



Make Good Choices, DoD

Optimizing Core Decisionmaking Processes for Great-Power Competition

Susanna V. Blume and Molly Parrish

About the Authors



Susanna V. Blume is a Senior Fellow and Director of the Defense Program at the Center for a New American Security (CNAS). Her research areas include the U.S. Department of Defense (DoD) budget, defense posture and force management, and strategy and strategic planning.

Prior to joining CNAS, Blume served as Deputy Chief of Staff for Programs and Plans to the Deputy Secretary of Defense, whom she advised on programming and budget issues, global force management, operational and strategic planning, force posture, and acquisition policy. During this time, she served as Executive Secretary of the Deputy's Management Action Group, the top resource decisionmaking body at DoD. She also served in the Office of the Under Secretary of Defense for Policy and in the Office of the Deputy Assistant Secretary of Defense for Plans and Posture. During her years at DoD, Blume participated in two Quadrennial Defense Reviews, the 2013 Strategic Choices and Management Review, and six Program and Budget Review cycles. Blume holds a master's degree in international studies from the Johns Hopkins University School of Advanced International Studies, a law degree from the George Washington University Law School, and a bachelor's degree in the history of art from Johns Hopkins University.



Molly Parrish is a Research Assistant for the Defense Program at the Center for a New American Security. Parrish's research focuses primarily on Department of Defense internal processes. This includes the annual President's Budget, DoD acquisition

reform, and the Planning, Programming, Budgeting, and Execution (PPBE) process. Parrish also assists with the CNAS Defense Program's "A New American Way of War" wargaming efforts. Prior to joining CNAS, Parrish served as the Center Coordinator for the Center for Emerging Infectious Diseases (CEID) at the University of Iowa. She also served as a lab technician at the CEID, assisting with epidemiological research, which earned her authorship on four articles published in several renowned peer-reviewed scientific journals. Parrish graduated from the University of Iowa with a Bachelor of Arts in Political Science, International Relations, and Global Health.

About the Defense Program

The CNAS Defense Program does serious work on the most pressing challenges facing the Pentagon, presented in an accessible and practical way. We seek concrete impact on defense policy, both now and in the future. We are a trusted source in the U.S. defense ecosystem, producing high quality analysis and policy recommendations on implications of competition with China and Russia for U.S. defense strategy, military operations, defense budgeting, and institutional reform. True to CNAS values, the Defense Program selectively addresses the issues that require the most thought leadership, such as new operational concepts and chronic institutional shortcomings that hinder the United States from competing effectively with China and Russia militarily.

Acknowledgments

We would like to thank the many, many people who contributed their time and their ideas to this report: Marty Bollinger, Chris Brose, Elbridge Colby, Scott Comes, Lisa Disbrow, Chris Dougherty, Ben Fitzgerald, Bill Greenwalt, Kristin Hajduk, Robert Hale, Michael Hermann, Anthony Ierardi, Andrew Krepinevich, Peter Levine, Mike McCord, Eric Mellinger, Jim Miller, Jamie Morin, Ely Ratner, Diem Salmon, Raj Shah, Robert O. Work, and Pat Zarodkiewicz.

We would also like to thank our partners in the defense and aerospace industry who gave their time and expertise and very patiently answered our many questions about what it is like to have the U.S. Department of Defense as a customer, what works well in the processes addressed in this report, and what does not. In particular, we would like to thank Bill Lynn and Joe Militano of Leonardo DRS; Jeffrey Schloesser, Ryan Ehinger, Colin Smith, and Mike Reilly of Bell Helicopter (a Textron Company); Jeremy Bayer, Janness Simler, and Lynn Williams of Boeing; Don Cline of Elbit Systems; Niki Johnson and Chris Pehrson of General Atomics; Betsy Schmid of General Dynamics; Joe Tofalo of Huntington Ingalls Industries; Tania Hanna of L3Harris; Bill Bender of Leidos; Dan Fata, Cord Sterling, Tressa Guenov, and Christy Grubbs of Lockheed Martin; Chris Bowie, Erin Simpson, and David An of Northrop Grumman; and Sally Sullivan, David Schild, and James Hickey of Raytheon.

Finally, we would like to thank Loren DeJonge Schulman, Ben Fitzgerald, Zach Mears, Lisa Disbrow, Peter Levine, and Bob Hale for their review of this document in draft and for their thoughtful and very helpful comments. Megan Lamberth and Sarah Newsome also deserves our thanks for their assistance with the images in this report. We would also like to thank Maura McCarthy and Mary Gladstone for their excellent editorial advice, and Melody Cook for her wonderful design of this publication and its graphics.

Cover Art

Melody Cook/CNAS

MAKE GOOD CHOICES, DOD

Optimizing Core Decisionmaking Processes for Great-Power Competition

01	Executive Summary
03	Introduction
08	Requirements
10	Programming and Budgeting
14	Acquisition
19	Integration of DoD's Three Core Processes
20	Conclusion

Executive Summary

This report is about how the U.S. Department of Defense (DoD) makes the decisions that determine how large, how capable, and how ready the future Joint Force will be. It provides recommendations for how the department should update the ways in which it makes these decisions to ensure that the U.S. military can effectively compete with China, focusing on how the United States can sustain and enhance the military technological advantage it has long enjoyed. Specifically, it addresses:

- *What DoD needs.* The Joint Capabilities Integration and Development System (JCIDS), referred to in this report as the requirements process;
- *What DoD buys and how much.* The Programming, Planning, Budgeting, and Execution System (PPBES), referred to in this report as the programming and budgeting process; and
- *From whom DoD buys it and how.* The acquisition process, which in this report will focus on Major Defense Acquisition Programs (MDAPs), as well as the development pipeline.

China has many advantages over the United States in the way that it makes and implements these decisions. Its national security decisionmaking apparatus is highly centralized and can move very quickly without the need to drive toward consensus on difficult decisions. The Chinese government also enjoys substantial control over its private sector, and thus control over what it produces, how, and for whom. Finally, Beijing does not have to balance spending on sustaining a large legacy force against investment in the force of the future. China does not have much of a legacy force to speak of and is thus able to put the vast majority of its resources into next-generation capabilities.

However, the United States has formidable advantages of its own. First and foremost is that very legacy force. While expensive to sustain, it remains the most capable joint force in the world today. It has also afforded U.S. service members the opportunity for unmatched operational experience and training. In addition, the United States remains at the center of global technological innovation. This last advantage is perhaps the most critical to sustaining U.S. military preeminence into the future, if the Department of Defense can develop new ways to access, adapt, and adopt the wealth of technological innovation occurring in the United States every day.

The processes and systems addressed in this report are not irretrievably broken, but there is room for improvement if the U.S. military is to remain the most capable and technologically advanced in the world. To this end, the recommendations in this report are pragmatic, achievable, and focused on clearly defined problems; they also avoid creating additional bureaucracy.

Summary of Recommendations



Requirements

- DoD should enhance existing ways and create new ways to bring disruptive technologies into the Department of Defense.
- DoD should increase transparency in the requirements process while maintaining ethical boundaries.



Programming and Budgeting

- Congress should reorganize appropriations titles (the “color of money”) to reflect the kind of life cycle a thing has, not what part of the life cycle a thing is in.
- When delivering fiscal guidance to the services, the secretary of defense should hold back some resources to be allocated at the end of the process and use it to harness interservice competition as a force for good.
- The secretary of defense should provide robust guidance at the outset of the annual process and engaged leadership throughout.



Acquisition

- DoD should fully implement recent changes in authorities and recommendations for streamlining regulations. Congress should resist the temptation to undertake substantial new reforms until DoD has done so.
- Congress and DoD should consider developing a regime where there are explicitly different risk tolerances for different types of acquisitions programs.
- DoD should develop additional ways to incentivize industry to adopt innovative technologies and adapt commercial systems to military purposes.
- DoD should develop a means of measuring the value of a regulation against the costs of compliance in terms of both time and money. Congress and DoD should use this metric to consider accepting more risk in some regulatory frameworks.
- Congress should watch closely whether devolution of certain acquisition authorities to the services delivers the right outcomes for the Joint Force.



Integration

- The deputy secretary of defense and the vice chairman of the Joint Chiefs of Staff should serve as formal integrators of the requirements, programming and budgeting, and acquisition processes.
- Congress and DoD should stop mandating across-the-board headquarters reductions and instead make determinations about where mission can be cut or real efficiencies can be harvested and reduce staff accordingly in a targeted manner.
- DoD should revive its joint analytic capability.

Introduction

This report is about how the Department of Defense (DoD) makes decisions. Most writing in the national security field is about what those decisions are, such as how much money to spend on ship maintenance next year, or what the top speed of the next-generation fighter aircraft should be, or how many tanks to upgrade while the next generation is still in development. However, the factors and processes that lead to these decisions remain underexplored. They merit closer scrutiny because the way DoD makes decisions—top down or bottom up, inclusively or exclusively, etc.—is an enormous determinant of what those decisions end up being. By extension, these factors and processes determine what the size and shape of the future Joint Force will be.

More broadly, this report is about how the U.S. Department of Defense can adjust its decisionmaking processes to more effectively compete with China. U.S. military superiority is eroding vis-à-vis China. China has spent the past 25 years studying the American way of war, systemically developing effective ways to counter most of the United States' traditional military advantages, and investing heavily in developing and fielding these new capabilities.¹ This report discusses the three core decisionmaking processes in the Department of Defense that have the most bearing on the size and shape of the future Joint Force, which will in large part determine whether this trend will continue or whether the U.S. Department of Defense will be able to reverse course. These processes determine:

- *What DoD needs.* The Joint Capabilities Integration and Development System (JCIDS), referred to in this report as the requirements process.
- *What DoD buys and how much.* The Programming, Planning, Budgeting, and Execution System (PPBES), referred to in this report as the programming and budgeting process.²
- *From whom DoD buys it and how.* The acquisition process, which in this report will focus on Major Defense Acquisition Programs (MDAPs), as well as the development pipeline.

The stewards of these processes often treat them as silos, operating largely independently from each other for distinctly different purposes. However, in reality they comprise an interdependent ecosystem that as a whole forms the future Joint Force, whether those involved recognize it and act accordingly or not. Failing to recognize this fact drives myriad inefficiencies in the system,

and so this report focuses not only on optimizing each of these processes individually, but also on optimizing the way they perform together as part of the broader defense enterprise. Astute observers will notice that these are, for the most part, joint processes managed either by the Office of the Secretary of Defense (OSD) or the Joint Staff (although significant authority in the acquisition process has recently been devolved to the services; more on that later). While it is true that the services are critical drivers of the development of the future Joint Force, this report will focus on the joint processes and systems that rest atop the bulk of the work in this area that occurs within the services themselves. The substantial and important work that occurs within the services merits closer scrutiny, but for now it is outside the scope of this report.

This report is about how the U.S. Department of Defense can adjust its decisionmaking processes to more effectively compete with China.

Contrary to much popular literature on these three core processes, these systems are not irreparably broken, and the solution is not to scrap them and begin again from a clean sheet.³ Recommendations to do so are impractical, and impracticality is perhaps the cardinal sin in defense planning. A full redesign of these processes would mean that for a period of several years, chaos would replace a system that most of the time delivers good results, ultimately doing harm to U.S. national security. To attempt it would be throwing out the baby with the proverbial bathwater. Moreover, redesigning the way the department makes decisions about what it needs and how to get it is unnecessary. The evidence that these systems, for the most part, result in the military getting what it needs is incontrovertible. It exists in the form of the incredibly capable Joint Force of today. Could these systems be more efficient? Could they perhaps be more future-focused, or less predisposed to perpetuate the status quo? Absolutely. Determining how to optimize these processes to drive these outcomes is precisely the focus of this report.

Further evidence that these systems are adaptable to the current competitive, innovation, and industrial environments is that they have adapted before. In fact, they are constantly evolving, sometimes in response to the people who use them within DoD and want them to work better, sometimes in response to senior leaders in DoD who want them to produce better outcomes,

and sometimes in response to Congress, which wants the same. Critics often decry these processes as rigid, out-of-date products of a bygone industrial age.⁴ While it is true that DoD developed the first instantiation of each of these processes decades ago, each has evolved considerably since then; in some cases they would be recognizable to their creators only in their broad contours and basic purposes. This report addresses how each of these processes has evolved over the years and makes concrete recommendations for their continued evolution in light of the strategic, innovation, and industrial environments extant today.

The Competitive Environment

The Department of Defense cannot afford to get these critical decisions—what it needs, how much to buy, and how to buy it—wrong. Over the course of the past decade, the U.S. defense establishment has concluded that it must turn its attention away from the counterinsurgency campaigns that were its primary focus during the first decades of the century and toward the threats to global stability and prosperity posed by a rising China and a resurgent Russia. Recognition of this situation began during the late Obama administration under the auspices of the Third Offset. The Trump administration further developed and codified these ideas in the 2018 *National Defense Strategy* (NDS).⁵ China is the greater challenge in the long term and possesses the most latent military capability. In fact, China has systematically gone to school on the way the United States fights its wars, and has developed capabilities to counter most traditional U.S. military advantages.⁶ As a result, China is the pacing threat for the United States in terms of force development.

China and the United States have extremely different national security decisionmaking apparatuses, each with pros and cons. The Chinese system is highly centralized, whereas the U.S. system can best be described as a federated system. In 2016 Chinese leadership implemented a series of reforms to the Central Military Commission and the People's Liberation Army (PLA) to tighten political control over the military, further centralizing an already thoroughly centralized system.⁷ Interestingly, these reforms replicated the bifurcation of service man/train/equip authorities and combatant command operational authorities that exists in the U.S. system.⁸ Even so, the PLA remains totally subordinate to the Chinese Communist Party (CCP) Politburo, and the party officials embedded throughout the military ensure it.⁹

While the U.S. military is certainly subordinate to central civilian control (as required by the Constitution),

China has systematically gone to school on the way the United States fights its wars, and has developed capabilities to counter most traditional U.S. military advantages.

the entities responsible for shaping the future Joint Force operate more like a federation, where consideration of the Joint Force as a whole occurs only at the highest levels. In each of the three core processes that are the subject of this report, the services are the primary power centers, brought together by OSD and the Joint Staff only at the highest levels, generally only for the biggest decisions, and usually pretty late in the game. For example, in the programming process the services are very much in the driver's seat, using the bulk of the year to build their inputs into the process. Review by the broader department, led by OSD over a period of just a few months, occurs after the services have more or less locked their programs, and will move at most about 5 percent of total defense dollars. Service chiefs also have a formal means of going to Congress directly to argue for investment not approved by the secretary or the president through their annual Unfunded Priorities Lists (UPLs), which are required by law.¹⁰

However, this federated system, which admittedly lacks the discipline possible under the highly centralized Chinese system, does have advantages. Having multiple entities working on solutions to the same or similar sets of joint operational problems can result in creative solutions. It also ensures that even if one service is pursuing what turns out to be a dead end, there are others developing different approaches to the same challenge or set of challenges.

When it comes to force development, China does not have to balance sustaining a large legacy force against investing in the force of the future as the United States does, because China does not have a large legacy force to sustain. Instead, Beijing can focus exclusively on investing in next-generation military capability.¹¹ The U.S. legacy force is expensive and sustaining it while also developing and procuring the next generation of military capabilities requires difficult tradeoffs. China does not have to make these tough decisions. Unburdened by the need to sustain significant military capability in the present, it can focus on the future. While not necessarily likely, it is possible that China could effectively leapfrog the U.S. military by skipping a generation of military technology.¹²

However, the U.S. military's legacy force is undoubtedly a major advantage. It is highly capable relative to most other militaries in the world and has underwritten security in Europe and Asia for decades. Moreover, it represents the fact that the U.S. military has spent the entirety of the 20th and 21st centuries operating jointly across the range of military operations and has both technological and operational experience that China has yet to approach.

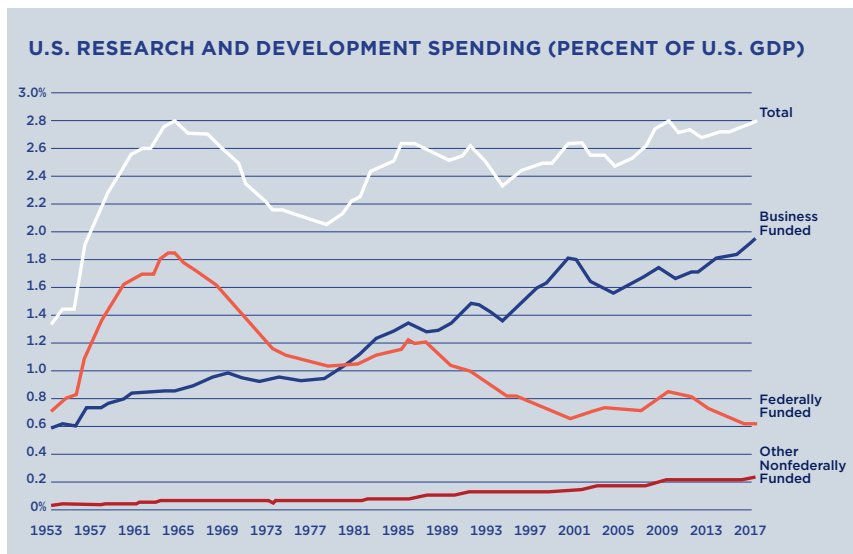
Unburdened by the need to sustain significant military capability in the present, China can focus on the future.

China also has the benefit of more-or-less singular focus in its defense enterprise and thus a smaller and simpler set of operational problems to solve. While the NDS has clarified for the U.S. defense enterprise that strategic competition with China must be its top priority, there are many other lower but still important priorities on the list that span the globe, demand attention, and require resources and a diverse set of capabilities to address.¹³ For China, on the other hand, the United States is essentially the sole focus of its military force planning, after the internal security of the CCP.¹⁴

The prioritization of China as the pacing threat for the U.S. military has engendered two critical shifts in its approach to force development: 1) a shift from single-minded focus on present conflicts to increasing focus on strategic competition and potential future conflicts; and 2) a shift from focus on the capacity or size of the force to a focus on the force's capability, with a willingness to sacrifice some capacity if necessary. To fully implement these two critical shifts in focus requires different ways of thinking about risk acceptance in the present versus the future, as well as different incentives inside the three core processes that are the subject of this report.

The Innovation Environment

Innovation has become a buzzword in recent years, the putative solution to all the Department of Defense's woes. This report addresses technological innovation specifically, a critical means of halting the erosion of U.S. military technological advantage. The environment in which technological innovation occurs has changed markedly over the past several decades. It used to be a reasonably safe bet that the next big military technology would come out of a DoD lab and eventually migrate from military applications to the commercial sector (like GPS, for example). However, this pattern no longer consistently holds true. DoD labs and traditional defense industry partners are still doing incredible, groundbreaking work, but now technologies with critical defense applications are emerging outside of the control of the Department of Defense and the U.S. government more broadly.¹⁵ The increasing importance of software in defense systems means that private technology and information companies are now critical to sustaining U.S. military technological advantage; at the same time, DoD continues to struggle with processes that were designed to develop and acquire military platforms, or hardware, not software. Take artificial intelligence and machine learning. While DoD and the U.S. government more broadly are doing important work in this space, the U.S. private sector has outstripped government investment



Over time, the U.S. government's share of research and development investment has declined. Increasingly, new technologies, many with military applications, are emerging outside the control of the Department of Defense.

Source: National Science Foundation, "Figure 2. Ratio of U.S. R&D to gross domestic product, by source of funding for R&D: 1953-2017," <https://www.nsf.gov/statistics/2019/nsf19308/#tab3>.

in this area by a factor of 10.¹⁶ The leaders at the cutting edge of this space are large, U.S.-based multinational technology companies such as Google, Microsoft, and Amazon, as well as their Chinese competitors such as Baidu and Tencent.

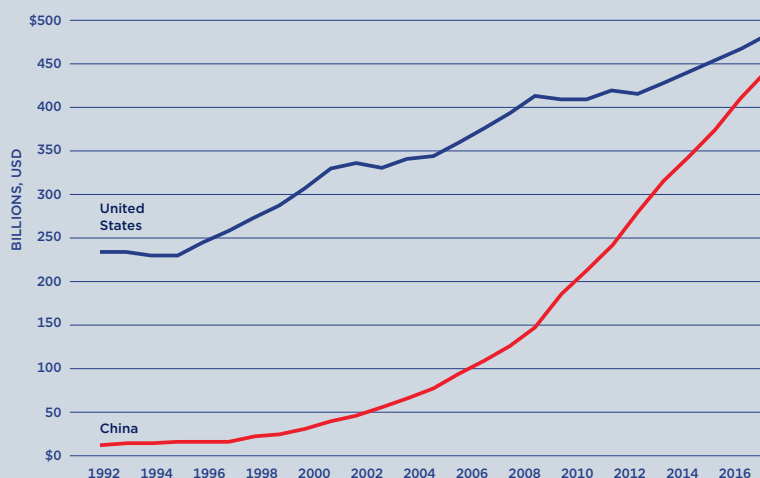
The challenge for earnest acquisition and programming officers inside the Department of Defense has shifted. A few decades ago, they would have struggled to move a promising developmental program born somewhere inside DoD across the “valley of death” and into production, which is challenging enough as it is. Now those same officers have to first identify critical new technologies emerging outside the defense ecosystem, figure out how to bring them into the department as developmental programs, and then transition them through the “valley of death” and into production. Eric Schmidt, current chairman of the Defense Innovation Board, sums up this predicament best: “DoD does not have an innovation problem; it has an innovation *adoption* problem.”¹⁷

Consequently, a critical question is, how can DoD access and adopt disruptive technologies that come from outside its own internal innovation ecosystem? There are a variety of ways that it can do so right now:



Eric Schmidt serves as the chairman of the Defense Innovation Board where he assists the U.S. secretary of defense in thinking through solutions to technology innovation with the Department of Defense. (Win McNamee/Getty Images)

U.S. RESEARCH AND DEVELOPMENT SPENDING (PERCENT OF U.S. GDP)



China has steadily increased R&D spending since 1991. They are on track to catch up and potentially surpass U.S. R&D spending in the next few years, which threatens U.S. military technological advantage.

Source: OECD Science, Technology and R&D Statistics: Main Science and Technology Indicators, Gross Domestic Spending on R&D, <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>.

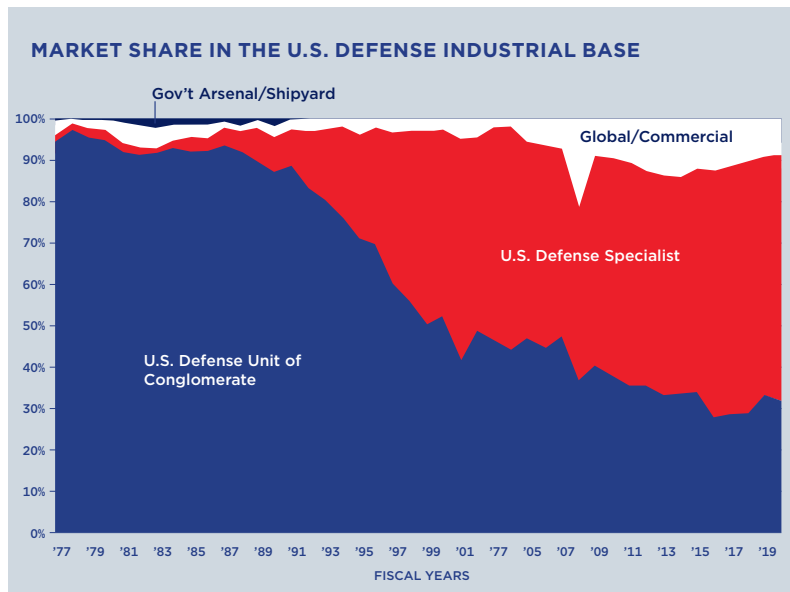
- DoD can access new technologies through existing pathways intended to address this problem, including the service labs, the Defense Advanced Research Projects Agency (DARPA), and the Small Business Innovation Research (SBIR) program.
- DoD can directly access new technologies through the acquisition system using traditional contracting organizations or those optimized for so-called non-traditional partners, such as the Defense Innovation Unit, AFWERX, SOFWERX, or the National Security Innovation Network.¹⁸
- Traditional defense systems integrators can incorporate new technologies developed by nontraditional partners in their programs.
- Larger traditional defense companies can acquire smaller companies that have developed new technologies with defense applications.
- Some defense prime contractors have established venture capital units to invest in promising technology start-ups (e.g., Boeing’s HorizonX and Lockheed Martin’s Lockheed Martin Ventures).
- DoD can work with start-ups to develop novel solutions to compelling problems before commercial markets become available, although only Palantir and SpaceX have been able to do so at scale, with Blue Origin following in their footsteps.¹⁹

That DoD has all of these tools to address the pressing problem of bringing new technologies into the defense ecosystem begs the question, why has the department made so little forward progress in this area? In the simplest terms, DoD is not a very attractive customer for new technology companies. Extensive regulatory frameworks and byzantine contracting procedures mean that barriers to entry into the defense sector are high, sales cycles are long, and persistent budgetary uncertainty makes investors nervous. At the same time, the market share that the U.S. Department of Defense represents is relatively small when compared with the global market for technology. In addition, many technology companies view working with the Department of Defense as damaging to their brand, as numerous recent employee protests have demonstrated.²⁰ Consequently, when companies look at the Defense Department as a customer, many conclude that working with DoD is just not worth the effort or the risk.

The Industrial Environment

The defense industrial environment has evolved considerably over the past century. The industrial base that produced the war matériel that the U.S. military used to fight in World War II consisted of large industrial conglomerates for whom the defense sector was just one part of a much larger enterprise. For example, Ford Motor Co. produced aircraft engines and Sherman tanks for the U.S. military throughout World War II.²¹ These conglomerates and many specialized defense companies thrived for several decades during the Cold War. However, the collapse of the Soviet Union and subsequent “peace dividend” cuts to defense spending caused these large conglomerates to sell their defense business units and forced massive consolidation throughout the defense industry. At the time, senior defense officials encouraged this consolidation. Most notably, in 1993 Secretary of Defense Les Aspin and his deputy Bill Perry gathered executives from across the industry at a now notorious event known as “the last supper,” where Aspin and Perry delivered a blunt message: Defense spending, already falling fast, would fall further, and companies in the defense sector needed to consolidate or risk going bust.²²

What remains today is a relatively small number of specialized defense and aerospace companies. With very few buyers and very few sellers in this market, both monopoly and monopsony forces are at work. The market for weapons systems is simply too small to support meaningful competition for all things. Competition is important and should be leveraged



Market share in the defense industrial base has shifted from conglomerates to specialists.

Source: Marty Bollinger, PowerPoint, Strategic Challenges in the Defense Industrial Base, University of Virginia (August 2019), 13.

where possible to ensure efficient use of taxpayer dollars, but it would be foolish to believe that the market for weapons systems can function like the markets for cars or bananas or washing machines. Increasing competition cannot be the answer to all of DoD's acquisition woes.

Most of the remaining defense companies are publicly traded, which means they are subject to their shareholders' ideas about how they should perform. The margins in the aerospace and defense industry generally are not enormous, but reliable, which means that investors look to the industry to provide relatively small gains at low risk.²³ This dynamic is compounded by the fact that these companies have traditionally conservative corporate cultures. As a result, these companies are limited in how aggressively they can pursue new and innovative technologies, which, by definition, are risky. This is not to say that traditional defense companies are not innovative; they are. They consistently drive evolutionary change to military technology, producing ever-better weapons systems for the warfighter. However, in general, they do not risk the health of their companies on totally unproven or disruptive technologies, which is a good thing both for the shareholders and for the country.

These dynamics are in addition to a host of other challenges the defense industrial base faces, described in a comprehensive report released by the Department of Defense last year.²⁴ They include years of unstable government funding, disruptions in supply chains, and difficulty recruiting and retaining a highly skilled

workforce. The defense industrial base finds itself in a somewhat fragile state, and yet it is an essential partner in producing the future Joint Force. To put it bluntly, there is no U.S. military without the defense industrial base, and its health should be a matter of grave concern to all those interested in U.S. national security.

Having oriented ourselves in the environments in which our three core processes—requirements, programming and budgeting, and acquisition—operate, we turn to the workings of these processes themselves and how they can be made to function more optimally in the current competitive, innovation, and industrial environments.

Requirements

The requirements process, known as the Joint Capabilities Integration and Development System (JCIDS) establishes a new weapons system's key warfighting characteristics and performance parameters. In general, programming and acquisition do not happen without a requirement of some kind. The requirements process is the essential first step in developing new military capabilities and, consequently, a major determinant of the capability mix the future Joint Force will have.

The JCIDS process was born of then-Secretary of Defense Donald Rumsfeld's transformation agenda. In 2003, Rumsfeld tasked the Joint Defense Capabilities Study, also known as the Aldridge Report, to develop recommendations for a streamlined process that would generate true joint requirements, rather than simply

validating service inputs.²⁵ In response, then-Chairman of the Joint Chiefs of Staff Richard Myers instantiated the JCIDS process that year, replacing the previous Requirements Generation System, which had been in place since 1991.²⁶ Among other things, this new process empowered the combatant commands to drive joint requirements, rather than allowing the services to completely dominate this space.²⁷ The Joint Requirements Oversight Council (JROC) is the decisionmaking body that sits atop the JCIDS process. It predates the establishment of the current process over which it presides. The department originally established the JROC in 1986, prior to the passage of the Goldwater-Nichols Department of Defense Reorganization Act, but as part of the same reaction to successive operational failures due to lack of jointness in planning and command and control.²⁸ Ten years later Congress legally mandated the existence of the body, its purpose, and its membership.²⁹ The warfighting requirements process evolves continually via regular updates to the governing *Chairman of the Joint Chiefs of Staff Instruction* and the *Joint Capabilities Integration and Development System Manual*.³⁰ In recent years, these updates have focused on streamlining the system, making it more efficient, and creating pathways for rapid requirements development in response to urgent or emergent operational needs.³¹ Recent updates have also focused on becoming less prescriptive in requirements documents, focusing on describing a capability that the department needs without describing exactly how the department thinks that capability ought to be delivered, giving industry more flexibility



Former Chairman of the Joint Chiefs of Staff Richard Myers, shown above third from left, instantiated the JCIDS process as it exists today. [Joe Raedle/Getty Images]

to solve problems in the most efficient and effective way possible, often resulting in better outcomes for the warfighter and better value for the taxpayer.

There are many points of entry into the JCIDS process: Combatant commands can drive requirements through their annual Integrated Priority Lists, the annual Joint Capabilities Gap Assessment (CGA), or through other operational or planning activity. Service-specific requirements for major programs come through JCIDS for validation, and other defense agencies with promising technologies can also introduce them into the JCIDS process.³² The Joint Staff J8 serves as the gatekeeper to the JROC; it collects these inputs, organizes them into portfolios, and puts them through a series of reviews.³³ The JROC then makes decisions about these requirements and generates validated capabilities documents.³⁴ Designation as an urgent or emergent operational need will earn a given requirement a fast track through the process, and the subsequent acquisition process.³⁵

Challenges in the Requirements Process

There are at least two weaknesses in the current JCIDS process:

1. Bringing technologies developed outside of the defense ecosystem into the process requires an awkward reverse engineering of a requirement for a thing that already exists. Similarly, the process does not easily accommodate evolving technologies for things such as software systems.
2. The process is relatively closed, making it difficult to seek input from outside the Department of Defense, or even from some constituencies within the department.

The JCIDS process is still geared toward the bygone era when most advancements in military technology came from within the DoD ecosystem. Given the shifts in DoD's innovation environment, identifying and importing technologies developed outside DoD should be just as valid a means of developing new capabilities as generating them from within the defense ecosystem. The process should reflect this new reality. Similarly, the requirements process is not well suited to purchasing such things as software. The end of the requirements process is generally a document that defines a finished product to be delivered to the department. However, software, unlike hardware, must continuously evolve to remain useful, and the requirements process struggles with this kind of amorphous

The JCIDS process is perhaps the least transparent of the three addressed in this report.

end state.³⁶ DoD should not allow software systems to get stuck in the past because they are beholden to a requirement that is technologically outdated.

The JCIDS process is perhaps the least transparent of the three addressed in this report. Its closed nature is largely intentional. It was designed to prevent political or corporate interests from influencing the development of military requirements, a laudable goal.³⁷ However, this lack of transparency comes at a cost. The closed nature of the process, combined with limited staff time, inhibits full engagement with the full breadth of experts within DoD, as well as in the private sector during the requirements generation process. The limited ability to engage with experts inside and outside the government efficiently and effectively prevents the custodians of the JCIDS process from discovering the full breadth of potential solutions to a given operational problem, thus circumscribing the kinds of technologies the department can access.

Recommendations for the Requirements Process

DoD should enhance existing ways and create new ways to bring disruptive technologies into the Department of Defense. The current process of reverse engineering a requirement for technology that already exists fails to acknowledge that more and more technology with military applications is being developed outside of the department itself. The requirements process should create new pathways both to identify these technologies and to bring them into the system without the pretense of backing into a need for a thing that is already out in the public domain. The department should also consider ways to write requirements for software that allow it to evolve at the pace of commercial technology.

DoD should increase transparency in the requirements process while maintaining ethical boundaries. The department should pursue ways to engage in dialogues with the private sector—both traditional and nontraditional industry partners—throughout the requirements-generation process, while also preserving the integrity of the process's outcomes. These means must be transparent to all stakeholders to guard against improper influence over requirements decisions. The custodians of the process should also seek to more fully engage experts within the department, for example, by taking annual briefings from DoD labs or others engaged with the tech sector.

Programming and Budgeting

The programming and budgeting process is the way in which the Department of Defense decides how and on what to spend its money. It determines what gets bought and in what quantities and thus is a critical determinant of the size and shape of the future Joint Force.

In broad strokes and under ideal circumstances, the process runs like this: The secretary of defense provides guidance to the services about what he or she wants to see in their five-year spending plans, generally through a document known as the Defense Planning Guidance (DPG). The services take several months to build their plans, called Program Objective Memoranda (POMs). OSD leads a review of the service POMs, and the secretary of defense makes a series of decisions. The services incorporate these decisions into their Budget Estimate Submissions (BES) and submit to OSD again for review. OSD transmits the department's budget submission to the Office of Management and Budget for White House review. The White House submits the President's Budget request to Congress. Congress then passes authorization and appropriations bills, which the president then signs into law. Yes, this process is hierarchical, and yes, it takes a while. It generally takes

It generally takes 18 to 24 months for a new weapons system program to get through this process and secure funding, depending on when and how the new idea gets injected into the system.

18 to 24 months for a new weapons system program to get through this process and secure funding, depending on when and how the new idea gets injected into the system. The imperative to preserve congressional oversight severely limits the department's ability to adjust spending once Congress has appropriated funds for the fiscal year. Consequently, for a new program to receive funding it generally needs to enter the process at or near the start of a programming cycle, and to ensure that the program is worthy of taxpayer dollars, it is reviewed by a service, OSD, and the White House prior to submission to Congress for authorization and appropriation, hence the 18- to 24-month timeline.

The Programming, Planning, and Budgeting System (PPBS) was instantiated in the 1960s under the leadership of then-Secretary of Defense Robert McNamara. In the words of two of the system's architects, Alain Enthoven and Wayne Smith, "The fundamental idea behind PPBS was decision making based on explicit criteria of the national interest in defense programs, as opposed to decision making by compromise among various institutional, parochial, or other vested interests in the Defense Department."³⁸ In its first incarnation, this process sought to assert the secretary of defense's leadership in the force development, programming, and budgeting processes. Again, in the words of Enthoven and Smith, "the principal task of the secretary of defense is personally to grasp the strategic issues and provide active leadership to develop a defense program that sensibly relates all these factors. In short, his main job is to shape the defense program in the national interest."³⁹

In general, the modern defense programming and planning process has persisted largely unchanged since



Robert McNamara served as the U.S. secretary of defense from 1961 to 1968. During his tenure, he created the modern defense programming and budgeting process. (MPI/Getty Images)

its inception in the 1960s. President Richard Nixon's first secretary of defense, Melvin Laird, shifted some of the authority amassed by his predecessor McNamara back to the services, providing them with direction at the outset of the process and then, through his staff, evaluating their program submissions against that guidance.⁴⁰ Laird also instituted the practice of issuing fiscal guidance to the services, providing them with a resource constraint at the outset of the process.⁴¹ These practices remain in place today. Under President George W. Bush, Rumsfeld's transformation combined the programming and budgeting phases of the process to reduce duplication of effort.⁴² He also rechristened the process as the Programming, Planning, Budgeting, and Execution System. Deputy Secretary of Defense Robert O. Work reversed this change during the Obama administration, in part to give OSD an additional opportunity to ensure service compliance with the secretary of defense's programmatic decisions. These changes and others that have occurred over the years represent a pendulum swing of power in the system between the department's civilian leadership and the uniformed military, though the services are consistently the power centers in this process, even when particularly robust civilian leadership is in place.

The process of building the Future Years Defense Program is essentially bottom-up.

Some would view consistency in this process as an anachronism, *prima facie* evidence that the process needs a revamp. Others might instead interpret the endurance of the process as a sign of its success; in general, the Department of Defense gets what it needs in a relatively reasonable amount of time. However, one consistent criticism of this process is that it just takes too long. Much criticism is based on the "false premise that all delays are bad ... when the secretary of defense is faced with a difficult decision on a program costing the taxpayers millions or even billions of dollars, he must take the time to examine the issues, weighing the costs and the expected returns in effectiveness, before making a decision."⁴³ The department's approach to reforming this system should be to accept good delays, ones that deliver appreciably better outcomes, while eliminating the kinds of delays that are functions of true inefficiency in the process.

Challenges in the Programming and Budgeting Process

There are two primary problems in the current instantiation of DoD's programming system:

1. The bottom-up nature of the process drives results that are heavily biased toward the status quo.
2. Long timelines used to produce budgets, combined with the need to allow for meaningful congressional oversight, make it very difficult to adapt spending plans to changes in the threat environment or to changes within a given weapons system program.

The process of building the Future Years Defense Program (FYDP) is essentially bottom-up. Service and intraservice parochialism are alive and well within the process, as they have been since before the inception of the original programming and budgeting system.⁴⁴ While the secretary of defense often provides guidance at the outset of the process through the DPG, this guidance is usually not specific enough to drive meaningful change in what the services provide to him or her. Further, the services have generally started building their programs before the secretary has issued guidance. In general, the previous year's program forms the basis, or at least the logical point of departure, for the new plan. Changes are difficult to make, because there are entrenched institutional interests fighting to defend their funding. Service staffs, through no fault of their own, generally cannot resolve these disputes by themselves as they are a group of equals intent on preserving resources for their portfolios, usually with the genuine belief that doing so is the right thing for the service and the country. To make changes, they require leaders willing to take from some in order to give to others, and so whether or not a service is able to make real tradeoffs within its program depends largely on who is occupying those key leadership positions at any given time. Moreover, as OSD and the secretary of defense review the service program submissions, an explicitly stated goal in that process is to resolve all issues at the lowest level possible. While this mode of operating does preserve leadership time, an incredibly scarce resource, it also perpetuates the instinct to keep things relatively steady year on year. The OSD review process generally moves no more than 5 percent of the total DoD budget each year. The result is a process that is heavily biased toward funding the status quo. While it is generally a very bad idea to pursue wild swings in weapons system program funding year to year, as doing so drives significant inefficiency building weapons systems and managing workforces, there are times

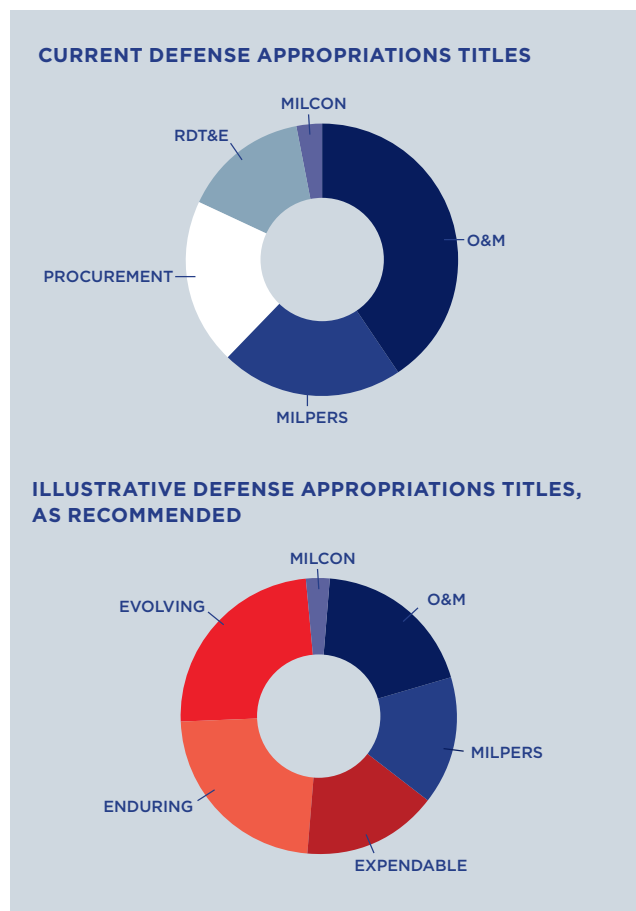
when the nation and the department require significant “change at scale.”⁴⁵ The current system is not particularly good at delivering those outcomes.

As previously noted, it takes about 18 to 24 months to secure funding for a weapons system program through the normal programming and budgeting process. This fact would not be particularly problematic if the “assumption that one can schedule inventions and that new technology is predictable” held true.⁴⁶ The thing is, it almost never does. If DoD planners are not precisely able to predict well in advance the exact moment a new technology will emerge or precisely when a weapons system program will be ready to make the leap from development to production, an 18- to 24-month delay can result while the request for funding works its way through the programming, budgeting, and appropriations processes to secure funds of the correct appropriations title, or “color of money” (i.e., procurement dollars as opposed to research, development, test, and engineering dollars). Because appropriations titles are organized by dividing all weapons systems programs into different phases of their life cycle (development, procurement, and sustainment), to jump from the development phase to the procurement phase can require a delay of an entire programming cycle. Congress permits DoD to transfer limited amounts of funds between appropriations accounts and reprogram funds within those accounts below certain amounts or with approval from the defense committees of jurisdiction.⁴⁷ However, the ability to move funds under these authorities is strictly limited by amount, requires an available offset (available dollars somewhere else), and where congressional approval is required, it can take months to secure. In other words, what flexibility does exist in the system is not adequate to allow DoD to react efficiently and in real time to technological advancements.

Recommendations for the Programming and Budgeting Process

Congress should reorganize appropriations titles (the “color of money”) to reflect the kind of life cycle a thing has, not what part of the life cycle a thing is in. Congress appropriates funding for weapons systems by title depending on what phase of the life cycle that weapons system is in: 1) research, development, test, and evaluation; 2) procurement; or 3) sustainment funded in operations and maintenance. This way of organizing appropriations creates major delays when a system transitions from the developmental stage to procurement; it takes 18 to 24 months to get the right color of money to begin procuring a promising developmental system at scale.⁴⁸ Instead,

Congress should consider appropriating funds for the full life cycle of a given weapons system according to the kind of life cycle it has: 1) enduring systems, such as ships and aircraft; 2) evolving systems, such as software; and 3) expendable systems, such as attritable drones and munitions. Reorganizing appropriations titles along these lines would preserve robust congressional oversight while also allowing the department to more easily move programs from development into production, as it would no longer require different colors of money. It would also allow DoD to more easily make funding decisions in the year of execution based on what that system needs, whether it be more maintenance to improve availability (currently funded by operations and maintenance) or follow-on



The current appropriations titles, shown on the top, are organized according to the part of a life cycle a given weapons system is in. Realigning appropriations titles to reflect the kind of life cycle a weapons system has, shown on the bottom, would allow a weapons system to remain in the same title throughout its life cycle, providing the department with additional flexibility.

Source: Office of the Under Secretary of Defense (Comptroller)/CFO, *Fiscal Year 2020 Budget Request* (Department of Defense, March 2019), 18, <https://media.defense.gov/2019/Mar/12/2002099931/-1/-1/1/FY-2020-BUDGET-ROLLOUT-BRIEF.PDF>.

modernization to update its technology (currently funded in research and development and/or procurement). This proposed reorganization would have the added benefit of creating more transparency around the full life cycle cost of weapons systems by putting that complete life cycle into a single appropriations account. It could also increase transparency in the department's operations budget, by shifting sustainment costs into the same titles in which the weapons systems are developed and acquired, thus revealing what the true cost of U.S. military operations are in a given year.

When delivering fiscal guidance to the services, the secretary of defense should hold back some resources to be allocated at the end of the process and use it to harness interservice competition as a force for good.

*When delivering fiscal guidance to the services, the secretary of defense should hold back some resources to be allocated at the end of the process (a real and transparent “bishop’s fund”) and use it to harness interservice competition as a force for good.*⁴⁹ Each year, OSD provides the services with their fiscal guidance for the upcoming programming cycle, which tells them how much money they have to work with in preparing their programs for the coming fiscal year. The services have long accused OSD of holding back some resources, creating a “bishop’s fund” to distribute during program review. The secretary should create a “competitive advantage fund” explicitly and transparently. Along with the annual fiscal guidance, the secretary should provide the services with a specific set of operational challenges (e.g., sinking a certain number of ships in a specific geographical area within a specific time frame).⁵⁰ During program review, the services would present their solutions, and the service or services that came up with the best solution to a given challenge would get the resources to fund that solution. This process would effectively turn the ever-present interservice rivalries for shares of the program from a liability into an asset. It would also make balancing the books at the end of the review process much easier, avoiding the need to search for offsets to fund higher priorities at the last minute.

The secretary of defense should provide robust guidance at the outset of the annual process and engaged leadership throughout. Over the years different secretaries of defense have chosen to be more or less engaged in the programming process. Some secretaries in recent memory have declined to offer guidance to the services at the outset of the process completely, while others have provided guidance that is inadequately specific and also too late to impact service program plans. Some secretaries have invested significant time and attention in the OSD review of service program submissions, while others have delegated that responsibility down to the deputy secretary of defense or even further to the under secretary of defense, comptroller, and the director of Cost Assessment and Program Evaluation. To ensure change in the Future Years Defense Program commensurate with changes in defense strategy or resourcing, the secretary of defense must provide top-down leadership, both in the form of specific and timely guidance at the outset of the process and throughout the review of service program plans. A model for this kind of leadership exists in the “night court” process that then-Secretary of the Army Mark Esper led in the fiscal year 2020 programming cycle.⁵¹ Now that he has been confirmed as secretary of defense, his stated intention to engage in a similar review of the DoD program as a whole bodes well.⁵²

Acquisition

The acquisition process is the means through which the Department of Defense makes decisions about from whom to buy weapons systems and how. Because it is the locus of so very many taxpayer dollars, the acquisition process receives significant congressional and public attention, even though it arguably has the least impact on the size and shape of the future Joint Force—the “what” and “how much” having already been decided in other processes. However, the acquisition process is not just about procurement of weapons systems; it also encompasses their design, engineering, and sustainment.⁵³ It is the process that in large part determines whether or not a weapons system program, once embarked upon, is ultimately successful, and is thus a critical part of the decisionmaking ecosystem.

Different rules and regulations apply to different types of acquisitions programs. But in the most general sense, once the department has identified a requirement and programmed and budgeted resources, a weapons system enters the acquisition pipeline, which consists of a series of decision points or “milestones.”⁵⁴ Milestone A begins the technology maturation and risk reduction phase. This part of the process develops the technologies required by the weapons system, demonstrating that they work before committing additional resources. Milestone B consists of engineering and manufacturing development, the process of figuring out how a weapons system will be built and developing the necessary infrastructure to do so.⁵⁵ If the department has carried more than one contractor through the technology maturation phase, down-selection usually occurs at this point. Milestone C begins production and deployment of the weapons system and also commences its sustainment, which will last for the entire life cycle of the weapons system until the department disposes of it.⁵⁶

A Brief and Selective History of Defense Acquisition Reform, 1985-2017

Successive administrations have sought to reform the defense acquisition system nearly continuously for the past several decades, with varying degrees of success.⁵⁷ Unlike with reforms to the requirements and programming and budgeting processes, Congress has been the primary driver of change in this space. Below is a brief and selective overview of these reform efforts, dating back to the 1986 Packard Commission Report and its implementation in the Goldwater-Nichols Department of Defense Reorganization Act of the same year, through the substantial reforms spearheaded by Sen. John

McCain in the fiscal year 2016 and 2017 National Defense Authorization Acts (NDAAs) while he was chairman of the Senate Armed Services Committee (SASC).

In 1985, President Ronald Reagan established **The Blue Ribbon Commission on Defense Management**, also known as the **Packard Commission**, in response to a series of troubled weapons systems programs and evidence of overspending by the Pentagon.⁵⁸ One of the commission’s mandates was to “review the adequacy of the defense acquisition process, including the adequacy of the defense industrial base, current law governing Federal and Department of Defense procurement activities, departmental directives and management procedures, and the execution of acquisition responsibilities within the Military Departments.”⁵⁹ The commission

Successive administrations have sought to reform the defense acquisition system nearly continuously for the past several decades, with varying degrees of success.

concluded that “too many of our weapons systems cost too much, take too long to develop, and, by the time they are fielded, incorporate obsolete technology.”⁶⁰ In 1986, the Packard Commission released its report, which included several recommendations for reforming the defense acquisition system.⁶¹ Many of these sound very familiar today; for example: “use technology to reduce costs”; “expand use of commercial products”; and “increase competition.”⁶² Congress implemented many of the Packard Commission’s recommendations in the **Defense Acquisition Improvement Act of 1986**.⁶³

While the executive branch was formulating the Packard Commission’s recommendations, Congress was busy preparing the **Goldwater-Nichols Department of Defense Reorganization Act of 1986**. The act is best known for its sweeping reorganization of the Department of Defense, most notably its major revisions to the chain of command in service of jointness. However, it also mandated significant changes in the acquisition enterprise, most notably creating the positions of under secretary of defense for acquisition and service acquisition executive.⁶⁴ These positions remain, although the under secretariat has gone through a few permutations.

The **Federal Acquisition Streamlining Act (FASA)** of 1994 and the **Federal Acquisition Reform Act (FARA)** of 1996 also harked back to some of the Packard



Sen. Barry Goldwater, shown above, along with Rep. William “Bill” Nichols, sponsored the Goldwater-Nichols Department of Defense Reorganization Act. (William Lovelace/Hulton Archive)

Commission’s recommendations on competition and use of commercial products. FASA changed the government’s procurement decision standard from “lowest bid” to “best value,” encouraged use of commercial technology, and introduced simplified acquisition procedures for contracts below certain dollar thresholds.⁶⁵ FARA followed, further incentivizing use of commercial items by simplifying acquisition procedures for them under a specific dollar threshold.⁶⁶

In 2009 Congress passed the **Weapons Systems Acquisition Reform Act (WSARA)** in response to poor cost and schedule performance of some major weapons systems programs. It too addressed many now familiar themes, including increasing competition and improving adherence to cost estimates and schedules. Under WSARA, DoD must pursue competition at both prime and subcontract levels throughout a program’s life cycle, and it “must ensure primes’ ‘make or buy’ decisions give their ‘full and fair consideration’ to qualified sources other than themselves for major subsystems and components.”⁶⁷ WSARA also modified the **Nunn-McCurdy Act**, originally passed in 1982. The act requires the department to report to Congress whenever a major defense acquisition program exceeds its cost estimates or schedule by certain percentages, with the goal of holding DoD officials accountable for cost overruns and schedule delays.⁶⁸ WSARA created a presumption of termination of programs found to be in critical breach of Nunn-McCurdy, allowing the secretary of defense to proceed with those programs only by certifying and restructuring them.⁶⁹ It also requires the department to provide

additional analysis to Congress when reporting a Nunn-McCurdy breach, identifying the root causes driving the cost overrun and/or schedule delay.⁷⁰ Finally, the act made several organizational changes, including creation of the Senate-confirmed position of director of Cost Assessment and Program Evaluation (CAPE, the office formerly known as Program Assessment and Evaluation [PA&E], but dating all the way back to McNamara’s Systems Analysis Office).⁷¹

The Department of Defense followed WSARA with a series of its own internal measures to improve the performance of the defense acquisition system. In 2010, then-Secretary of Defense Robert Gates and then-Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) Ashton Carter launched the first **Better Buying Power (BBP) Initiative**. Its main goal was to make the Department of Defense’s acquisition process more efficient, allowing DoD to “do more without more.”⁷² BBP started with five main goals, many of which sound familiar from previous reform efforts: target affordability and control cost growth; incentivize productivity and innovation in industry; promote real competition; improve tradecraft in services acquisition; and reduce nonproductive processes and bureaucracy.⁷³ Carter’s successor as USD(AT&L), Frank Kendall, subsequently led two further iterations of the initiative: BBP 2.0 in 2012 and BBP 3.0 in 2015. The goals within each subsequent version remained relatively unchanged, focusing on incremental improvement with the goals of delivering affordable programs, eliminating unproductivity, controlling costs, and incentivizing innovation.⁷⁴



On May 22, 2009, President Barack Obama signed the Weapons Systems Acquisition Reform Act into law to address poor cost and schedule performance of some major weapons systems programs. (Mark Wilson/Getty Images)

Congress began another round of significant defense acquisition reforms in the **fiscal year 2016 National Defense Authorization Act**. The catalyst for these reforms was the ascension of McCain to the chairmanship of the Senate Armed Services Committee. McCain and his staff believed that the defense acquisition enterprise was ill-equipped to address a number of major trends, particularly the rapid increase in Chinese military capability and the democratization of commercial technologies with military applications.⁷⁵ The SASC designed these reforms, and the ones that followed in the next year's NDAA (discussed below), to improve the department's ability to field new capabilities more rapidly and to work with a more diverse set of

McCain and his staff believed that the defense acquisition enterprise was ill-equipped to address a number of major trends, particularly the rapid increase in Chinese military capability and the democratization of commercial technologies with military applications.

technology partners, thus sustaining and extending the U.S. military's technological advantage. The fiscal year 2016 NDAA's major innovation was a new or expanded set of "middle-tier" acquisition authorities designed to create efficient and agile pathways for rapid prototyping and rapid fielding of new technologically advanced weapons systems.⁷⁶ In addition, the fiscal year 2016 NDAA enhanced the department's existing other transaction authorities (OTAs), which allow the department to fund research outside of normal contracting procedures and procurement laws and regulations.⁷⁷ The fiscal year 2016 NDAA also devolved significant acquisition authorities from OSD to the services, the idea being that fewer layers of review would result in a faster and more adaptable acquisition process.⁷⁸ Finally, the NDAA that year created an advisory panel to make recommendations for streamlining and codifying acquisition regulations.⁷⁹ Known as the Section 809 Panel, it completed its work in July 2019, having delivered its findings and recommendations in a series of three volumes.⁸⁰

The **fiscal year 2017 National Defense Authorization Act** continued the reforms begun the year before.

Frustrated by the department's lack of responsiveness to the reforms of the fiscal year 2016 NDAA, Congress fundamentally reorganized the defense acquisition enterprise, dividing USD(AT&L) into two separate organizations: the under secretary for research and engineering (USD(R&E)) and the under secretary for acquisition and sustainment (USD(A&S)).⁸¹ The reasoning behind this decision was to create a separate organization charged with innovating in service of U.S. military technological advantage that would have a culture of risk-taking (R&E), separate from the rightfully risk-averse acquisition organization (A&S). The fiscal year 2017 NDAA also sought to increase the agility and adaptability of major defense acquisition programs, as well as competition throughout a program's life cycle, by mandating use of modular open systems architectures, a concept first developed by WSARA's architects.⁸² Finally, the fiscal year 2017 NDAA also doubled down on the now very familiar themes of cost overruns and schedule delays, requiring the department to provide new "acquisition scorecards" to Congress for major defense acquisition programs.⁸³

Challenges in the Acquisition Process

The same basic challenges have dogged the defense acquisition system since its inception. In their current state, these challenges consist of two difficult balancing acts:

1. Balancing the need to push the technological edge in developing weapons systems against the imperative to deliver programs on time and on budget is really, really hard.
2. Balancing the need for speed and efficiency in acquisition against the need to provide proper oversight of how DoD spends taxpayer dollars is also difficult.

The fundamental question inherent in both of these balancing acts is, how much risk should the department accept and where?

It is extremely difficult to produce bespoke, technologically cutting-edge weapons systems within original cost estimates and on a predetermined schedule. Programs that will truly advance U.S. military technological capability are not the kinds of programs where you can tell at the outset exactly how much they are going to cost or how long they are going to take.⁸⁴ Truly pushing the envelope of what is technologically possible requires accepting some risk that the thing will cost more than

expected and/or take longer to produce than planned. As previously noted in the programming and budgeting section, it is not possible to schedule inventions, and new technology is not predictable.⁸⁵ Striking the correct balance between pursuing innovative technologies and performing on cost and schedule is extraordinarily difficult. Failing to accept some risk in weapons systems programs places the department's ability to innovate at risk. Take the Air Force's desire to reprise the fast-paced development and production of the Century Series aircraft of the 1950s.⁸⁶ The original Century Series aircraft succeeded in pushing cutting-edge technology to the warfighter quickly and also proved that there was value in modularity (i.e., subsystems could be used effectively in aircraft for which they were not originally designed).⁸⁷ However, it is worth remembering that the original Century Series aircraft all came in over cost, and many were delivered behind schedule and performed unreliably, with occasionally deadly consequences.⁸⁸

To an extent, oversight and efficiency are also in tension with each other. By definition, oversight takes time. It introduces new layers of review and new regulations and reporting requirements with which to comply, slowing down a process that is habitually derided for

To an extent, oversight and efficiency are also in tension with each other.

already being too slow. This dynamic is exacerbated by the near-constant attempts to reform the defense acquisition system. In doing so, Congress has often layered on additional rules and regulations, which are effectively new sources of inflexibility, making an already byzantine system even more so. As the

Packard Commission Report pointed out in relation to a series of scandals about the Pentagon overpaying for spare parts: "Ironically, actions being

prescribed in law and regulation to correct spare parts procurement tend to exacerbate these underlying problems by making acquisition procedures even more inflexible and by removing whatever motivation exists for the exercise of individual judgement."⁸⁹ It is relatively easy to create new rules and regulations, while it is incredibly difficult to move old rules and regulations off the books. Moreover, the need to comply with regulations designed to ensure proper oversight creates high barriers to entry into the defense sector, making it difficult for small start-ups to compete. At some point, additional layers of oversight or new and burdensome regulations are not worth their cost in terms of time or resources. But it is far from easy to determine exactly where this point is. For example, the Truth in Negotiations Act (TINA) requires that companies provide documentation proving they have paid fair and reasonable prices for goods if the cost of those goods is above a certain threshold.⁹⁰ Making sure that the taxpayer is paying fair prices for goods provided to the government is absolutely a great idea. The problem is that it costs both time and money to develop, provide, and review the required documentation. The key question is, at what point does the cost to comply exceed the value of having this regulation? The fiscal year 2018 NDAA increased the TINA threshold, making a judgment that in this case, the cost of complying with the regulation for goods costing less than \$2 million was not worth the value of enforcing the regulation below that level.⁹¹

Recommendations for the Acquisition Process

DoD should fully implement recent changes in authorities and recommendations for streamlining regulations. Congress should resist the temptation to undertake substantial new reforms until DoD has done so. The fiscal year 2016 and 2017 NDAs instituted sweeping changes in acquisition authorities and organization, and these changes will take time to fully implement. Anecdotal evidence indicates that there are instances



F-100 Super Sabres are examples of the Air Force's original Century Series aircraft, which had cutting-edge technology and were developed quickly. (Michael Ochs Archives/Getty Images)

where the full scope of the new or expanded authorities included in the fiscal year 2016 and 2017 NDAA's has not yet been implemented or, where implemented, has not completely filtered down through the acquisition workforce. The 2017 NDAA's mandate to dramatically reorganize the acquisition enterprise, coming on the heels of the new "middle-tier" authorities promulgated in the 2016 NDAA, means that many acquisition officials were distracted by the mandate to rearrange the deck

DoD should use these new acquisition authorities to incentivize industry to rapidly adopt and adapt commercial technological developments to military purposes.

chairs instead of fully exploring the expanded authorities at their disposal. Congress should allow the department adequate time to fully digest these reforms, to test them out, to understand their limits, and to identify their shortcomings before pursuing additional reform to the acquisition enterprise.

DoD should use these new acquisition authorities to incentivize industry to rapidly adopt and adapt commercial technological developments to military purposes. The department must consider the defense industrial base a full partner in sustaining U.S. military technological advantage and, to that end, incentivize the traditional defense industrial base to adopt and adapt commercial technological developments to military purposes. What technology start-ups need to succeed is proof that they can make money, to demonstrate that they can scale.⁹² Traditional large defense companies are already providing these things to tech start-ups through venture capital activities, but the department can and should do more to incentivize defense companies to help solve the innovation adoption problem. By executing contracts using the rapid fielding authorities and new definition of commercial items included in the 2016 NDAA, for example, the department can successfully incentivize industry to quickly adapt commercial technological developments for military use.⁹³

Pending a determination as to whether the new "middle-tier" and expanded OTA acquisition authorities created by the fiscal year 2016 NDAA provide sufficient flexibility, Congress and DoD should consider developing a regime where there are explicitly different risk tolerances for

different types of acquisitions programs. Under this kind of regime, certain weapons systems programs could be designated as having a potentially significant impact on U.S. military technological advantage; Congress and DoD together could agree to accept a higher degree of risk in terms of cost and schedule for these programs. For example, for a given weapons system with this high impact/high risk designation, Congress could consider creating an exception to WSARA's presumption of termination for programs with critical Nunn-McCurdy breaches. For DoD to undergo a cultural shift that truly promotes risk acceptance in certain cases, both the department's leadership and the Congress must agree and state explicitly that they will not condemn those responsible when one of these high risk/high reward programs fails. Otherwise, existing incentives to avoid risk (and thus to decline to aggressively pursue immature technologies) will continue to prevail.

DoD should develop a means of measuring the value of a regulation against the costs of compliance in terms of both time and money. Congress and DoD should use this metric to consider accepting more risk in some regulatory frameworks. Both Congress and DoD could use a meaningful cost/benefit analysis of compliance with various regulations to set more informed thresholds below which those regulations do not apply, or even to determine that certain regulations are not worth their cost. Doing so could save the taxpayer money while also allowing programs to move faster. It could also lower barriers to entry into the defense sector, thus lowering costs further by increasing competition. While it is true that the department has studied this issue before with somewhat unsatisfactory results, the time may be ripe to make another attempt given improvements in data management that could provide additional insight into the costs of various regulatory frameworks.⁹⁴

Congress should watch closely whether devolution of certain acquisition authorities to the services delivers the right outcomes for the Joint Force. In the spirit of Enthoven and Smith's "not all delays are bad" mantra, Congress should consider whether: 1) devolution of milestone decision authority formerly held by OSD to the services has actually generated significant time savings; and 2) whether milestone decisions about these weapons systems programs are generating the right outcome for the Joint Force when made at the service level. If either or both prove false, Congress should consider allowing for reinstatement of joint review for certain kinds of major defense acquisition programs by OSD.

Integration of DoD's Three Core Processes

Given how closely related these three processes' functions are, one would be forgiven for assuming that they operate in close coordination with one another. But in reality, these processes largely operate in separate stovepipes, a result of the fact that they are each managed by different organizations comprising different groups of people. Overlap between the three occurs only at the highest levels of leadership within the department. In the daily workings of the department, these processes do not interact significantly. However, the lack of solid links between the three processes with the greatest impact on the size and shape of the future Joint Force means that the cracks among them are large enough to swallow many good ideas whole before they reach maturity, limiting the department's ability to adopt innovative solutions to strategic and operational problems today and in the future. The handoff from requirements to programming, and the iteration between programming and acquisition throughout a weapons system's service life, must be as seamless as possible to ensure that the department can develop, obtain, and employ the capabilities it needs.

One of the casualties of successive rounds of across-the-board staff cuts has been DoD's joint analytic capability.

Moreover, each of these processes requires sufficient numbers of adequately trained personnel to make it run right. However, the staffs responsible for ensuring that these processes run smoothly and deliver good outcomes have been subject to repeating rounds of indiscriminate cuts for the past several decades, dating back to the 1986 Goldwater-Nichols Department of Defense Reorganization Act.⁹⁵ For example, in 1998, Congress mandated a 15 percent reduction to DoD headquarters, which Donald Rumsfeld implemented when he became Secretary of Defense in 2001.⁹⁶ Gates followed up with his own rounds of efficiencies exercises.⁹⁷ Secretaries Leon Panetta and Chuck Hagel continued this trend with their own efficiencies drills.⁹⁸ And in 2015, Congress mandated an additional 30 percent reduction in headquarters spending, although this time with instructions not to spread cuts evenly across the enterprise.⁹⁹ These kinds of astrategic, indiscriminate, across-the-board reductions have already long outlived their efficacy.

One of the casualties of successive rounds of across-the-board staff cuts has been DoD's joint analytic capability. Support to Strategic Analysis (SSA), co-led by CAPE, Joint Staff J8, and the Office of the Under Secretary of Defense for Policy, has in the past provided validated joint scenarios that anyone in the department can use to assess capability gaps, the utility of new military capabilities, or new operational concepts. Unfortunately, SSA has eroded in recent years, a victim of staff cuts and its own internal dysfunction. The result is that services are generally left to invent their own analytic scenarios, which is sort of like students being allowed to grade their own homework. Further, those outside the services wishing to evaluate various force structure options or operational concepts are left without a reliable and current joint product to use in their analysis.

Recommendations for Integration

The deputy secretary of defense and the vice chairman of the Joint Chiefs of Staff should serve as formal integrators of the requirements, programming and budgeting, and acquisition processes. In fact, the deputy secretary of defense (DSD) and the vice chairman of the Joint Chiefs of Staff (VCJCS) already do a fair amount of integrating across these three processes, because the results of each land on their desks at some point. As a result, formalizing this function would not require much in the way of additional bureaucracy, but it would require existing staffs to acknowledge their role as integrators and work together to provide them with information accordingly. In doing so, formalizing this integration role would also force requirements, programming and budgeting, and acquisitions staffs into a greater state of integration in order to staff their principals effectively. As a first step, DSD and VCJCS could together review the roles and missions of each process and their stewards, with an eye to both reducing duplication of effort and determining where each must be more closely linked.

Congress and DoD should stop mandating across-the-board headquarters reductions and instead make determinations about where missions can be cut or real efficiencies harvested and reduce staff accordingly in a targeted manner. There is no doubt that the Department of Defense broadly, and each of these three processes, could be made more efficient. However, repeated rounds of indiscriminate cuts have harmed these processes by eroding talent in the organizations that support them. Future reductions in staff should be taken only when the department eliminates a mission area or finds genuine efficiencies—ways to do the same work with fewer man-hours.

Formalizing this integration role would force requirements, programming and budgeting, and acquisitions staffs into a greater state of integration in order to staff their principals effectively.

DoD should revive its joint analytic capability. DoD should revive this capability, which can serve as an important enabler of these three processes. Undoubtedly the SSA process needs a redesign to overcome some of the challenges that prevented it from functioning well. However, the ability to do joint analysis and to provide joint scenarios to others who wish to do their own analysis is a critical enabler of each of the three decisionmaking processes that are the subject of this report.

Conclusion

This paper provides a review of the Department of Defense's three core decisionmaking processes, what is working in them, what is not, and some recommendations for how to make them deliver better outcomes for the U.S. military and for the American people. These recommendations would improve the way DoD makes the decisions that size and shape the future Joint Force. By extension, they would help ensure that the U.S. military can compete effectively with China, with specific emphasis on sustaining and enhancing U.S. military technological advantage. This approach is pragmatic, focusing on changes that could be implemented in the near to medium term. It also avoids calling for additional bureaucracy. While always a tempting solution to most institutional problems, creating additional organizations without fixing those that already exist rarely yields satisfying results. Our approach derives from the premise that opened this paper: The system is not irretrievably broken. It by and large delivers what the United States needs based on the current threat environment and operational concepts. However, each of the three core decisionmaking processes in DoD has its shortcomings and challenges. The hope is that the recommendations made here, if implemented, would improve what exists while preserving what is working. The end result would be a Joint Force that is, in its design and composition, more responsive to changes in the threat environment, the rapid pace of technological change, and new developments in the American way of war.¹⁰⁰

Endnotes

1. Robert O. Work and Greg Grant, "Beating the Americans at Their Own Game: An Offset Strategy with Chinese Characteristics" (Center for a New American Security, June 6, 2019), <https://www.cnas.org/publications/reports/beating-the-americans-at-their-own-game>.
2. Defense Acquisition University, "Planning, Programming, Budgeting, and Execution Process (PPBE)," [dau.edu, https://www.dau.edu/acquipedia/pages/articleetails.aspx#1154](https://www.dau.edu/acquipedia/pages/articleetails.aspx#1154).
3. Scott Chandler, "Rethinking Defense Acquisition: Zero-Base the Regulations," *WarOnTheRocks.com*, January 6, 2017, <https://warontherocks.com/2017/01/rethinking-defense-acquisition-zero-base-the-regulations/>; Zachery Tyson Brown, "All This 'Innovation' Won't Save the Pentagon," *DefenseOne.com*, April 23, 2019, <https://www.defenseone.com/ideas/2019/04/all-innovation-wont-save-pentagon/156487/>; and Sydney J. Freedberg Jr., "'Put A Match To It' And Scrap DoD's Buying Rules: Top Pentagon Advisor Exclusive," *BreakingDefense.com*, August 30, 2012, <https://breakingdefense.com/2012/08/put-a-match-to-it-and-scrap-dods-buying-system-top-pentagon/>.
4. Marcus Weisgerber, "Slow and Steady is Losing the Defense Acquisition Race," *Government Executive* (November 11, 2014), <https://www.govexec.com/magazine/features/2014/11/slow-and-steady-losing-defense-acquisition-race/98567/>; and Michelle Shevin-Coetzee, "The Labyrinth Within: Reforming the Pentagon's Budgeting Process" (Center for a New American Security, February 2016), <https://s3.amazonaws.com/files.cnas.org/documents/CNASReport-PPBE-160203.pdf?mtime=20160906082258>.
5. U.S. Department of Defense, *Summary of the 2018 National Defense Strategy of The United States of America: Sharpening the American Military's Competitive Edge* (2018), <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.
6. Work and Grant, "Beating the Americans at Their Own Game: An Offset Strategy with Chinese Characteristics."
7. Phillip C. Saunders and Joel Wuthnow, "China's Goldwater-Nichols? Assessing PLA Organizational Reforms," *Joint Force Quarterly*, 82 no. 3 (2016), 68, https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-82/jfq-82_68-75_Saunders-Wuthnow.pdf.
8. Saunders and Wuthnow, "China's Goldwater-Nichols? Assessing PLA Organizational Reforms," 70.
9. Saunders and Wuthnow, "China's Goldwater-Nichols? Assessing PLA Organizational Reforms," 70.
10. 10 U.S.C. §222a, "Unfunded priorities of the armed forces and combatant commands: annual report."
11. Timothy R. Heath, "China's Untested Military Could be a Force—or a Flop," *Foreign Policy* (November 27, 2018), <https://foreignpolicy.com/2018/11/27/chinas-untested-military-could-be-a-force-or-a-flop/>.
12. Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, NJ: Princeton University Press, 2010), 5.
13. Eric Edelman, Gary Roughead, et al., "Providing for the Common Defense: The Assessment and Recommendations of the National Defense Strategy Commission" (United States Institute of Peace, November 2018), <https://www.usip.org/sites/default/files/2018-11/providing-for-the-common-defense.pdf>.
14. Ministry of National Defense of the People's Republic of China, *China's National Defense in the New Era* (July 24, 2019), http://eng.mod.gov.cn/news/2019-07/24/content_4846443.htm.
15. Robert O. Work and Shawn Brimley, "20YY: Preparing for War in the Robotic Age" (Center for a New American Security, January 2014), 35, https://s3.amazonaws.com/files.cnas.org/documents/CNAS_20YY_WorkBrimley.pdf?mtime=20160906082222.
16. In 2016 according to McKinsey Global Institute, quoted in *Foreign Policy*. Michael C. Horowitz, "The Algorithms of August," *Foreign Policy* (September 12, 2018), <https://foreignpolicy.com/2018/09/12/will-the-united-states-lose-the-artificial-intelligence-arms-race/>.
17. Dr. Eric Schmidt, testimony to the Armed Services Committee, U.S. House of Representatives, April 17, 2018, <https://docs.house.gov/meetings/AS/AS00/20180417/108132/HHRG-115-AS00-Wstate-SchmidtE-20180417.pdf>.
18. Defense Innovation Unit, "Tap Into a \$100+ Billion Market With Speed," *diu.mil*, <https://www.diu.mil/work-with-us/companies>.
19. Ben FitzGerald, Alexandra Sander, and Jacqueline Parziale, "Future Foundry: A New Strategic Approach to Military-Technical Advantage" (Center for a New American Security, December 2016), 39, <https://s3.amazonaws.com/files.cnas.org/documents/CNAS-Report-FutureFoundry-final.pdf?mtime=20161213162640>.

20. Zak Doffman, "Google Accused By Top U.S. General And Senator Of Supporting Chinese Instead Of U.S. Military," *Forbes* (March 16, 2019), <https://www.forbes.com/sites/zakdoffman/2019/03/16/google-accused-by-u-s-general-and-senator-of-benefiting-chinese-instead-of-u-s-military/#426260cf1899> and Michael Kan, "Microsoft Employees Protest HoloLens Contract with US Army," *PCMag.com*, February 22, 2019, <https://www.pcmag.com/news/366742/microsoft-employees-protest-hololens-contract-with-us-army>.
21. "Tank Assembly Changeover at Ford Motor Company Rouge Plant, 'B' Building, Dearborn, Michigan, 1943," *TheHenryFord.org*, <https://www.thehenryford.org/collections-and-research/digital-collections/artifact/371856/>.
22. John A. Tirpak, "The Distillation of the Defense Industry," *Air Force Magazine* (July 1998), <http://www.airforcemag.com/MagazineArchive/Pages/1998/July%201998/0798industry.aspx>.
23. Loren Thompson, "Defense Industry Profits Are Not Impressive," *Forbes* (July 24, 2013), <https://www.forbes.com/sites/lorenthompson/2013/07/24/defense-industry-profits-are-not-impressive/#30a0d55a2a05>; and Mary Ellen Biery and Sageworks Stats, "These Industries Generate the Lowest Profit Margins," *Forbes* (September 24, 2017), <https://www.forbes.com/sites/sageworks/2017/09/24/these-industries-generate-the-lowest-profit-margins/#2f40cc42f49d>.
24. U.S. Department of Defense, *Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States: Report to President Donald J. Trump by the Interagency Task Force in Fulfillment of Executive Order 13806*, (September 2018), <https://media.defense.gov/2018/Oct/05/2002048904/-1/-1/1/ASSESSING-AND-STRENGTHENING-THE-MANUFACTURING-AND%20DEFENSE-INDUSTRIAL-BASE-AND-SUPPLY-CHAIN-RESILIENCY.PDF>.
25. U.S. Department of Defense, *Joint Defense Capabilities Study: Improving DoD Strategic Planning, Resourcing and Execution to Satisfy Joint Capabilities: Final Report* (January 2004), iii, <https://www.hsdl.org/?abstract&did=449952>; and U.S. Department of Defense, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Defense Science Board 2005 Summer Study on Transformation: A Progress Assessment, Volume II: Supporting Reports*, (April 2006), 132-133, <https://apps.dtic.mil/docs/citations/ADA446891>.
26. Defense Acquisition University, "Joint Capabilities Integration and Development System (JCIDS)," *dau.edu*, <https://www.dau.edu/acquipedia/pages/articledetails.aspx#1371>.
27. U.S. Department of Defense, *Joint Defense Capabilities Study: Improving DoD Strategic Planning, Resourcing and Execution to Satisfy Joint Capabilities: Final Report*, iii.
28. Wilson Brissett, "The School of JROC," *Air Force Magazine* (March 2017), <http://www.airforcemag.com/MagazineArchive/Pages/2017/March%202017/The-School-of-JROC.aspx>.
29. U.S. Senate, *National Defense Authorization Act for Fiscal Year 1996*, S. 1124, 104th Cong., <https://www.govinfo.gov/content/pkg/PLAW-104publ106/pdf/PLAW-104publ106.pdf>.
30. U.S. Department of Defense, Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction: Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, CJCSI 5123.01H (August 31, 2018), <https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%205123.01H.pdf?ver=2018-10-26-163922-137>; and U.S. Department of Defense, Joint Chiefs of Staff, *JCIDS Manual: Manual for the Operation of the Joint Capabilities Integration and Development System* (August 31, 2018), <https://www.dau.edu/cop/rqmt/DAU%20Sponsored%20Documents/Manual%20-%20JCIDS,%2031%20Aug%202018.pdf>.
31. U.S. Department of Defense, Joint Chiefs of Staff, *JCIDS Manual: Manual for the Operation of the Joint Capabilities Integration and Development System*, B-F-1 – B-F-4.
32. U.S. Department of Defense, Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction: Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, D-1-2.
33. U.S. Department of Defense, Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction: Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, D-3-4.
34. U.S. Department of Defense, Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction: Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, A-1-2.
35. U.S. Department of Defense, Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction: Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*.
36. J. Michael McQuade, Richard M. Murray, et al., "Software is Never Done: Refactoring the Acquisition Code for Competitive Advantage" (Defense Innovation Board, March 14, 2019), [https://media.defense.gov/2019/Mar/14/2002101480/-1/-1/0/DIB-SWAP_STUDY_REPORT\[DRAFT\],_LAST%20MODIFIED_13MAR2019.PDF](https://media.defense.gov/2019/Mar/14/2002101480/-1/-1/0/DIB-SWAP_STUDY_REPORT[DRAFT],_LAST%20MODIFIED_13MAR2019.PDF).
37. Conversation with Lisa Disbrow, August 2, 2019.

38. Alain C. Enthoven and K. Wayne Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969* (Santa Monica, CA: RAND Corporation, 2005), 33.
39. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, 3.
40. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, xii.
41. Robert Hale remarks at September 23, 2019 workshop.
42. U.S. Department of Defense, Jim Garamone, “Rumsfeld Attacks Pentagon Bureaucracy, Vows Changes,” American Forces Press Service, September 10, 2001, <https://archive.defense.gov/news/newsarticle.aspx?id=44916>.
43. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, 43-44.
44. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, 17.
45. “Statement From Acting Secretary of Defense Patrick M. Shanahan,” U.S. Department of Defense, press release, June 18, 2019, <https://www.defense.gov/Newsroom/Releases/Release/Article/1880219/statement-from-acting-secretary-of-defense-patrick-m-shanahan/>.
46. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, 26.
47. Aaron D. Walenga and Brendan W. McGarry, “Defense Primer: DOD Transfer and Reprogramming Authorities” (Congressional Research Service, June 7, 2019), <https://fas.org/sgp/crs/natsec/IF11243.pdf>.
48. Conversation with Raj Shah, August 8, 2019.
49. Robert O. Work at May 30, 2019, CNAS meeting.
50. David Ochmanek, “Improving Force Development Within the U.S. Department of Defense: Diagnosis and Potential Prescriptions” (RAND Corporation, July 2018), https://www.rand.org/content/dam/rand/pubs/perspectives/PE300/PE302/RAND_PE302.pdf; and Center for a New American Security, transcript from panel discussion, “How the U.S. Military Fights Wars Today and in the Future,” (March 7, 2019), <https://s3.amazonaws.com/files.cnas.org/ANAWOW-Transcript-07MAR19.pdf?mtime=20190408161639>.
51. Jen Judson, “Army’s ‘night court’ finds \$25 billion to reinvest in modernization priorities,” *Defense News* (October 8, 2018), <https://www.defensenews.com/digital-show-dailies/ausa/2018/10/08/armys-night-court-finds-25-billion-to-reinvest-in-modernization-priorities/>.
52. U.S. Senate, Committee on Armed Services, “Hearing to Conduct a Confirmation Hearing on the Expected Nomination of: Honorable Mark T. Esper to be Secretary of Defense” (July 16, 2019), 128, https://www.armed-services.senate.gov/imo/media/doc/19-59_07-16-19.pdf.
53. Moshe Schwartz, “Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process,” RL34026 (Congressional Research Service, May 23, 2014), <https://fas.org/sgp/crs/natsec/RL34026.pdf>.
54. Schwartz, “Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process.”
55. Schwartz, “Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process.”
56. Schwartz, “Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process.”
57. Rosalind Lewis, Susan E. Hastings, et al., “Acquisition Reform Regimes on Their Own Terms: Context, Mechanisms, Effects, and Space Program Impact” (The Aerospace Corporation, February 2019), https://aerospace.org/sites/default/files/2019-02/Lewis-Hastings_AcqReform_01302019.pdf.
58. President Ronald Reagan, “Remarks Announcing the Establishment of the Blue Ribbon Commission on Defense Management” (White House, Washington, June 17, 1985), <https://www.reaganlibrary.gov/research/speeches/61785a>.
59. Ronald Reagan Presidential Library and Museum, *Executive Order 12526 -- President’s Blue Ribbon Commission on Defense Management* (July 15, 1985), <https://www.reaganlibrary.gov/research/speeches/71585c>.
60. David Packard et al., “A Quest for Excellence: Final Report to the President” (President’s Blue Ribbon Commission on Defense Management, June 1986), 44, <https://assets.documentcloud.org/documents/2695411/Packard-Commission.pdf>.
61. Packard et al., “A Quest for Excellence: Final Report to the President,” 52.
62. Packard et al., “A Quest for Excellence: Final Report to the President,” 55, 60, 62.
63. Defense Acquisition Improvement Act of 1986, which was enacted as Title IX of the *National Defense Authorization Act for Fiscal Year 1987* (Public Law 99-661).
64. U.S. House of Representatives, *Goldwater-Nichols Department of Defense Reorganization Act of 1986*, H.R. 3622, 99th Cong., Section 3014, https://history.defense.gov/Portals/70/Documents/dod_reforms/Goldwater-NicholsDoDReordAct1986.pdf; U.S. House of Representatives, *Goldwater-Nichols Department of Defense Reorganization Act of 1986*, Public Law 99-433, Section 5014; and U.S. House of Representatives, *Goldwater-Nichols Department of Defense Reorganization Act of 1986*, Public Law 99-433, Section 8014.

65. U.S. Senate, *Federal Acquisition Streamlining Act of 1994*, S. 1587, 103rd Cong., Section 1066, <https://www.congress.gov/103/bills/s/1587/BILLS-103s1587enr.pdf>; and U.S. Senate, *Federal Acquisition Streamlining Act of 1994*, Section 4002.
66. U.S. Senate, *National Defense Authorization Act for Fiscal Year 1996*, Public Law 104-106, Section 4202.
67. U.S. Senate, *Weapon Systems Acquisition Reform Act of 2009*, S. 454, 111th Cong., Section 202, <https://www.congress.gov/111/plaws/publ23/PLAW-111publ23.pdf>.
68. Moshe Schwartz and Charles V. O'Connor, "The Nunn-McCurdy Act: Background, Analysis, and Issues for Congress," R41293 (Congressional Research Service, May 12, 2016), <https://fas.org/sgp/crs/natsec/R41293.pdf>.
69. U.S. Senate, *Weapon Systems Acquisition Reform Act of 2009*, Public Law 111-23, Section 206.
70. U.S. Senate, *Weapon Systems Acquisition Reform Act of 2009*, Public Law 111-23, Section 206.
71. U.S. Senate, *Weapon Systems Acquisition Reform Act of 2009*, Public Law 111-23, Section 101.
72. Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, U.S. Department of Defense, Memorandum for Acquisition Professionals, *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending* (September 14, 2010), 1, https://www.acq.osd.mil/fo/docs/USD_ATL_Guidance_Memo_September_14_2010_FINAL.PDF.
73. Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, U.S. Department of Defense, Memorandum for Acquisition Professionals, *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending*.
74. Frank Kendall, Memorandum for Secretaries of Military Departments, Deputy Chief Management Officer, Department of Defense Chief Information Officer, Directors of the Defense Agencies, and AT&L Direct Reports, *Implementation Directive for Better Buying Power 3.0 – Achieving Dominant Capabilities through Technical Excellence and Innovation*, attachment 1 (April 9, 2015), [https://www.acq.osd.mil/fo/docs/betterBuyingPower3.0\(9Apr15\).pdf](https://www.acq.osd.mil/fo/docs/betterBuyingPower3.0(9Apr15).pdf); and Frank Kendall, Memorandum for Defense Acquisition Workforce, *Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending*, attachment 1 (November 13, 2012), [https://www.acq.osd.mil/fo/docs/USD\(ATL\)%20Signed%20Memo%20to%20Workforce%20BBP%202%2000%20\(13%20Nov%2012\)%20with%20attachments.pdf](https://www.acq.osd.mil/fo/docs/USD(ATL)%20Signed%20Memo%20to%20Workforce%20BBP%202%2000%20(13%20Nov%2012)%20with%20attachments.pdf).
75. Email exchange with Ben FitzGerald, August 30, 2019.
76. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, S. 1356, 114th Cong., Section 804, <https://www.congress.gov/114/plaws/publ92/PLAW-114publ92.pdf>.
77. Moshe Schwartz and Heidi M. Peters, "Acquisition Reform in the FY2016-FY2018 National Defense Authorization Acts (NDAAs)," R45068 (Congressional Research Service, January 19, 2018), 2, <https://fas.org/sgp/crs/natsec/R45068.pdf>.
78. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, Public Law 114-92, Section 802.
79. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, Public Law 114-92, Section 809.
80. "Section 809 Panel: Streamlining & Codifying Acquisition," Section 809, <https://section809panel.org>.
81. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2017*, S. 2943, 114th Cong., Section 901, <https://www.congress.gov/114/plaws/publ328/PLAW-114publ328.pdf>.
82. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2017*, Public Law 114-328, Section 805.
83. Schwartz and Peters, "Acquisition Reform in the FY2016-FY2018 National Defense Authorization Acts (NDAAs)."
84. "Evolving the Future Force," YouTube, March 29, 2018, 1:44:51, <https://www.youtube.com/watch?v=hOrX1Nkk-kzM>.
85. Enthoven and Smith, *How Much Is Enough?: Shaping the Defense Program 1961-1969*, 26.
86. John A. Tirpak, "Holmes: What ACC Expects from New 'Century Series,'" *Air Force Magazine* (April 15, 2019), <http://www.airforcemag.com/Features/Pages/2019/April%202019/Holmes-What-ACC-Expects-from-New-Century-Series.aspx>; and Mike Pietrucha, "Finding the Way (Again): Building the Air Force's New Century Series," *WarOnTheRocks.com*, June 11, 2019, <https://warontherocks.com/2019/06/finding-the-way-again-building-the-air-forces-new-century-series/>.
87. Leland Johnson, "The Century Series Fighters: A Study in Research and Development" (RAND Corporation, May 20, 1960), 2, https://www.rand.org/pubs/research_memoranda/RM2549.html.
88. Johnson, "The Century Series Fighters: A Study in Research and Development," 1.
89. Packard et al., "A Quest for Excellence: Final Report to the President," 44.
90. Office of the Under Secretary of Defense for Acquisition and Sustainment, Defense Pricing and Contracting, "Defense Federal Acquisition Regulation Supplement," https://www.acq.osd.mil/dpap/dars/pgi/pgi_hm/current/PGI215_4.htm.
91. U.S. House of Representatives, *National Defense Authorization Act for Fiscal Year 2018*, H.R. 2810, 115th Cong., Section 811, <https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

92. Diem Salmon, September 23, 2019 workshop.
93. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, Public Law 114-92, Section 804; and U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, Public Law 114-92, Section 851.
94. Coopers & Lybrand, “The DOD Regulatory Cost Premium: A Quantitative Assessment” (Defense Technical Information Center, December 1994), <https://apps.dtic.mil/docs/citations/ADA295799>; United States General Accounting Office, *Acquisition Reform: Efforts to Reduce the Cost to Manage and Oversee DoD Contracts*, GAO/NSIAD-96-106 (April 18, 1996), <https://www.gao.gov/archive/1996/ns96106.pdf>; and United States General Accounting Office, *Acquisition Reform: DoD Faces Challenges in Reducing Oversight Costs*, GAO/NSIAD-97-48 (January 29, 1997), <https://www.gao.gov/archive/1997/ns97048.pdf>. Many thanks to Peter Levine for pointing us in the direction of these studies.
95. Peter Levine, “Ten Rules for Defense Management Reform,” *WarOnTheRocks.com*, July 9, 2019, <https://warontherocks.com/2019/07/ten-rules-for-defense-management-reform/>.
96. U.S. House of Representatives, *National Defense Authorization Act for Fiscal Year 1998*, H.R. 1119, 105th Cong., 1st sess., Section 911, <https://www.congress.gov/bill/105th-congress/house-bill/1119/text/enr>.
97. Department of Defense, *Department of Defense Efficiency Initiatives: Fiscal Year 2012 Budget Estimates* (2011), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2012/FY2012_Efficiency_Justification_Book.pdf.
98. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, Public Law 114-92, Section 346; and Defense Secretary Leon E. Panetta, “Statement on Fiscal 2013 Budget” (Pentagon Press Briefing Room, Washington, January 26, 2012), <https://apps.dtic.mil/dtic/tr/fulltext/u2/a555037.pdf>.
99. U.S. Senate, *National Defense Authorization Act for Fiscal Year 2016*, S. 1376, 114th Cong., 1st sess., Section 351, <https://www.congress.gov/114/bills/s1376/BILLS-114s1376pcs.pdf>.
100. Chris Dougherty, “Why America Needs a New Way of War” (Center for a New American Security, June 12, 2019), <https://www.cnas.org/publications/reports/anawow>.

About the Center for a New American Security

The mission of the Center for a New American Security (CNAS) is to develop strong, pragmatic and principled national security and defense policies. Building on the expertise and experience of its staff and advisors, CNAS engages policymakers, experts and the public with innovative, fact-based research, ideas and analysis to shape and elevate the national security debate. A key part of our mission is to inform and prepare the national security leaders of today and tomorrow.

CNAS is located in Washington, and was established in February 2007 by co-founders Kurt M. Campbell and Michèle A. Flournoy.

CNAS is a 501(c)3 tax-exempt nonprofit organization. Its research is independent and non-partisan. CNAS does not take institutional positions on policy issues. Accordingly, all views, positions, and conclusions expressed in this publication should be understood to be solely those of the authors.

© 2019 Center for a New American Security.

All rights reserved.



Bold. Innovative. Bipartisan.