Final FY21 Appropriations: Department of Defense," American Institute of Physics, February 23, 2021, https://www.aip.org/fyi/2021/final-fy21-appropriations-department-defense; Heidi M. Peters and Brendan W. McGarry, "Defense Primer: Procurement," Congressional Research Service, January 7, 2021, https://fas.org/sgp/crs/natsec/IF10599.pdf.

[17] "Consolidated Appropriations Act, 2021," H.R. 133, 116th Cong. (2020), Division C, Title IV: Explanatory Statement, https://www.aip.org/sites/default/files/aipcorp/images/fyi/pdf/Budgets/fy21-approps-dod-rdte-final-explanatory-statement.pdf.

[18] Gilman Louie, the former CEO of In-Q-Tel, the intelligence community's venture capital firm, spoke to the dangers of disorganized innovation ecosystems in a 2005 Harvard case study: "A little bit of competition could be useful because we can set up cooperative relationships, but a lot of them, done poorly, could disrupt the reputation of the model." For more information, see: Josh Lerner, G. Felda Hardymon, and Ann Leamon, "In-Q-Tel (TN)," Harvard Business School Teaching Note 805-047, September 2004.

[19] The federal government already requires acquisition officials to conduct market research before drafting certain solicitations and program requirements. Our recommendation would ensure they also consult market intelligence collected by innovation offices to identify emerging capabilities relevant to their

specific program. For more information on the DOD's market research requirements, see: Defense Standardization Program Office, "Market Research: Gathering Information about Commercial Products and Services," U.S. Department of Defense, December 2018, https://www.dau.edu/Lists/Events/Attachments/142/Guidance-SD-5_121818.pdf.

[20] "A Closer Look at Discretionary Spending," Congressional Budget Office, April 30, 2021, https://www.cbo.gov/publication/57172.

[21] William Greenwalt and Dan Patt, "Competing in Time: Ensuring Capability Advantage and Mission Success through Adaptable Resource Allocation" (Hudson Institute, February 2021), https://s3.amazonaws.com/media.hudson.org/Patt%20Greenwalt_Competing%20in%20Time.pdf.