Executive Summary:

- Create various education and training opportunities for senior leaders to understand new technologies and innovation methodologies such as data science, artificial intelligence and machine learning, lean startup, design thinking, and more
- Guide DoD senior leaders on how the private sector is developing the most advanced capabilities so leaders are more likely to embrace them, despite their novelty in DoD, when military innovators suggest them as solutions worth adopting

Background

Over the past eighteen months the Defense Innovation Board has identified a gap in Department of Defense strategic leader understanding of the potential of modern technology, their collective ability to develop and foster innovative organizations, and their understanding of how to use rapid acquisition to quickly close capability gaps. More importantly, this barrier will allow adversaries to exploit weaknesses within the Joint Force by innovating at a faster rate than the United States can adapt – ultimately resulting in United States interests being threatened and potential lethality and readiness gains being compromised. Specific observations include:

- Key decision makers across the Department do not having an in-depth understanding of the quickly evolving technology landscape which hinders their ability to effectively drive, lead, and scale technology adoption;
- A large disconnect between private sector and Department of Defense information technology infrastructure, culture, and business strategy;
- Inability to effectively foster and integrate industry standard best practices in innovation
- Inability to effectively foster and integrate industry standard best practices in software development to deliver iterative solutions quicker; and
- The most innovative contracting and procurement mechanisms - including hiring and acquisition authorities, accelerating technology adoption and availability of new funding sources - not widely understood or viewed as acceptable paths to procurement by program and acquisition teams.

Problem Statement

Department of Defense leaders are not receiving the type or level of education necessary to successfully identify, adopt, and integrate the latest technologies and innovative practices to maintain pace with our adversaries. Successful innovation practices being implemented within the private sector are not understood or not viewed as acceptable paths by senior Department leaders. As a result, the Department is not maintaining its once pronounced technological advantage over its adversaries; is lagging behind in speed and agility; is straining to adapt to emerging technologies that are changing the character of warfare; and is failing to adapt its workforce and processes to address emerging and future challenges.

Proposed Solution

The Secretary of Defense should initiate an education and training program to expose Department of Defense leaders to technologies and business practices that have been successful in quickly advancing technological innovation and advancement in the private sector. This program would take a hands-on approach to solving operational defense challenges by tailoring individual problem solving sessions for leaders with the intent of increasing lethality and readiness within the Joint Force. These sessions will be underpinned by exploring current trends and opportunities within the fields of technology, management, and rapid acquisition practices, and how they can be applied – with and without stronger industry partnerships – to increase the rate of technology adoption and overcome institutional barriers within individual organizations.

Curriculum Development

The Curriculum will be based on similar executive level experiences delivered by, e.g. Harvard, Stanford, and the Wharton Business Schools to private industry and be closely coordinated within the Department. Individual education sessions will be tailored to the level of the audience and hands-on based on existing and emerging operational challenges. Students will have an opportunity to apply what they have learned to these operational challenges with learning objectives focused on the following core tenets:

What technological innovation looks like in the Department of Defense. Technology by itself is not innovation; the unique application of technology is. This segment will discuss: Types of technological innovation and its implications; when, why, and how to focus on these different types of technological innovation; and how to prioritize technological innovation efforts.

How to effectively work with private sector emerging technologies. It is no secret that there is a cultural, business, and technological gap between the private sector, non-traditional technology companies, and the Department. It is critical that leaders develop a basic understanding of how the private sector works in order to have more productive interactions with companies and their investors. It will also help leadership identify lessons and practices that private sector entrepreneurs use when evaluating technologies. This will speed up time to adoption of technologies that will increase the lethality of the Joint Force faster.

How emerging technology and technology companies are funded. How outside investment affects companies, and how it influences buying behaviors of other countries impacting the capabilities available to the Department. An understanding of this process can greatly improve collaboration by understanding the motivations of private sector companies. It can also help shape views on where to focus technology adoption. We will discuss the role of venture capital firms (and their investors), foreign investment, and its implications for the Department and our adversaries, and how private technology companies grow.

Sales, Revenue, Operational and Reporting structures. Just as the Department is motivated by things like reporting spend to Congress and budget stability – there are norms for how companies price, generate revenue, and report to their stakeholders. These internal methods can greatly impact their ability to effectively work with the Department. Understanding these processes can help the leadership shape the budget and adopt collaboration and contracting processes that work more effectively within the constraints the private sector faces.

Cultural Differences: As DoD leadership moves forward in working more closely with emerging technologies, it is helpful to understand the unspoken etiquette, expectations, and culture in the private sector. This understanding will help facilitate more efficient ways to work together - similar to how the Department seeks an understanding of the culture within its designated areas of operation.

Delivering Technology: The private sector is innovating more rapidly than ever before. The Department can learn a lot about how to create, evolve, and scale technologies by looking at best practices within industry.

Projecting the Future. Traditional strategic planning and threat assessments practice within the department rely on projecting how specific technologies may be applied to existing scenarios and engagement models. The Department will benefit by understanding the additional process, common in the private sector, which concentrates first and primarily on how technologies might evolve and then seeks to rewrite the competitive space.

Leading the Future. The Department is extremely effective at war gaming to test doctrine and improve the lethality of the Joint Force. Technology should be viewed no differently. To effectively implement emerging technologies, a cultural shift in how the work force is managed needs to occur. This portion will focus on how to "speak tech," promote creativity within the ranks, and encourage thinking outside the box. Providing leaders, even those that are not technical, management techniques and principals to more effectively leverage what they are good at and learn from what they are not will help facilitate technology adoption in a rapidly changing environment.

Innovative Procurement. Buying software should not be the same as buying an F-35. There are numerous procurement vehicles, contracting mechanism, and waivers that can be leveraged to help facilitate the adoption of technologies and tools that can transform the Department. Understanding what is available, and how to effectively leverage these vehicles can be a game-changer for rapid Department technology adoption.

Building on existing initiatives

An innovation education initiative must be complemented by existing programs that focus on enabling talent at the grass-roots level and throughout the Department. This approach optimizes the identification, prioritization, resourcing, incubation, development, and integration of ideas across the ranks.

One example of this is the Air Force's collaboration with MD5 to build a portfolio of innovation curricula that span the entire gamut of innovation education. These curricula range from basic concepts familiarization for all personnel to development of an elite group of cross-functional innovation experts. Specifically, Air Education and Training Command (AETC) and Air University (AU) will launch two pilot programs for innovation education that will begin in the coming months.

In addition, the Naval Postgraduate School's (NPS) establishment of a full curriculum around Special Operations – the only one of its kind in DoD – provides a model for a potential options in innovation education. For example, NPS and other DoD war colleges and educational institutions might consider a standalone degree related to innovation and technology that looks at the business and technical aspects of this area, or a semester-long course to be incorporated into nearly every curriculum or specialty track at the institution. In the case of NPS, the students are primarily at the O-3 and O-4 level, so education at this level inculcates a culture of adaptability earlier in service members' careers. As NPS is geographically close to Silicon Valley, DoD should explore the proximity between its other educational institutions and known innovation hubs.