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Improving Defense Acquisition: Insight from Three Decades of RAND Research

Jonathan Wong—is associate director of the Strategy, Doctrine, and Resources Program of the RAND Arroyo Center, a policy researcher at RAND Corporation, and a professor at the Pardee RAND Graduate School. His research focuses on the role of new technologies and operational concepts, and processes in shaping how militaries fight. He also contributes to other force design and development research and RAND's military logistics, manpower, intelligence policy, and strategy portfolios. [jonwong@rand.org]

Obaid Younossi—is director of the Defense and Political Sciences Department and a senior policy researcher at the RAND Corporation. He is responsible for the hiring, professional growth, and support of about 200 regular professional researchers and over 100 adjunct staff located in four major offices and in offsite locations. Since joining RAND in 1998, Younossi has led and worked on a wide range of studies for the U.S. Air Force, the Office of the Secretary of Defense, the U.S. Navy, the UK Ministry of Defence, Government of Qatar, Government of Oman, and the Australian Department of Defence. [obaid@rand.org]

Abstract

Improving the U.S. Department of Defense (DoD) acquisition system—the management and development processes by which the department acquires, develops, and sustains weapon systems, automated information systems, and services—has been an issue of sustained interest to policymakers since the beginning of the military establishment. Numerous actions have been initiated and implemented over decades to rein in the increasing life-cycle costs and to ensure a timely delivery of these systems to meet U.S. security needs. In this report, researchers describe overarching trends that affect the defense acquisition system, outline challenges in the DoD's defense acquisition process, and suggest improvements that might help address those challenges.

Background

Improving the U.S. Department of Defense (DoD) acquisition system—the management and development processes by which the department acquires, develops, and sustains weapon systems, automated information systems, and services—has been of sustained interest to policymakers since the beginning of the military establishment. In 1986, a confluence of trends external and internal to the department prompted Michael Rich, Edmund Dews, and C. L. Batten, Jr., to write *Improving the Military Acquisition Process: Lessons from Rand Research*. In that report, the authors examined years of prior RAND Corporation research and identified the following four trends, which they anticipated would have significant effects on the DoD's acquisition of systems:

- escalating enemy threats
- resource constraints and uncertainties
- longer retention of weapon systems in the operational inventory
- increasing difficulties of producing at an affordable cost.

Our goal with this report is to look broadly at RAND's acquisition research, as Rich et al. did in 1986. Although the context for weapon system acquisition has changed since 1986, the four trends identified in the earlier work remain just as relevant today for system acquisition in the DoD. That said, there have been some additional challenges since 1986 that have affected the DoD's acquisition of weapon systems, and we expect them to continue to do so in the coming years.¹ Moreover, defense acquisition reforms have remained a major policy issue and

¹ These challenges are outlined in further detail later in this report.



continue to be the subject of significant legislative and regulatory efforts—as evidenced by such initiatives as Congress’s Weapon Systems Acquisition Reform Act of 2009, the DoD’s Better Buying Power initiatives in the early to mid-2010s, a burgeoning set of defense innovation initiatives and organizations since 2014, and the sweeping changes to the DoD acquisition regulation in 2020 that yielded the Adaptive Acquisition Framework (Office of the Under Secretary of Defense for Acquisition and Sustainment [OUSD(A&S)], 2020). Inspired by the approach in Rich et al. (1986), we turned to RAND’s research on defense acquisition to understand the current trends and challenges shaping that debate and to identify solutions that might improve weapon system acquisition.

Methodology

Our research approach relied on relevant resources to inform the current trends influencing acquisition decisions and leaned heavily on a sampling of 89 of RAND’s publicly available reports on weapon system acquisition practices since 1986 to draw insights and lessons learned.

We examined reports that touched on broad trends, future challenges to acquisition, and comprehensive solutions, similar to that presented in Rich et al. (1986). We did not substantially use (and do not cite) research that was similar to other later work; for instance, RAND conducted periodic assessments of a defense workforce initiative and acquisition reform activities and did cost and schedule evaluations for specific programs. Instead of examining each assessment, we chose the most recent one that captured the results of all previous iterations. In other cases where RAND researchers make similar recommendations to address similar problems across different reports, we chose the report that offered the clearest articulation of the argument.

Using these criteria, we identified 44 relevant RAND reports from the initial list of 89 reports published since 1986. We created a spreadsheet template to qualitatively assess reports based on acquisition issues across all military services, the joint establishment, and all warfighting domains, and organized across 13 topic areas.²

Trends and Challenges for System Acquisition in the DoD

We begin by noting four overarching trends that affect the DoD acquisition system—the management and development processes by which the department acquires, develops, and sustains weapon systems, automated information systems, and services. First, geopolitical changes have widened the threat landscape; in addition to a resurgent Russia, growing Chinese economic and military power poses new threats to U.S. interests, while Islamic extremism remains a potent force. Globalization has altered the economic and technological landscape, creating new opportunities, as well as challenges, for the DoD. Furthermore, the United States has changing national priorities: Defense issues remain important, but domestic policy issues compel policymakers to prioritize attention and resources. Lastly, advancing commercial technologies are creating new challenges and opportunities for an acquisition system that was not designed to import and adapt technologies developed outside the traditional defense industrial base.

These trends are in turn linked to the following challenges for the DoD’s acquisition of weapon systems:

² Those areas were defense acquisition policy, program cost, program schedule, risk in acquisition, defense industrial base, defense innovation, acquisition workforce, development and design of weapon systems, lessons learned from acquisition programs, joint acquisition, space and cyber acquisition, data in defense acquisition, and international acquisition.



- **Responding to evolving missions.** A wider range of missions demands a more flexible, responsive, and faster approach to acquisition (see, for example, Ochmanek et al., 2017, p. 100).
- **Leveraging a changing defense industrial base.** The prominence of the commercial technology sector, a consolidating defense industrial base, and a challenging contracting environment demand attention (see Defense Science Board Task Force on Defense Industrial Structure for Transformation, 2008).
- **Accommodating interoperability.** Increased cooperation among U.S. components, allies, and partners requires weapon systems that are more interoperable (see, for instance, Porche et al., 2011, p. 18).
- **Building in cybersecurity.** More-sophisticated cybersecurity threats that can disrupt, damage, degrade, or destroy system capabilities require more attention to securing systems (see Gonzales et al., 2020).
- **Planning for technology refresh and insertion.** Longer service lives of weapon systems may require more attention to designing systems with modular or easily upgradable characteristics (see Drezner & Simpson, 2017, for more information).
- **Rebuilding the acquisition workforce.** Underinvestment in maintaining the acquisition workforce in the 1990s has weakened the workforce’s capability to manage an increasingly complex acquisition system (see, for instance, Government Accountability Office [GAO], 2015).
- **Managing the acquisition cost of systems.** Weapon system cost growth continues to be a concern (see Younossi et al., 2007).
- **Aligning incentives, organizations, and processes to acquisition goals.** The complexity of the acquisition landscape has grown, making it essential to reconsider the organizational and procedural norms to ensure alignment.³

Potential Actions for Improving the Acquisition Process

Our review of RAND literature highlights many different actions to specifically address these challenges. Most fall within four broad themes, which we discuss in this section. No theme alone can address all of the challenges we have identified from RAND research. However, each has the potential to address numerous challenges, as indicated in Table 1.

Table 1. Action Themes to Address Acquisition Challenges

Challenge	Tailor Acquisition Approaches	Better Engage an Inclusive Industrial Base	Properly Size, Train, and Incentivize the Acquisition Workforce	Track and Analyze Attributes of Acquisition
Responding to evolving missions	✓	✓	✓	✓
Leveraging a changing defense industrial base		✓		✓
Accommodating interoperability	✓			✓
Building in cybersecurity	✓	✓	✓	✓
Planning for technology refresh and insertion	✓	✓	✓	✓
Rebuilding the acquisition workforce		✓	✓	✓
Managing the acquisition cost of systems	✓			✓

³ A good example that outlines this problem is William Greenwalt and Dan Patt (2021, pp. 41–48).



Challenge	Tailor Acquisition Approaches	Better Engage an Inclusive Industrial Base	Properly Size, Train, and Incentivize the Acquisition Workforce	Track and Analyze Attributes of Acquisition
Aligning incentives, organizations, and processes to acquisition goals	✓		✓	✓

Tailor Acquisition Approaches

A key observation across RAND’s acquisition research is that acquisition programs may benefit from management frameworks tailored to the circumstances and characteristics of the system being considered. Attributes that can be tailored include program timelines, contract strategies, oversight structures, and technical risk tolerance. For example, urgent operational needs necessitate quick design and procurement timelines to help field equipment expeditiously. Short obsolescence timelines also drive quick turnarounds in program schedule. On the other hand, complex system developments require large investment and oversight, which makes an expedited timeline less feasible. In these cases, a long-term outlook with careful planning is more appropriate. An effective acquisition system should be sufficiently adaptable that it can respond to urgent and evolving operational needs when necessary and can incorporate deliberate and thoughtful planning when timelines and cost considerations require it.

That said, certain program considerations are more universal. For example, consideration must be given to ensuring the realism of requirements by using relatively mature technologies; maintaining budgetary and program resource stability; and managing interoperable systems, cybersecurity, and obsolescence. Moreover, some measure of accountability and responsiveness to oversight, adjusted to the amount of risk tolerated by stakeholders, is important (Cook et al., 2016, pp. 100–101). Despite arguments by some that oversight is too burdensome and inimical to agility, oversight and accountability are necessary to sustain the political viability for programs and the acquisition enterprise generally (Wong, 2020). These universal considerations never can be fully disregarded in the interest of acquisition agility.

As the DoD reforms the acquisition system to accommodate approaches to reduce schedule and cost slippage *and* become more flexible and agile to contend with evolving threats, it should continue to consider these broad principles as the acquisition workforce learns to use new acquisition pathways and tools. This will be particularly important as acquisition leaders determine which tailored pathways are most appropriate for a given program. One way to synthesize these principles is by categorizing programs into four pathways along two dimensions: program need timeline (short timeline versus long timeline) and technology development risk (evolutionary versus revolutionary).⁴

In some cases, operational circumstances dictate a timeline or level of technology risk. In others, program leaders must choose their timeline and the acceptable level of risk based on external limitations, such as budget. Table 2 summarizes key attributes for programs in each of these four archetypes.⁵ We believe that this framework and its underlying principles will

⁴ In the context of this report, evolutionary technology development refers to a gradual development of new capability, as opposed to the development of game-changing capability. The term *evolutionary* should not be confused with evolutionary acquisition, a DoD acquisition approach implemented in the early 2000s that involves *spiral development*, or increasingly detailed incremental system capability development phases (or design spirals) rather than traditional discrete phases.

⁵ These summations are adapted from John Birkler et al. (2000). See also Van Atta et al. (2016).



continue to be relevant as the program management and oversight landscape in the DoD and Congress evolves.

Table 2: Associated Program Attributes, by Acquisition Program Archetype
(Birkler et al., 2000)

Timeline Length	Technology Development Risk	
	Evolutionary	Revolutionary
Short	<ul style="list-style-type: none"> Streamlined oversight Increased prototyping Limited changes to requirements 	<ul style="list-style-type: none"> Streamlined oversight Increased prototyping Increased program risk tolerance Flexible contracts Relaxed intellectual property ownership
Long	<ul style="list-style-type: none"> Limited changes to requirements Longer-term contracts Increased life-cycle planning: operations and support (O&S), interoperability, technology refresh 	<ul style="list-style-type: none"> Increased prototyping Increased program risk tolerance Longer-term contracts Increased life-cycle planning: O&S, interoperability, technology refresh

Challenges to Implementing Tailored Approaches

The tailored acquisition approach described here has not been implemented to the degree that empirical evidence of its effectiveness to improve acquisition outcomes is possible. The DoD has been moving steadily toward emphasizing a tailored approach, including emphasis in the 2013 version of DoD Instruction 5000.02, as well as adoption of the Adaptive Acquisition Framework outlined in the 2020 version of the document.⁶

Nevertheless, RAND research highlights implementation obstacles that are likely to occur. Research by McKernan et al. (2015) on acquisition-tailoring suggests that various bureaucratic characteristics, such as high turnover among senior leaders, weak support for tailoring, and weak incentives and structures, constrain tailoring. Also, education and training are important so that the workforce knows how to tailor acquisition procedures. Tailoring requires a workforce that thinks critically about acquisition issues and understands the acquisition process in great detail (McKernan et al., 2015). Research by Bartels et al. (2020) that wargames elements of the Adaptive Acquisition Framework also suggests that the risks of transitioning programs between pathways (e.g., from middle-tier rapid prototyping and fielding to the more traditional major capability acquisition process) are not well understood by acquisition practitioners (pp. 7–9).

Having adequate training for tailoring, however, is only part of the difficulty with implementing tailored acquisition for weapon system programs. According to case studies of tailored programs documented by McKernan et al. (2015), bureaucratic obstacles are another major challenge. Examples of such obstacles within the DoD include high turnover among senior leadership, limited ground-level support for flexible program approaches, limited holistic understanding of the entire acquisition process within the acquisition workforce, and limited incentives to carry out alternative approaches (McKernan et al., 2015).

However, these challenges to tailored acquisition can be addressed by the DoD’s growing understanding of how program context can dictate which tailoring approaches are appropriate for best results in a given situation. Anton et al. (2020) examine 62 potential

⁶ On the 2013 version, see McKernan et al. (2015). On the 2020 version, see OUSD(A&S, 2020).



approaches to more responsive acquisition by identifying 49 contextual program factors that are likely to influence the effectiveness of each approach (pp. 74–82). Such insights as these are likely to be critical to effectively crafting tailored acquisition strategies.

Better Engage an Inclusive Industrial Base

Industry is the prime source of innovation for the defense acquisition system, and harnessing industry's innovation potential is key to maintaining the United States' warfighting advantage. Toward this end, two major priorities for the defense industrial base are to expand it to include nontraditional suppliers and to implement better long-term planning to ensure that the industrial base remains healthy. RAND research suggests that some tools already exist to enable further expansion of the industrial base and further improve long-term industrial base planning. In this section, we identify RAND research that highlights these existing tools to help enable their use more broadly through defense acquisition.

Expand the Industrial Base to Include Nontraditional Suppliers

Although sustaining members of the present defense industrial base is crucial, further expansion of the industrial base is necessary to better channel the innovation potential of industry. This expansion can be accomplished through improved DoD engagement with industry. The DoD has made recent efforts in this area—for example, by establishing the Defense Innovation Unit in August 2015—but more action can be taken to diversify partnerships with the industrial base.⁷

One possibility is to pursue the further implementation of DoD venture capital funds. Designed to make equity investments in early-stage firms, venture capital funds and their organizational structures are a stimulus for innovation in the technology sector, according to a 2001 RAND study for the U.S. Army (Held & Chang, 2000, p. 2). An example of DoD's limited use of venture capital programs to date is the Army Venture Capital Initiative, chartered by Congress and established in FY 2002. Based within In-Q-Tel (a venture capital firm funded mainly by the Central Intelligence Agency), the venture fund was created (1) to find innovative energy technologies and invest in their development and (2) to realize substantial net return for the investing organizations from commercial and Army markets (Parmentola & Rohde, 2003, p. 29). The Army selected OnPoint Technologies to manage the fund and has invested in firms developing battery electrodes, printing solar cells on flexible substrates, and enhancing battery management devices (Webb et al., 2014, p. 25). An example of the success of the fund is the battery management technology created by PowerPrecise Solutions, which received excellent reviews from deployed soldiers in Iraq and Afghanistan and was estimated to save the Army approximately \$375 million over a 5-year period (Steipp, 2013, p. 122). By providing modest funding at the right time, venture capital funds are a conduit to accessing the newest technologies and diversifying partnerships with nontraditional firms. Thus, as mentioned earlier, the DoD should consider employing this venture capital model more widely—for example, in cyber and other technology areas that exhibit promise (Steipp, 2013).

In a similar vein, funding for the DoD Small Business Innovation Research (SBIR) program can be better distributed to already successful small businesses and those that the DoD is already investing in via other avenues. Held et al. (2006) indicate that integrating the resources of the SBIR program with venture capital initiatives can provide a stream of funding throughout the life cycle of a nascent technology, which can be crucial to fielding new capability (p. 92).

⁷ The Defense Innovation Unit is a DoD initiative intended to increase agility and innovation in defense acquisition by serving as a bridge between DoD components, the military services, and companies operating at the leading edge of technology.



An inherent reality of the defense industry is that many systems require significant up-front capital expenditure for production. The infrastructure, materiel, and human capital investments required can be substantial, so both established and emerging markets continually seek ways to reduce such expenditures. This is visible in the established commercial satellite industry, in which operators deploying traditional satellites require up-front capital investment on the order of several hundred million dollars per program. Chang et al. (2016), in a study for the U.S. Army, recommend that the DoD pursue business arrangements and public-private partnerships that defray these capital expenditures for industry (Chang et al., 1999, pp. 55–57). Commercial firms often operate under strict timelines, so there is not always excess capacity for the DoD's needs. Early, up-front investment by the DoD can allow firms to plan their operations more effectively to accommodate both commercial and defense programs.

Lastly, the DoD should continue to reduce the administrative burdens involved in the acquisition process. The DoD is encountering an environment in which nontraditional technology firms are reluctant to conduct business with it, partly because of such barriers as a cumbersome bidding process, unique cost-accounting reporting, and backlogs that create late payments and inconsistent guidance. These barriers add cost and time to the proposal process and can be especially problematic for smaller firms that do not solely rely on defense contracts for revenue. Cox et al. (2014) suggest that, to alleviate these issues, the DoD could streamline the bidding process by standardizing procedures and reducing required paperwork, creating a list of prequalified suppliers, accelerating payment transactions, and using alternative contracting vehicles (p. 24).

On the idea of using alternative contracting vehicles, OT contracts can alleviate administrative burdens by allowing the DoD to contract with firms outside of the standard Federal Acquisition Regulation process. Research on OT usage by Mayer et al. (2020) suggests that OTs allow government contracting officers more flexibility than acquisition through the Federal Acquisition Regulation system, including greater ability to communicate with offerors and greater freedom to tailor solicitations and agreements (pp. 64–65). However, Mayer et al. (2020, pp. 65–67) and Webb et al. (2014, p. 19) note that OTs can limit transparency and require greater efforts by the government to balance flexibility with an appropriate level of discipline. Under certain circumstances, OT agreements can be useful in reducing bureaucratic restrictions.

Improve Long-Term Planning to Sustain the Industrial Base

In addition to broadening the industrial base, the DoD should look to augment the long-term planning of acquisition programs to maintain the health of the defense industrial base. Schank et al. (2011), in a study for the U.S. Navy, found that, to maintain a technology and capability edge, planning is needed to integrate the respective design, production, and maintenance organizations in industry (p. 106). For example, in shipyards, it is important to involve builders, maintainers, operators, and the technical community in the design process of a program. The design engineers should collaborate with and incorporate feedback from these parties to ensure that the designed system can be produced and maintained in an efficient manner. This is often achieved through implementing a single integrated design and production contract with the prime contractor. For certain classes of weapon systems that are complex and high cost, such as aircraft or large ships, the infrequency of new acquisition programs endangers certain critical skills in the industrial base. For example, historically, there have been large time intervals between new aircraft carrier design programs, which put critical skills, such as design engineering, at risk of erosion. Some of these design engineering skills may be retained by employing some number of the low-workload engineers for a related program (e.g., for a new submarine) that shares some design features (e.g., pumps, instrumentation systems, power generation or distribution equipment) during these periods.



Another method of sustaining industry's technological capability during a fiscally constrained period is by maintaining several active design or prototyping programs. Birkler et al. (2003) show that a reduction in acquisition funding can cause gaps in innovative design efforts, particularly for niche technologies, and developing a long-term plan to mitigate this is vital (p. 89). In an environment of limited major development and production programs, an option could be to fund some design projects, such as through the Advanced Technology Demonstration program or the Advanced Concept Technology Demonstration (ACTD) program. Drezner and Leonard (2002, pp. 25–30) and Thirtle et al. (1997) observe that, during the fiscally constrained 1990s, the Predator and Global Hawk ACTD programs, respectively, enabled the continued development of key unmanned aerial vehicle development efforts. This is a way of channeling R&D investment so that specific technological capability is developed, retained, and ready to be used when production resumes.

Long-term acquisition program planning could also enable longer-term contracts with industry, which has multiple benefits under the right circumstances, according to RAND research by Birkler et al. (2000) for the Office of the Secretary of Defense. Because of uncertain future funding, the employment of annual contracts is not conducive to industry making significant investment in facility modernization and training. Long-term agreements ensure a steady flow of capital and encourage firms to revitalize infrastructure and human capital training, among other cost-reduction initiatives. Longer-term contracts are also helpful in alleviating the effect of unexpected price increases during market volatility, as noted earlier. Seong et al. (2009) conclude that, when structured properly, long-term contracts for titanium could provide stability to the DoD and industry amid unpredictability in global markets; this may be the case in other contexts as well (p. 102).

The challenge of maintaining a capable defense industrial base is likely to intensify. Efforts to broaden the industrial base to adapt commercial technologies for military use are necessary but may deflect attention away from the parts of the defense industrial base that do not contribute to commercial markets. One can look to the United Kingdom and Australia to see examples of the challenge of modernizing military capabilities absent a robust domestic industrial base (see, for example, Bassford et al., 2010, and Birkler et al., 2015). RAND research has helped these countries make difficult decisions about developing military ships and aircraft, but these options do not fully address the risks.

Properly Size, Train, and Incentivize the Acquisition Workforce

Since 1986, concerns over the size, mix, and quality of the acquisition workforce have driven numerous investigations and policy changes aimed at reshaping it. However, as many studies have shown, acquisition outcomes have not improved noticeably. To be sure, confounding factors unrelated to the acquisition workforce—for example, churn in broader acquisition policy and unstable acquisition program budgets—may challenge the establishment of a link between workforce characteristics and acquisition outcomes. Nevertheless, basic information needed to begin to assess the impact of acquisition workforce characteristics on acquisition outcomes is lacking. Establishing this link would support acquisition workforce planning because it would highlight current or expected gaps in the workforce and inform initiatives aimed at reshaping the acquisition workforce to address these gaps. Thus, drawing on RAND research, we argue in this section that the DoD should expend efforts to establish a link between acquisition workforce characteristics and acquisition outcomes (Gates et al., 2008; Gates, 2009). However, to improve acquisition outcomes, more effective acquisition workforce planning must be supported by better understanding of how workforce composition affects outcomes and must be complemented by incentives that are aligned with acquisition goals, as we discuss next.



Map Workforce Characteristics to Acquisition Activities and Their Outcomes

To identify the impact of workforce attributes on acquisition outcomes, improvements must be made to both acquisition workforce data collection and appropriate acquisition outcome metrics.

As noted by Gates et al. (2008), data on the acquisition workforce are lacking for a few reasons. First, the definition of the organic acquisition workforce (military and civilian) has varied over the years and across DoD organizations, thereby precluding reliable trend analyses from before 2008. The DoD should work to revise data collection policy guidance to improve consistency of workforce data over time and across organizations. Second, to address the common criticism that the acquisition workforce lacks the skills to accomplish its workload, the DoD should improve workforce metrics that capture the competencies necessary to do its work. Third, there is poor DoD-wide information on the number of support contractors in the acquisition workforce. Because support contractors constitute an important segment of the acquisition workforce, the DoD cannot hope to manage the acquisition workforce from a total workforce perspective if its insight into this segment of the workforce is severely limited (Gates et al., 2008). Thus, the DoD should collect the same kind of data on contractors that we recommend for the organic workforce.

As mentioned earlier, to enable acquisition workforce planning, workforce characteristics must be linked to appropriate acquisition outcome metrics (Gates et al., 2008). Accomplishing this goal would require managers to develop metrics appropriate to the program, organization, or activity in question that plausibly inform the quality of the work being done; that is, they should develop metrics based on the things that the workforce could influence and that would ultimately be expected to affect outcomes. For example, if managers agree that providing timely systems engineering to support investment decision-making is a critical process indicator, they could track whether such activities are occurring and possibly assess the quality of those activities.⁸

Information could then be linked with data on that program's workforce to assess the relationship between workforce characteristics and these outcomes. Similarly, the tenure of program managers has been highlighted as a plausible factor influencing outcomes. This workforce characteristic could be tracked at the program level and related to program outcomes to determine whether there is a relationship between tenure and outcomes.

Align Incentives With Desired Acquisition Outcomes

In some respects, the challenge of shaping acquisition workforce behavior so that it is aligned with acquisition goals is similar to the challenge of other segments of the DoD workforce—or even the broader government workforce. For example, the manner in which the acquisition workforce is compensated may not optimally encourage effective work from the workforce. Asch and Warner (1994) indicate that the active-duty compensation structure could be revised to induce the workforce to supply more effort through increased intergrade pay spreads and by tying part of compensation to performance. Presumably, similar lessons hold for the civilian and contractor segments of the acquisition workforce. Indeed, this hypothesis regarding the civilian General Schedule personnel system motivated the DoD Civilian Acquisition Workforce Personnel Demonstration Project (AcqDemo), which is an initiative beginning in 1999 to reengineer the civilian personnel systems with greater flexibility (e.g., tying a greater portion of pay to performance) to meet the needs of the acquisition workforce. Lewis

⁸ Additional RAND research on the implementation of performance-based accountability systems in various service industries identifies circumstance-specific considerations that must be made when implementing workforce incentive systems. See Stecher et al. (2010).



et al. (2016) indicate that, within AcqDemo, higher levels of contribution to the organizational mission were associated with higher salaries, more rapid salary growth, more promotions, and a greater likelihood of retention, but the perceived complexity of the project's evaluation system has been a long-standing concern (Werber et al., 2012). Guo et al. (2014), in another RAND assessment of the acquisition workforce, illustrate that people who were in the AcqDemo project, or any demonstration pay plan, were retained longer than those in the General Schedule.

We recommend that the DoD continue implementing and evaluating compensation schemes that provide greater flexibility in rewarding performance that aligns with desired acquisition outcomes. In that vein, Savych (2005) examines how different compensation models in the labor economics literature may be adapted to help create greater flexibility in managing personnel and inducing desired performance in the DoD (see also Klitgaard & Light, 2005, Chapter 11). As with our previous recommendation on workforce planning, the key to compensation schemes that employ performance incentives is defining metric-based dimensions (e.g., problem-solving, teamwork and cooperation, customer relations, leadership and supervision, communication, and resource management) that the workforce could influence and that would ultimately be expected to affect acquisition outcomes.⁹ Consistent with our earlier theme of tailoring, Asch (2005) suggests that the most effective pay incentives will likely be highly dependent on situational factors, such as occupation, organizational mission, and costs of monitoring.

In addition to revisiting personnel compensation, the DoD should also reconsider policies that may create incentives for program managers or other decision-makers that run counter to desired acquisition outcomes. For example, seeking efficiencies that generate savings for programs may not be encouraged if all of the savings are subsequently removed from the program's budget. In a similar vein, programs are incentivized to execute funds in accordance with generic benchmarks from the Office of the Secretary of Defense, even if it is premature for the program to do so, because under-execution of funds can be punished by cutting current or later program funding. As a result, incentives may exist to prematurely award contracts or to spend funds unnecessarily, and those incentives are contrary to desired acquisition outcomes. Program manager tenure is another area that may merit attention; tenures that are much shorter than the length of acquisition programs may incentivize short-term decision-making.¹⁰ Assuming that program manager tenure is a driver of acquisition outcomes, the DoD should consider resolving these conflicting incentives so that lengthy tenure in a program can be advantageous for promotion.

Track and Analyze Attributes of Acquisition

Finally, because most reforms require several years for their full effects to be realized, the DoD must be patient in letting acquisition reforms play out before implementing additional changes. Indeed, since its inception, the DoD's acquisition system has been subjected to a constant stream of reform initiatives, many of which harken to earlier efforts whose effects may not have been fully assessed. Thus, it is only through a patient, data-driven evaluation of reform initiatives that the DoD can tell what worked, what did not, and where the DoD should go to improve acquisition outcomes.

⁹ These performance dimensions were articulated as part of the AcqDemo project. See Werber et al. (2012, pp. 19–20).

¹⁰ Better data in support of acquisition workforce planning could shed light on the strength of the correlation between program manager tenure and acquisition outcomes.



Conclusion

The themes of recommendations that this body of research makes is remarkably consistent since 1986. Indeed, some themes and specific recommendations were present in Rich et al. (1986) as well. This begs a question: Why has the DoD continued to struggle with weapon system acquisition?

It might be possible that these recommendations are not effective or the DoD is incapable of implementing them. This might be true to some extent, but it is far more likely that the needs that the acquisition system is meant to serve and the imperatives that it operates under have changed over time. Weapon system acquisition must balance the tension between delivering maximum performance while minimizing cost overruns and schedule delays. This tension has shifted repeatedly over the decades. Performance, particularly for the burgeoning aerospace domain, was the preeminent concern in the 1950s (see, for example, Loftin, 1985). This gave way to the imperative of controlling costs in the 1960s (Enthoven & Smith, 2005). Reducing schedule delays was critical during the post-9/11 era to meet operational needs (Wong, 2016). Once those conflicts subsided, reducing cost overruns and increasing buying power became the priority.

Since this research was conducted in 2022, the imperative for fast, responsive acquisition has returned. This is driven by current Ukrainian operational needs as they consume considerable stocks of munitions and utilize new and untested emerging technologies on the battlefield (“Ukraine’s Tech Entrepreneurs,” 2023). Speed also motivates the DoD as it competes with China in the realm of shipbuilding, long range missiles, integrated command and control systems, and others. The recommendations highlighted in RAND research therefore represent sets of choices that that the DoD must make to respond to the operational and strategic needs at hand.

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DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL
555 DYER ROAD, INGERSOLL HALL
MONTEREY, CA 93943

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