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Making Innovation Great

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Overview

President-elect Donald Trump, upon taking office, will be confronted immediately with a profoundly complex and rapidly changing global security environment. Under his leadership the United States will face conventional, and also decidedly unconventional, national security challenges. Both conventional and unconventional challenges will emanate from nation-state competitors and non-government actors alike. Just as Al Qaeda, the Taliban, and ISIS have already done, these challengers will continue to leverage an increasingly global and commercial innovation environment in order to generate new capabilities that undermine or overcome U.S. warfighting advantages.

DoD has historically provided as much as 100 percent of the investment capital needed to develop the systems that meet its specialized needs. However, in return for this generosity, it sharply limits its suppliers' potential profits and imposes substantial administrative burdens. These burdens operate not only as barriers to entry to the defense market, but also as barriers to exit, meaning that only the most committed and specialized suppliers are interested in entering the defense market.

Innovation takes many forms, both process and technology, and is capable of altering warfighting at the tactical, operational, and strategic levels. Potential U.S. adversaries frequently have the benefit of focusing narrowly on a few key areas where innovation is central to their success, while the United States is effectively obligated to seek and find innovation across the entire range of military missions. The way the U.S. Department of Defense does business actually was designed in some ways for this kind of fight. It was built to continuously innovate to provide a U.S. warfighting advantage and to do so in every domain where conflict can arise. In several critical ways, however, the Department of Defense must change the way it does business to allow it to adapt to rapidly changing threats and opportunities. This is one of the central challenges the upcoming Trump administration must confront.

Issue

The department currently struggles to acquire systems in areas where technology changes rapidly. Rapid in this context means changing more frequently than once every two years. This time frame is simply a description of where the department's struggles begin, however, not a description of where it needs to go. In most actual conflict scenarios, rapid means change over days and weeks rather than years.

Much of the department's struggles are driven by three central problems. First, the department struggles to identify and communicate rapidly evolving warfighting challenges to those who can offer solutions. This barrier arises because the department's normal processes for characterizing its needs are based on predicting threat developments far into the future and developing consensus around long-term efforts to confront these far-off threats. Modernization efforts are started infrequently, are massive in scope, and once established are changed rarely and with difficulty. Open communication between technology providers, whether internal or external to the Department of Defense, and the warfighters looking for solutions is constrained by the high threshold for establishing or modifying official requirements. Even when new requirements surmount this threshold and receive approval, there are relatively narrow channels of communication to share this information with industry. The communication of the department's needs is therefore too infrequent, too limited in scope, and too divorced from feedback from industry. For industry's part, the highly particular nature of the department's approved needs and the scarcity of new opportunities it offers makes it a challenging partner for companies engaged in innovation.

Second, the department struggles to shift resources to address needs that arise or change rapidly. Part of this is the natural tendency of existing programs to hang onto whatever hard-won resources they've managed to lay claim to in the budget, whether those resources are immediately needed or not. Also hampering rapid innovation, however, are deeper procedural roadblocks to prioritizing new needs over those of long standing programs. Funds in the current budget have gone through several years and multiple levels of competition, review, and approval by the time funds are actually available to be expended, and the inherent inertia of this elaborate approval process creates very high thresholds for urgency and certainty before it allows shifts to

established budgets. This approach works fairly well when the presumption is that future needs are likely to be fairly predictable, but it inevitably fails when needs change rapidly.

Third, the department struggles to offer a convincing business case to many potential innovative suppliers. DoD has historically provided as much as 100 percent of the investment capital needed to develop the systems that meet its specialized needs. However, in return for this generosity, it sharply limits its suppliers' potential profits and imposes substantial administrative burdens. These burdens operate not only as barriers to entry to the defense market, but also as barriers to exit, meaning that only the most committed and specialized suppliers are interested in entering the defense market. At the other end of the spectrum, the department has mechanisms in place to buy already developed commercial technology on commercial terms, but struggles to use these mechanisms when commercial items require modification to meet the department's needs, something that is often the case. For industry's part, the relatively small size of the defense market compared to the potential global commercial customer base make it less than compelling, if not downright unattractive, to adapt commercial products to defense needs.

Recommended Changes

A key element in altering how the Department of Defense fosters innovation is to make change where change is needed while letting the department continue to do the things it already does well. Notwithstanding frequent criticism, the Department of Defense is uniquely capable of developing many of the world's most complex and technologically sophisticated systems. Taking a long term approach to the acquisition of items that change gradually and will be needed for decades makes sense. Even in a constantly changing world, not everything is changing rapidly. For those areas where rapid change is needed, however, such as cyber, electronic warfare, artificial intelligence, and many other software-intensive tasks, the Trump Administration should change the innovation model, pursuing the following policies:

- Make defense innovation a top administration priority, building on steps taken over the last several years of the current administration and provisions in the recently completed National Defense Authorization Act that prioritize innovation in DoD leadership by appointing innovators in multiple senior positions and leveraging the Defense Innovation Advisory Board to identify further ways to attract innovative suppliers to the defense market.

- Develop alternative business models that allow DoD and industry to invest jointly in innovation, sharing both the risk and the rewards of innovative R&D and innovative processes, while limiting the risk exposure of each. The Department's DIUx and innovation centers at NASA, DARPA and the Army have developed business models that should be encouraged and expanded. In addition to expanding some of the flexibilities in the current system, they should be made easier to use so that taking prudent risk to achieve innovation isn't an extraordinary career risk for government personnel.
- Accelerate innovation by leveraging existing investments and capabilities as much as possible, reducing the over-specification of budget requests to allow more flexibility in execution, and dedicating funding for prototyping and concept demonstrations, particularly at the major subsystem level. The Strategic Capabilities Office has demonstrated the viability and power of this approach.
- Establish entities and processes designed to iterate requirements in time frames of six months or less in which the content of future increments is not specified in detail in advance. This approach has been demonstrated in the Acoustic Rapid COTS Insertion program for Navy submarines and so-called agile acquisition for software, and can be significantly expanded.
- Communicate regularly with technology suppliers to identify emerging technological advances as they emerge. Establish and use communities of interest in key technology areas, and ensure these communities are linked with military users to assist in spurring an ongoing dialogue on solving warfighting problems.
- Focus on accessing the top talent possible for government by encouraging rather than restricting the flow of people between industry and government and back again. Efforts such as the Defense Digital Service show how much the department can gain from this approach. Avoid unnecessary expansions of post-employment restrictions that inhibit people from entering and exiting government service.

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