The U.S. Department of Defense (DoD) capability edge over U.S. adversaries has deteriorated over the last several decades.

“Today, we are emerging from a period of strategic atrophy, aware that our competitive military advantage has been eroding.”

- Secretary of Defense, Jim Mattis, 2018 Summary of the National Defense Strategy, Sharpening the American Military’s Competitive Edge, page 1

This decline is accelerating now in parallel with the rapid, global proliferation of advanced technology and the genesis of new and challenging threats to our national security. National Security leaders in the White House and Department of Defense (DoD) clearly recognize these issues. These leaders also understand that substantial changes must occur soon in how the DoD manages and executes its considerable Research, Development, Testing, and Engineering (RDT&E) investments (over $12 billion per year) to put cutting-edge capabilities in the hands of U.S. Warfighters more effectively than our adversaries:

“The United States must regain the element of surprise and field new technologies at the pace of modern industry. Government agencies must shift from an archaic R&D process to an approach that rewards rapid fielding and risk taking.”

- National Security Strategy of the United States of America, December 2017, page 31

Indeed, enabling more effective rapid fielding initiatives and promoting an institutional culture that rewards calculated risk taking have the potential to help the DoD maintain its competitive edge. However, to achieve lasting, impactful changes that overcome the strategic inertia of recent decades, DoD leadership must address two foundational challenges through their future initiatives:

1) Outdated structure and function: DoD has an antiquated industrial organization with extensive bureaucracy and exaggerated hierarchical structure that is exceptionally able to manage risk and drive capability optimization, but it is not equipped to operate at the speed and flexibility required to keep pace with the dynamic defense technology space of today.
2) Inefficient financial-based strategic investing: As described in detail by Stefan J. Banach in "From Reagan to Entropy: The Need for a U.S. National Technology-Based Strategy," current defense capability development strategy measures success through effective obligation and expenditure of disparate investments in emerging technology domains across the Services and Agencies. This strategy operates under the false assumption that in today’s global competition, investment levels are directly proportional to future strategic capability advantage. However, in the rapidly evolving battlespace, competitive advantage comes not only from technical proficiency, but also from winning the technology exploitation race – using technology-based investment strategies to effectively combine the continuum of immature and mature technology assets across the Department into targeted, revolutionary capability sets.

As the DoD restructures its RDT&E and Acquisition work forces according to the Fiscal Year 2017 (FY17) National Defense Authorization Act (NDAA) and moves to modernize its IT infrastructure with cloud-based capabilities,1 there are opportunities to transform the “archaic R&D process” and establish technology-based approaches that empower the DoD bureaucracy to quickly leverage the breadth of DoD data and technology assets into unmatched capability advantages.

First, the DoD must forge a fully integrated capability development workforce using cloud-based capabilities and shared, data-enabled machine learning technology that defragments and integrates RDT&E knowledge across the Enterprise. Artificial Intelligence (AI) based, automated workforce connectivity (within appropriate classification levels) will enable RDT&E leaders to link DoD researchers, operators, acquisition professionals, and R&D portfolio directors across all Services and Agencies, push potential collaborations together, perform coordinated gap analysis, and effectively exploit all of DoD’s ongoing R&D. Senior RDT&E leaders, especially at the Office of the Secretary of Defense (OSD) level, can develop technology-based capability development goals with full knowledge of the range and maturity of DoD investments. Then, leaders can direct distributed, synchronized development of operational requirements with related R&D activities across the RDT&E continuum to achieve and field those goals.

Second, it is critical that the DoD empowers R&D portfolio funding decisions and risk taking to lower levels of the DoD bureaucracy, in particular in the Prototyping and Experimentation (P&E) domain. Slow top-down decision-making kills the rapid P&E required to maneuver in the current and future battlespace. With flexibility and freedom to execute RDT&E strategy, DoD portfolio directors can quickly test potential technologies and capabilities that adhere to senior leadership’s long-term strategies.

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