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Accelerating Defense Acquisition: Faster Acquisitions Produce a Stronger Force

Peter J. Modigliani—is a Senior Defense Capability Accelerator within The MITRE Corporation. He works with acquisition executives and CIOs across defense, intel, and civil agencies on enabling speed, agility, and innovation in their enterprises and major programs. [pmodigliani@mitre.org]

Daniel B. Ward—is a Principal Systems Engineer at The MITRE Corporation. He specializes in rapid innovation and is the author of two books: The Simplicity Cycle and F.I.R.E.—How Fast, Inexpensive, Restrained, and Elegant Methods Ignite Innovation. [dbward@mitre.org]

Abstract

U.S. military superiority is at risk due to rapid technological advancements changing the character of war in an increasingly complex global security environment. Department of Defense (DoD) executives fear the DoD has lost its ability to go fast. They stress the need to increase speed and agility in defense acquisition. MITRE researched organizations across the DoD, government, and industry that delivered capabilities faster than comparable organizations to understand their keys to success. Based on this initial research, strategies were identified across five major areas to enable practitioners to accelerate deliveries to the warfighters. These include creating a culture of speed, managing requirements, systems design, program execution, and contracting.

Accelerating deliveries starts with leadership creating a culture of speed, agility, and innovation to deliver capabilities to users for mission success. Effectively scoping a program and managing requirements enables rapidly delivering an initial solution and iterating vice overly defining requirements prematurely. Designing systems faster requires embracing principles of user focus, reuse, simplicity, modularity, and open systems. Executing programs faster includes tailoring and streamlining acquisition processes, documentation, and reviews with delegated decision authorities. Contracting should be part of a holistic business strategy to leverage existing vehicles and exploring the full range of FAR and non-FAR strategies available. These strategies, along with new rapid acquisition pathways enable the DoD to deliver better solutions faster.

The Need for Speed

> *What keeps me up at night is not North Korea,*
> *but the fear that the U.S. has lost its ability to go fast.*
> *— Gen John Hyten (2017), USSTRATCOM Commander*

The United States has enjoyed significant technical advantages over its adversaries in most conflicts over the last 100 years. That may not be the case for future conflicts, as the 2015 novel Ghost Fleet demonstrated. In this fictional account of a near-future World War III between the United States and China, America's military superiority was eroded by an adversary able to quickly outmatch and undermine the nation's most advanced technical systems. Several of the U.S. military's most advanced weapons systems were defeated by comparable enemy systems based on designs and technologies stolen from U.S. defense companies, then fielded in a fraction of the time it took the United States.

If such a thing were to happen in real life, future military leaders in the United States would look to the current DoD research and acquisition enterprises for the source of their difficulties. As they reflect on what could have been done differently, they could reasonably point to the slow pace of acquiring and delivering military capabilities as a major contributor to America's losses. This is hardly a new hypothesis, of course. As far back as 1986's

Packard Commission report, the acquisition community has known that "an unreasonably long acquisition cycle … is a central problem from which most other acquisition problems stem" (Packard, 1986).

As the 2018 National Defense Strategy (NDS) says, the United States has entered a new era of great power competition with the rise of China and a resurgent Russia (Mattis, 2018). Further, the military technical advantage the U.S. military has long maintained over its competitors is steadily eroding as the nation's competitors have the same access to the globalized technology marketplace driving innovation. Commercially driven breakthroughs in new technologies—artificial intelligence, advanced autonomy, robotics—are changing the very character of war. That competitors have access to these same technologies risks eroding the conventional overmatch to which the U.S. military has grown accustomed.

The NDS acknowledges that the DoD is in a race to develop and integrate cutting-edge technologies before its competitors do the same. Yet, the DoD's bureaucratic structure, lengthy processes, and risk-averse culture inhibits timely adoption of new technologies. The reality is that competitors can iteratively field new systems in faster cycles, rapidly eroding our military, economic, and technical superiority.

There are parts of the acquisition community that move faster than others. Special Operations Command (SOCOM), for example, is well known for its ability to quickly deliver affordable, effective new weapon systems. The Navy Acquisition Executive (when with USSOCOM) James "Hondo" Geurts famously said, "Velocity is my combat advantage" (Clevenger, 2016). His use of operationally-focused language ("combat advantage") instead of administrative language ("buying power") is not an accident. It reflects his perspective on why the military develops technology in the first place. In a similar vein, Dr. Will Roper, the Air Force Acquisition Executive, coined "Celerity!" as a mantra to encourage the Air Force acquisition workforce to go faster (Roper, 2018).

Of course, delivering real battlefield advantage requires more than just raw speed. It also requires a nuanced capacity for agility, the ability to rapidly adapt to change—particularly when facing the emergence of new capabilities or an adversary's new way of operating. That means the DoD requires agile systems, organizations, and strategies. As most major weapon systems are increasingly software intensive, the DoD must employ modern software development practices such as Agile DevOps. Agile typically entails small, frequent releases; valuing working software over documentation; being responsive to changes; and active user involvement throughout development (Mitre, n.d.-a). DevOps is the set of practices to integrate and automate processes between software development teams and operations to deliver software faster. Adopting Agile DevOps practices extends beyond writing software code and requires deeper changes to program structure, requirements, security, contracting, testing, systems engineering, and culture.

In researching successful organizations, programs, and initiatives across the DoD, other federal agencies, and industry, MITRE identified the following set of specific practices to enable speed and agility. MITRE is working with many federal agencies to apply these practices to accelerate their acquisition programs and enable adoption of Agile development practices. The team is relentlessly focused on shorting the time from "idea to IOC"—Initial Operational Capability.

> *Success goes to the country that … better integrates technology and adapts its way of fighting. Our response will be to prioritize speed of delivery, continuous adaptation, and frequent upgrades.*
> *—National Defense Strategy (Mattis, 2018)*

Researching Acceleration

Recognizing the urgency by defense executives, acquisition professionals, and warfighters to deliver innovative solutions faster, MITRE embarked on a research project to understand how to successfully accelerate capability deliveries. The team researched exemplar organizations across the DoD to include the Special Operations Forces Acquisition Technology and Logistics and the Air Force Rapid Capability Office to understand their keys to success.

In analyzing the schedules of major DoD programs, the team imported schedule and cost data on the DoD's major defense acquisition programs and major automated information systems into the Tableau analytics platform visualization tool. It allowed the team to identify direct correlations between acquisition costs and schedules for the Engineering and Manufacturing Development (EMD) phase.

Data was sorted and filtered by service, program category, a new start vs. modernization, and decade of program start. Tableau provided visual summaries of the data with box plots on the center 50 and 75% of timelines between Milestones A and B and B and C for each grouping of programs. It allowed the team to identify edge case programs—those who were able to deliver much faster than comparable programs as well as those that took considerably longer. This led to pursuit of initial research with individual programs to understand how their environment, constraints, and strategies impacted schedule.

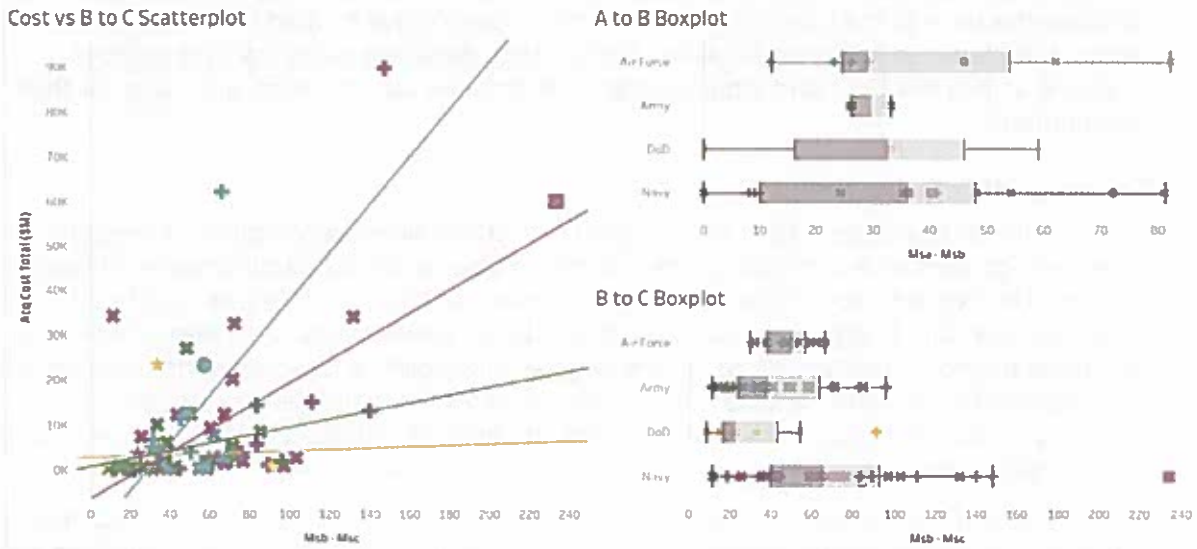

Figure 8. **Sample Tableau Visualization of Schedule Milestone Analysis**

Furthermore, the team researched commercial industry, including high-tech startups. The focus was to understand their leading strategies to rapidly exploit leading technologies for commercial solutions and how they can be applied within the defense acquisition enterprise.

The purpose of this research is to enable acquisition professionals to deliver better solutions faster. The team curated dozens of practical, field-tested strategies and tactics to apply to programs to accelerate IOC. These strategies span five initial areas: leadership and culture, requirements, system design, program execution, and contracting. Each strategy has curated content, videos and graphics, actions that programs can take, and links to dozens of references. The research is published as part of an Accelerate initiative on MITRE's Acquisition in the Digital Age (AiDA) website: https://aida.mitre.org/accelerate/.

Leadership and Culture

According to the research, culture is a key determinant of organizational performance, particularly in acceleration, agile, and innovation. Culture refers to a wide range of beliefs, behaviors, and standards that influence an organization's activities and outcomes. The norms and behaviors of a team are strongly influenced by the organizational culture in their parent organizations.

Leaders have the opportunity—and the responsibility—to influence their team's culture. One simple way to do this is to develop a strategic plan for establishing specific norms and behaviors related to agility. A leader might help foster a culture of experimentation and rapid learning by providing training and tools that support such behaviors. Leaders can further reinforce a culture of speed by delegating decision authorities to those closest to the action. Since rapid project teams often encounter resistance, ranging from passive skepticism to open opposition from key stakeholders, leaders could provide public support and recognition for acceleration to help overcome the resistance. Executives are recognizing teams and individuals that embrace agile methods, flexible contracting, and aggressively tailoring the 5000 policy.

Acceleration introduces new risks to a program while reducing others. While the net change is generally positive, leaders and staff must be mindful of the overall risk profile associated with acceleration. Ironically, being risk averse may be the biggest risk of all. Spending too much time perfecting the program analysis, documents, and briefings simply transfers the risks to the operational community. Operating at a rapid pace also often requires the team to acquire new skills. Fortunately, there are many training sources available across the DoD and industry that organizations can leverage and tailor for their environment.

Scope and Requirements

Another key determinant according to the data is effectively scoping a program, increment, or release is a critical element to being able to deliver capabilities in a timely manner. The key is to scope the work that leverages mature technologies, is affordable within the available budget, and can realistically be delivered within the needed timelines. To help meet expected delivery dates, some degree of flexibility is needed in the requirements. The operational command should convey requirements via high-level objectives. The acquiring organization can then iteratively deliver capabilities based on budgets, schedules, risks, threats, and other factors.

The DoD can accelerate delivery of innovative solutions by designing acquisition portfolios that deliver an integrated suite of smaller capabilities, rather than monolithic stand-alone systems. Operational commands should consider authoring a Capstone Portfolio Requirements document to cover a broad mission or capability area rather than that of a single program. Acquirers and developers should focus on rapidly delivering a Minimum Viable Product (MVP) to accelerate learning and rapidly iterate capabilities (Brikman, 2016). An MVP is the smallest possible product that is valuable, usable, and feasible. This replaces the DoD's traditional approach of elaborate planning, intuition, and big-bang upfront design. MVPs and iteration practices favor experimentation, customer feedback, and iterative design.

One key to iterative design is requirements that are iteratively defined. These requirements can be managed via dynamic program, release, and sprint backlogs rather than through formal requirements documents. The DoD must give up the fallacy of defining all the requirements for a system upfront. As the NDS stressed, "a rapid, iterative approach

to capability development will reduce costs, technological obsolescence, and acquisition risk" (Mattis, 2018). A close partnership and active collaboration between users, acquirers, and materiel developers is critical to delivering mission impactful solutions.

System Design

Accelerating the pace of delivery is not about simply "turning the crank faster." The DoD should also take a fundamentally different approach to the way it designs systems in the first place. The discipline of Design Thinking (and its related discipline, Human Centered Design) is an important enabler of speed. It combines empathy for users, immersion in the problem, creativity in the generation of insights and solutions, and a data-based experimental approach to assess the quality of solutions. The related discipline of Systems Thinking balances holistic thinking and reductionist thinking. It enables programs to arrive at effective solutions sooner and avoid unnecessary delays and re-work.

Prototyping, experimentation, and rapid deliveries of MVPs in the early phases of the acquisition life cycle should shape requirements and system design. Agile and iterative developments value putting capabilities in the hands of users and shaping future releases based on performance and feedback. Implementing a modular open systems approach enables innovation, interoperability, and technology refresh from a variety of competing vendors. Trimming is an iterative technique for removing unnecessary elements from technical designs, system architectures, process diagrams, communications products, and organizational structures (Mitre, n.d.-b).

Documentation and Reviews

Our research found documentation historically consumed a significant amount of a program's schedule. Thus, to effectively accelerate a program, the team should constrain the amount of time spent developing, reviewing, and approving documents. In 2015, the GAO reported that acquisition programs spent over two years on average completing numerous information requirements for their most recent milestone decision, yet acquisition officials considered only about half of the requirements as high value (Sullivan, 2015).

One example of a sound approach to documentation comes from the Agile Manifesto (2001). The Agile software approach emphasizes working software over comprehensive documentation and offers this perspective: "Simplicity—the art of maximizing the amount of work not done—is essential." While writing documentation is important, not writing documentation is also important. Aim to only produce the documents that are useful and needed to manage the program, rather than writing "compliance only" documents which exist only to satisfy the interests of headquarters staffs.

Similarly, programs should apply the concept of Minimum Effective Dose to their documentation. This concept comes from the medical community, where doctors and nurses recommend patients take the least amount of medicine that delivers the desired effect. Acquisition programs should adopt a similar Minimum Effective Documentation strategy, aiming to produce as little as possible, as much as necessary.

This involves MDAs and functional leaders clearly identifying what information is required and developing the minimum set of documents that can capture the required information. While a functional oversight organization may expect a functional document, a program office may merge the content of that document with others to minimize the number of documents to coordinate. Communicating the intent of this tailored approach in advance helps increase the buy-in from reviewers and other stakeholders.

Streamlined documentation coordination and approvals are equally critical to accelerate schedules. Exemplar organizations identify upfront the minimum set of officials to coordinate and approve each program document. Many have leveraged IT tools and business rules (e.g., no response within 10 days signifies concurrence) to streamline coordination across multiple organizations. Many milestone decision authorities have delegated approval of various program documents to lower level officials.

Program reviews should be focused on the highest risks, open issues, and provide the oversight officials with the key information to decide if the program is ready to proceed. Weeks and months can be lost with pre-briefs and rework to debate elements of the program's strategy and refine the messaging for leadership. Like documentation, reviews should be kept to an absolute minimum. Program reviews should provide the highlights of the strategy, with the details in the program documentation. Successful MDAs and functional leaders set clear on the key information required for each review and ensure subordinate reviews are minimized.

Contracting

Finally, data shows contracting is often one of the longest lead-items in the acquisition life cycle, and one of the riskiest. Traditional contracting methods can take 18 months to three years to compete and award a contract. This increases the risk of the program delivering products that are operationally irrelevant, technologically obsolete, or both.

Successful acquisition organizations approach contracting as a holistic business strategy where program managers partner with their contracting officers early to develop and shape the strategies. They work together to achieve the mission objectives within the environmental constraints. Far too many acquisition organizations separate contracting from the program offices to "process the paperwork," which leads to lengthy timelines and poor contract strategies. They also regularly collaborate with industry to communicate the government's needs, approach, and timelines and to solicit feedback on issues with their strategy.

Leveraging existing contracts to award a task or delivery order saves significant time over developing and awarding a new contract. Programs should first look to the array of existing contracts to see if the scope of work and pool of vendors meet their needs. The Under Secretary of Defense for Acquisition and Sustainment's (USD[A&S]) Contracting Cone outlines 23 different Federal Acquisition Regulation (FAR) and Non-FAR contract strategies (USD[A&S], 2018a). The online tool offers insights on common applications, pros/cons for use, restrictions, and references.

Program Executive Officers should establish multiple-award contracts to cover a broad portfolio area. If established correctly, these contracts have aggressively streamlined processes with standardized language, terms, and metrics to enable rapid orders. Similarly, a portfolio can establish their own Other Transaction Authority (OTA) Consortium to tap a pool of non-traditional vendors focused on their portfolio capabilities (USD[A&S], 2018b). These portfolio vehicles enable each program and project to aggressively cut contracting timelines.

There is a wide array of FAR and non-FAR contracting strategies available to the acquisition community with ample flexibilities on their use. Instead of a traditional, lengthy FAR Part 15 approach, many use OTAs, Broad Agency Announcements, Federal Supply Schedules, Simplified Acquisition, and Commercial Items to reach contractors in a fraction of the time. The FAR explicitly encourages speed, agility, and innovation, yet many

interpretations assume that a lengthy approach is safer. The FAR also stresses using modular contracting to the maximum extent practicable, by dividing large efforts into a series of smaller efforts.

Contracting officers are the key linchpins to a successful government–contractor partnership, which is critical to success. They can identify the key levers (e.g., progress payments and bonuses for cash flow) to incentivize contractors for speed to delivery. In addition to contracting, many rapid organizations have empowered, experienced, forward-leaning professionals from other functional areas to include legal, test and evaluation, and finance.

Summary

The current operational environment demands acquisition professionals accelerate their capability deliveries. The culture has begun to shift over the last two years from controlling costs to accelerating schedules. There are proven strategies and tactics throughout the acquisition life cycle to lean the acquisition and requirements processes to achieve IOC sooner. The current leadership in the Pentagon are strong champions of speed and agility. Congress has also been a strong proponent of speed, offering a series of new authorities and flexibilities to go faster to include the popular Middle Tier Acquisition (Mitre, n.d.-c). There are additional opportunities to accelerate other major schedule drivers across the acquisition life cycle to include test and evaluation. The time is ripe for acquisition professionals to lean forward and accelerate deliveries of innovative solutions. See more at https://aida.mitre.org/accelerate/.

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