

SYM-AM-23-050



EXCERPT FROM THE
PROCEEDINGS
OF THE
TWENTIETH ANNUAL
ACQUISITION RESEARCH SYMPOSIUM

**Acquisition Research:
Creating Synergy for Informed Change**

May 10–11, 2023

Published: April 30, 2023

Approved for public release; distribution is unlimited.

Prepared for the Naval Postgraduate School, Monterey, CA 93943.

Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the federal government.



ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

The research presented in this report was supported by the Acquisition Research Program at the Naval Postgraduate School.

To request defense acquisition research, to become a research sponsor, or to print additional copies of reports, please contact any of the staff listed on the Acquisition Research Program website (www.acquisitionresearch.net).



ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

Using Metrics to Understand the Performance of the Adaptive Acquisition Framework

Megan McKernan—is a Senior Defense Researcher at RAND. She specializes in DoD weapon systems acquisition along with data governance, management, sharing, and analytics. She also conducts defense acquisition-related analysis in many areas, including space and cyber rapid acquisition, software acquisition, requirements planning, and prototyping. Prior to working at RAND, McKernan was an Economic Analyst providing reports for policymakers, primarily at the National Security Council, Department of Treasury, and Department of State on global economic issues. She holds an MA in international trade and investment policy from The George Washington University and a BA in economics from William Smith College. [mckernan@rand.org]

Jeffrey A. Drezner—is a Senior Policy Researcher at RAND. He has over 35 years of professional experience conducting policy analysis on a wide range of issues, including planning and program management, analyses of cost and schedule outcomes in complex system development programs, aerospace industrial policy, and defense acquisition policy and reform. His research continues to emphasize mixed qualitative and quantitative approaches to analyze issues associated with technology development, organizational behavior, and program management. Drezner received his PhD in political science from Claremont Graduate University. [zner@rand.org]

Mark V. Arena—is a Senior Physical Scientist at the RAND Corporation. Since joining RAND in 1998, Arena has worked on a variety of research projects for the U.S. Navy, Air Force, OSD, USCG, the Australian DoD, and the UK MoD. Arena has focused on technology evaluations, cost and risk analysis, and industrial base simulations for acquisition programs. Arena graduated from Yale University with a BS degree in Chemistry. Subsequently, he pursued graduate studies at Stanford University in the Department of Chemistry. He was granted a PhD in physical chemistry. [arena@rand.org]

Jonathan P. 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]

Yuliya Shokh—is a Technical Analyst at the RAND Corporation with experience in all-source intelligence analysis, intelligence, surveillance and reconnaissance (ISR) operations, and project management. Following her military service, Shokh completed graduate work in diplomacy and military studies. Her current research at RAND focuses on intelligence and acquisition communities, the role of intelligence support in military and domestic operations, and Russia's military planning and its impact on regional security. [yshokh@rand.org]

Nancy Young Moore—is a Senior Management Scientist at the RAND Corporation, where she has led or co-led analyses of small business policy and implementing best commercial practices in purchasing, supply chain, supply chain risk, and change management in a government setting. She is a registered engineer with the state of California and holds an MS and a PhD in water resources systems engineering from the University of California, Los Angeles. [nancy@rand.org]

Sydne Newberry—has served as a Research Communications Analyst and as the Medical Editor for the Southern CA Evidence-Based Practice Center since joining RAND in 2000. As a CA, Newberry assists researchers with proposal preparation, designing dissemination plans, drafting and revising research reports, and creating spinoff products—including research highlights, briefings, and blogs—for various stakeholders. She was the recipient of an NIH postdoctoral training grant and conducted postdoctoral research at the Ohio State University and the Fels Research Institute/Wright State University School of Medicine in molecular biology and virology. She received her PhD in nutritional biochemistry from MIT. [sydnen@rand.org]

Judith D. Mele—is a Research Programmer at the RAND Corporation. [judym@rand.org]

Austin Lewis—is a former Research Assistant at RAND. [austinl@rand.org]



Abstract

The Adaptive Acquisition Framework (AAF) is intended to improve defense acquisition performance by designing pathways to accommodate the diversity of systems and services that the U.S. Department of Defense (DoD) acquires. As of 2022, the AAF consists of six pathways: Urgent Capability Acquisition, Middle Tier of Acquisition, Major Capability Acquisition, Software Acquisition, Defense Business Systems, and Acquisition of Services. For each pathway, the authors identify an initial set of metrics that the DoD can use to measure performance and assess whether the pathway is achieving its goals. The authors also identify challenges to identifying metrics, both within and across pathways.

Key Findings

- Adaptive Acquisition Framework metrics should be regularly reviewed and are expected to change in response to changes in strategic goals, leadership priorities, and the results of analysis.
- Regular and well-defined data governance and management procedures need to be in place for all pathways.
- A high level of subject-matter expertise is required to gather, process, and analyze data and interpret results.
- Pathway-specific data challenges are exacerbated by programs interconnected through multiple pathways.
- The output of this initial set of metrics should be used to refine policy and process and to improve pathway performance and outcomes.

Introduction

One of the more significant changes to the Defense Acquisition System since 2015 is the revision to the U.S. Department of Defense (DoD) 5000 acquisition policy that created a set of distinct acquisition pathways, known as the Adaptive Acquisition Framework (AAF). Congress initiated these changes by providing statutory relief to the DoD through the introduction of the Middle Tier of Acquisition and Software Acquisition pathways, which were instantiated in law. The DoD then completed the AAF by designing additional pathways to accommodate the diversity of systems and services that the DoD acquires. The AAF is intended to create a more tailored process that reflects that diversity. The underlying assumption is that improved, and more specific, tailoring of program management and execution will enable the DoD to acquire the capabilities it needs more effectively and efficiently. Currently, the AAF has six pathways, all of which are further tailorable to the characteristics of the program. The objective of this study was to assist the Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD[A&S]) with developing metrics to measure AAF performance and assess whether the pathways are achieving their goals.

The six pathways are shown in Figure 1. The pathways are defined in their respective policy documents as follows:

- Urgent Capability Acquisition (UCA): This policy establishes acquisition pathways for use in acquiring capabilities to fulfill urgent operational needs and quick reaction capabilities (DoD, 2019b).
- Middle Tier of Acquisition (MTA): This policy establishes procedures for rapid prototyping and rapid fielding of capabilities. It is intended to enable accelerated development and demonstration of capabilities (DoD, 2019a).
- Major Capability Acquisition (MCA): This policy establishes a pathway for Major Defense Acquisition Programs (MDAPs), other programs categorized as Acquisition Category (ACAT) I, major systems, usually categorized as ACAT II, and



Automated Information Systems (not managed by other acquisition pathways; DoD, 2021).

- Software Acquisition: This policy establishes an acquisition pathway for the development and procurement of custom software (DoD, 2020d).
- Defense Business Systems (DBS): This policy guides acquisition of business capabilities and their supporting business (information technology [IT]) systems across DoD components. It includes business system capability procured “as a service” (DoD, 2020c).
- Acquisition of Services (AoS): This pathway is for acquisition of services rather than products. Services can range from landscaping installations to IT support (DoD, 2020a).

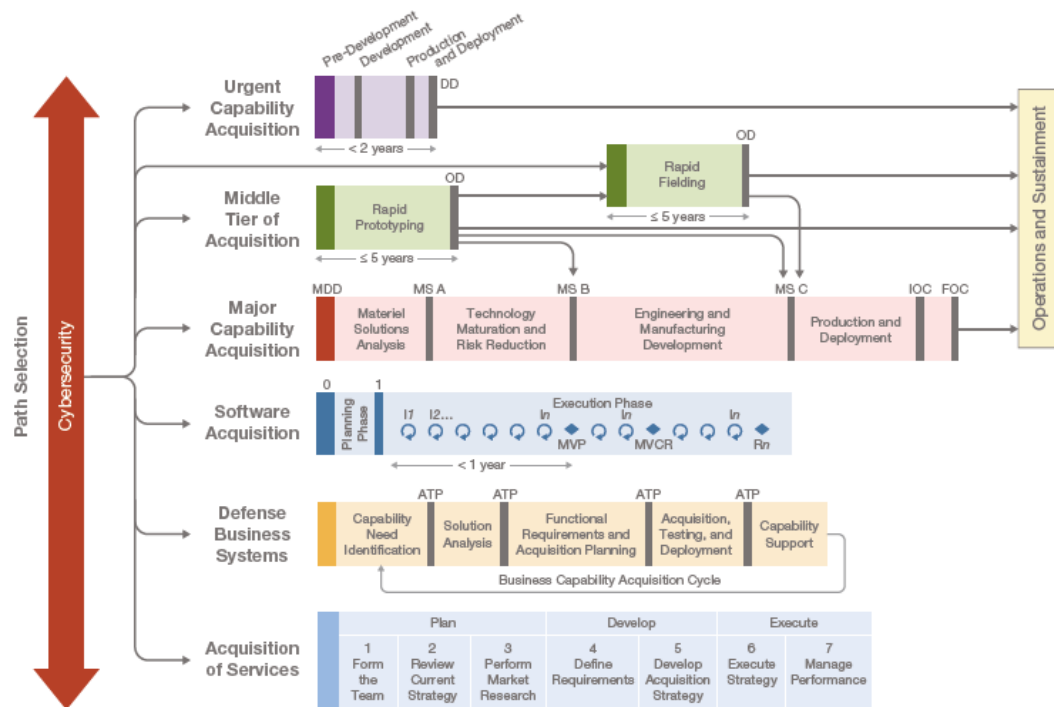


Figure 1. The Adaptive Acquisition Framework (DoD, 2020b, p. 10)

NOTES: DD = deposition decision; OD = outcome determination; MDD = material development decision; MS = milestone; IOC = initial operational capability; FOC = full operational capability; I = iteration; R = release; MVP = minimum viable product; MVCR = minimum viable capability release; ATP = authority to proceed.

These policies implement applicable statutes, assign responsibilities, provide guidance and direction, and establish management structures for each pathway. Congress also provided some statutory relief for MTA and Software Acquisition that helped make these pathways viable, including how requirements and reporting are handled.

The AAF has existed since 2020 and needs to be examined to assess its effectiveness.¹ The U.S. Government Accountability Office (GAO) agrees and requested

¹ We used 2020 as the approximate date for the release of the AAF because DoDI 5000.02 was effective as of January 23, 2020.



metrics to evaluate pathway performance (GAO, 2019). At the same time, DoD leadership is also interested in metrics and is pushing data to inform metrics (Deputy Secretary of Defense, 2022);² however, this means that effective data governance is required for each pathway and for the AAF as a whole. Metrics that provide insight into pathway performance and health are part of this governance (Deputy Secretary of Defense, 2021; OUSD[A&S], 2020a). Therefore, the DoD is promulgating policy to that effect and establishing standards (OUSD[A&S] Office of Acquisition Enablers, 2020; OUSD[A&S], 2020b).

Study Objectives and Approach

This research builds on prior RAND research from fiscal years (FYs) 2019–2021 that identified acquisition metrics to assess the health of the overall acquisition system. The objective of the prior analysis was to systematically identify strategic questions, metrics, and analytics within OUSD(A&S) offices that would assist the DoD in understanding how well it is meeting its short-term and longer-term strategic goals with respect to acquisition (Arena et al., 2021).

The prior research adapted a process, described by Savitz et al. (2017), that provides an overview of how to identify measures and metrics that can be used to inform decision-making, assessment, planning, and communication. Central to this metrics identification and evaluation approach is generating a logic model that describes the linkages among inputs, activities, outputs, outcomes, and strategic goals. The prior research tailored the traditional logic model approach to measure the health of the acquisition system.

The objective of the research reported here was to identify metrics for each AAF pathway that can provide insight into whether a given pathway is performing as intended. We derived a simplified logic model (Figure 2) from the more detailed logic model in the previous work by Arena et al. We then applied this logic model to individual pathways with an additional step that compares proposed metrics with current required data.

The logic model constructed for each AAF pathway provided the analytical framework to identify metrics for that pathway. The analysis was supported by a rigorous review of AAF policy, a broader literature review focused on metrics, and a series of stakeholder interviews on topics that included pathway-specific goals, current metrics, and data governance, management, and analytical issues.

The next section addresses AAF challenges, both common and unique. We then identify an initial set of metrics for measuring the health of each pathway. Additional information on each AAF pathway, including the current state of the policy and data environment, is contained in the appendixes in McKernan et al. (2022).

² For example, DoD senior leadership is also increasingly asking for information on the status of different mission-oriented portfolios of programs. This is in the Integrated Acquisition Portfolio Review and the Deputy's Management Action Group executive analytics efforts.



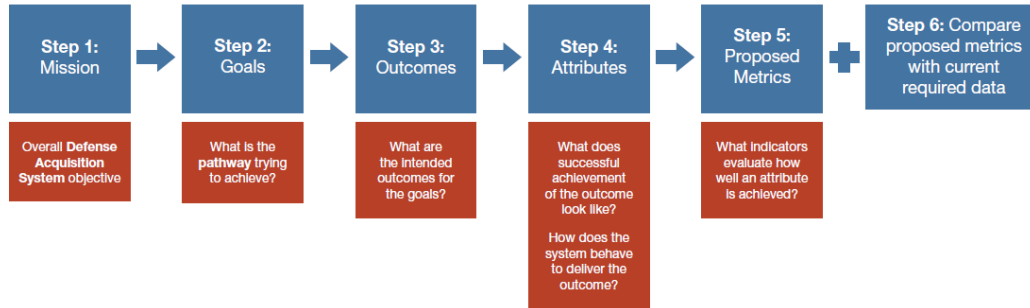


Figure 2. Simplified Logic Model Used to Identify AAF Metrics and Data Gaps (Savitz et al., 2017)

Challenges Identifying Metrics for AAF Pathways

Identifying metrics to measure the health or performance of each AAF pathway is associated with various challenges. Through our analysis of subject-matter expert interviews conducted during this study and drawing on prior work, we were able to identify challenges for implementing metrics for the AAF (Bartels et al., 2020). Although these challenges tend to fall into common categories of issues, the way or the degree to which they apply may be unique to each pathway.

Challenges common across AAF pathways include determining what programs are using a pathway and why, identifying the strategic goals related to pathway (not program) performance, defining metrics that provide insight into the extent to which those goals are being achieved, identifying authoritative sources of data, defining data standards that apply across the AAF pathways, and collecting and processing the data to support analysis. One challenge in particular exists across most of the pathways when conducting analyses of the AAF. The amount of and the specific data elements collected are intentionally different within and across the pathways, although that is not necessarily problematic. For example, the data are still governed for each pathway within the OUSD(A&S)'s Acquisition Visibility Data Framework (AVDF); however, the differences in data collected on smaller and larger programs may constrain the metrics that can be derived for each pathway and affect standardization.

The UCA, Software, and MTA pathways share a common challenge of trying to balance the schedule imperative of the pathway with information requirements for monitoring and oversight. Based on our review of the policies for each of these pathways, UCA, Software Acquisition, and MTA pathways are designed to facilitate acceleration of capability delivery, and they downplay reporting for purposes of monitoring and oversight of the pathway.

Within both the MTA and MCA pathways, there is less data availability for non-major MTA programs and lower ACAT-level programs than for major capabilities. This means that some metrics will reflect only larger programs, which poses a potential challenge when conducting analysis of these pathways. However, the OUSD(A&S) made the determination that less data are required for non-major MTA and lower ACAT-level programs than for major capabilities. Much of the data for major capabilities are driven by specific statutory guidance that may not be fully applicable for the non-major MTA and lower ACAT-level programs.

An AAF metrics framework also has pathway-unique challenges that need to be addressed. Figure 3 summarizes two key challenges for each pathway.



<p>Urgent Capability Acquisition</p> <ol style="list-style-type: none"> 1. No centralized data source exists for urgent needs due to disaggregated governance across Joint Staff/Components 2. Tension exists between schedule imperative and information requirements; decreases available data for analysis 	<p>Middle Tier of Acquisition</p> <ol style="list-style-type: none"> 1. There is less data available for analysis on non-major MTA programs than major MTA programs 2. Tension exists between schedule imperative and information requirements; decreases available data for analysis 	<p>Major Capability Acquisition</p> <ol style="list-style-type: none"> 1. There is less data available for analysis on ACAT II–IV programs than ACAT I programs 2. Programs integrating into MCA from other pathways creates data governance and management challenges
<p>Software Acquisition</p> <ol style="list-style-type: none"> 1. While different from typical hardware metrics, software performance still needs to be measured to ensure capability delivery at the predicted cost 2. Data collection is in the early stages; no automation exists yet between OSD and component-level information systems 	<p>Defense Business Systems</p> <ol style="list-style-type: none"> 1. Full list of DBS and associated data needs to be aggregated from information systems outside acquisition community 2. Some data is defined in the AVDF data standard, but is not readily available for most DBS programs 	<p>Acquisition of Services</p> <ol style="list-style-type: none"> 1. No entry documentation, so analysis relies solely on labor-intensive data collection to assess who is using pathway 2. Limited post-award performance information to assess requirements and PALT to assess timeliness

Figure 3. Key Pathway-Specific Challenges

For example, we found that in the UCA Pathway, DoD leadership does not require a significant amount of data on these efforts in order to allow staff to focus on building the capability as quickly as possible. While this meets the main priority of the pathway (quickly fielding a capability), a lack of data makes analysis difficult. In addition, existing data are difficult to acquire due to disaggregated governance across the Joint Staff and the components. The Office of the Secretary of Defense (OSD) is responsible for joint urgent capabilities only. The components have additional urgent capability processes, but the existing data are mostly decentralized in the components and are almost entirely classified. The OSD has little formal leverage with component-level UCA Pathway owners to unify and standardize data collection.

We identified multiple MTA Pathway–unique challenges. First, a majority of MTA programs are lower-dollar value programs with a minimal set of information that is collected. The data may need to be supplemented on an ad hoc basis from component-level program offices. Secondly, the pathway contains a mix of programs (prototypes and items for rapid fielding/major or non-major), which means not every capability can be treated the same way in this pathway from a data perspective. Finally, there is tension between the schedule imperative and information requirements (i.e., leadership does not want to levy unnecessary information requirements on MTA programs that will lengthen schedule).

For the MCA Pathway, less data are available on ACAT II–IV programs than ACAT I programs at the OSD level. The components are not required to share all their smaller program data with the OSD. The OSD and the components are still working through what smaller program data need to be shared for the Department’s pivot to capability portfolio analysis in the Integrated Acquisition Portfolio Review, which requires data from acquisition programs of all levels. Additionally, available ACAT II–IV data may differ among the components. For instance, the Navy and the Air Force use different software and collect slightly different sets of data elements for their smaller programs, though both are derived from the long history of MDAP reporting (Drezner et al., 2019).

Significant challenges also exist in transitions between the MCA Pathway and other pathways. DoDI 5000.02 recommends that program managers “may leverage a combination of acquisition pathways to provide value not otherwise available through use of a single



pathway” (DoD, 2020b). These transitions need to be planned early with prototypes and software, and synchronization is needed for requirements, budgets, schedules, contracting, testing, intellectual property, and sustainment, between pathways and potentially programs that will merge into other programs.

It is also not clear whether there is or should be an agreement on the strategic questions and goals of the MCA Pathway between the OSD and the components. Because strategic questions and goals drive which metrics are of interest, and therefore what data are collected, differences between the OSD and components could lead to somewhat different sets of metrics. While that is not necessarily a problem—metrics should be consistent with senior leader preferences and interests, and they will change over time in response to both internal and external factors—this inconsistency could lead to confusion among outside organizations like the GAO or Congress.

Use of the Software Acquisition Pathway is still ramping up (14 programs are in planning and 21 are in the execution phase), so data collection is in the early stages. Also, programs have only recently started sending data to the OSD, which means no full set of information exists yet for analysis.³ As experience is gained with reporting, both metrics and analysis can be refined. Additionally, software acquisition metrics are different from typical cost, schedule, and performance metrics (e.g., software supports continuing evolution across the lifecycle of the system and does not have discrete “acquisition” and “sustainment” phases; deliveries are continuous; and no Acquisition Program Baseline [APB] exists). These differences also mean that there is likely going to be a learning curve for the DoD acquisition workforce for understanding what these metrics mean and how they are measured. For example, the time it takes to recover from a cyber attack is a measure of software resilience. While no defined schedule endpoint may exist, the frequency with which new capabilities are added is a relevant schedule metric of interest to users.

For the DBS Pathway, the full list of DBSs and their associated data need to be aggregated from information systems outside of the acquisition community; those systems were not designed to capture the kind of information needed to assess program or pathway health. Additionally, while some data are defined in the AVDF⁴ common data standard (i.e., program number, program name, required funding—total acquisition-related operation and maintenance quantity), many AVDF data elements are not readily available for most DBS programs.⁵

The AoS Pathway does not have entry documentation (i.e., a formal declaration that a program or effort is going to use the pathway, which may consist of an Acquisition Decision Memorandum), so analysis relies solely on labor-intensive data collection to assess what programs are using the pathway. There is also limited post-award performance information to assess requirements and Procurement Administrative Lead Time (PALT) to assess timeliness (except for major contracts). Other features unique to the AoS Pathway include the unit of analysis being a contract or contract action, not necessarily a program, and tremendous variation in the size of programs. In addition, no formal program office may

³ As of March 2022, there was only one biannual data collection.

⁴ According to the Office of the Assistant Secretary of Defense for Acquisition, Office of Acquisition Data and Analytics/Enterprise Information (n.d.), “The AVDF provides the Acquisition community an authoritative, governed set of data elements, definitions, rules, and other metadata for the Adaptive Acquisition Framework (AAF). The AVDF establishes a common enterprise data standard for DoD that will enable the six AAF pathways through data.”

⁵ According to the FY22Q1 Acquisition Visibility Data Framework, 85 data elements are available for DBS out of 624 total.



exist, especially for smaller activities; program management and contract monitoring are often “other duty as assigned,” rather than a full-time position.

Finally, integration of programs into the Major Capability Pathway from other pathways creates data governance and management challenges such as understanding the applicable set of approved/governed data elements when combining the information from the different pathways and adjusting to the new pathway data reporting requirements.

Primary Set of AAF Pathway Metrics

Our focus is on identifying metrics to assess the performance of each AAF pathway—whether the pathway is achieving its intended outcomes and strategic goals. It is useful to think of the set of programs using a given pathway as a portfolio and the metrics of interest as those that provide insight into the status of the portfolio. Some potential metrics inherently measure status at the portfolio level. Other metrics are program-centric but can be aggregated to provide a measure of portfolio performance. For example, the cost growth of programs using a given pathway can be aggregated to produce an average portfolio cost growth value.

Figure 4 lists the five initial metrics recommended for each pathway. These metrics link back to the strategic goals of each pathway, as is best practice in identifying metrics. Among each of the five metrics per pathway, some measure more critical aspects of an individual pathway’s health than others, but all will help provide DoD leadership and the GAO with better insight into the health of the AAF as a whole. Traditional cost, schedule, and performance metrics are included in this initial set of recommended metrics but are tailored to the way these metrics make sense for each pathway. We also include two additional unique metrics per pathway that provide more direct measures of pathway health. We have selected metrics for which data are available or data gaps can be readily resolved. More information on these metrics can be found in the corresponding appendix for each pathway in McKernan et al. (2022).



Pathway	Metrics	Pathway	Metrics
Urgent Capability Acquisition	<ol style="list-style-type: none"> 1. Program cost estimate (total) 2. Time elapsed from requirement validation date to solution sponsor assignment 3. Total number of capabilities terminated, sustained, or transitioned at disposition decision 4. Time elapsed from requirement validation date to capability delivery or revalidation of requirement 5. Total number of joint urgent operational needs/joint emergent operational needs/Warfighter Senior Integration Group special interest items 	Software Acquisition	<ol style="list-style-type: none"> 1. Program cost estimate (total) 2. Average lead time 3. Change fail rate 4. Average mean time to resolve experienced cyber incident or common vulnerability or exposure (CVE) 5. Average deployment frequency
Middle Tier of Acquisition	<ol style="list-style-type: none"> 1. Average percentage cost growth (quantity adjusted, if applicable) 2. Difference between MTA start date and expected operational demonstration date 3. Beginning Technology Readiness Level 5 or greater 4. Percentage change in initial and current budget (year-over-year) 5. Number of rapid prototypes fielded, transitioned, or terminated 	Defense Business Systems	<ol style="list-style-type: none"> 1. Average percentage cost growth 2. Limited deployment authority to proceed date slippage (initial operational capability slippage equivalent)—percent delta of planned versus actual schedule 3. Percentage established performance parameters met for each release before development or delivery 4. Compliance with cyber policy is being monitored/tracked 5. Fraction of contracts competitively awarded
Major Capability Acquisition	<ol style="list-style-type: none"> 1. Average percentage cost growth (quantity adjusted, if applicable) 2. Average schedule slippage between planned and actual initial operational capability (or equivalent) 3. Average percentage of objective/threshold key performance parameters (KPPs) met (or equivalent) 4. Fraction of programs failing initial testing 5. Fraction of programs either entirely from or partly from other pathways 	Acquisition of Services	<ol style="list-style-type: none"> 1. Average percentage cost growth 2. Average schedule slippage between need date and service requirement received 3. Percentage of warfighter objectives met (or equivalent) 4. Average procurement acquisition lead time 5. Number of effective bid protests (per the GAO definition)

Figure 4. Primary Set of Pathway-Specific Metrics

The selected metrics are not intended to be comprehensive in providing insight to pathway performance. Rather, we found that it is important to start performance measurement in a way that is feasible—data are or could be made available—in order to demonstrate the utility of the metrics in terms of providing insight into pathway health and building confidence among stakeholder organizations. As confidence and experience in performance measurement are gained, the specific set of metrics for each pathway can and should be modified to address other aspects of pathway health. While different subject-matter experts might select a different set of metrics to initiate a performance measurement system, the most important thing is to begin, and to learn and improve data collection and analysis to support improved policy design and pathway outcomes.

We recommend that the DoD pilot this system of metrics. A pilot will help to better understand and address the challenges that we identified, generate lessons learned to modify or improve data governance and management for pathway metrics, and, of course, provide insight into the health and performance of each AAF pathway.

Conclusions and Observations

As is good practice in enterprise-level metrics, we chose a limited set of metrics per pathway to start (PricewaterhouseCoopers LLC, 2007). Five were chosen for each AAF pathway from a list of over 75 possible metrics per pathway identified in each logic model. There is no right or wrong answer for the exact number, but it is counterproductive for an organization to start by implementing a large number of metrics. The chosen metrics also need to show some consistency across pathways for comparison (if appropriate) in order to understand the entire framework. Importantly, the goals (and derived metrics) should align



with leadership interests and policy preferences. It is also useful to focus on one or more specific attributes of pathway health as they relate to strategic goals using available data and collection tools. This is a manageable set of metrics to gain initial pathway health insights with the understanding that, given the DoD's complexities, implementation will require an iterative process (i.e., the metrics chosen will change over time as the DoD's goals and leadership change).

The DoD acquisition community should also consider several additional observations regarding implementation:

- Strategic goals are critical—they define the use cases for each pathway and therefore associated metrics and data needs.
- A high level of subject-matter expertise is required to gather and process the necessary data, conduct the analysis, and interpret results. This finding cannot be understated. Facts, assumptions, and limitations of the source data must be clearly and deeply understood—and explicitly documented, approved, and promulgated—to allow for accurate “processing” (consistent calculations, data curation, etc.) and subsequent analysis. Each pathway collects unique data and therefore has its own challenges and nuances that need to be understood when collecting and preparing the data for analysis. Interpretation of the results is likewise difficult and nuanced, given that the data may have outliers at the lower levels that are driving the metrics.
- The recommended metrics should be regularly reviewed for relevance and should be expected to change in response to changes in strategic goals, leadership priorities, and the results of analysis. This may be a challenge in that it requires discussions leading to agreement on metrics and the data needed. This first set of metrics focuses on those that will provide near-term insights with data that do not appear to have significant gaps. Additional metrics can be identified through changes in leadership's focus and the Department's strategic vision, along with data governance, management, and analysis as each pathway matures.
- Regular and well-defined data governance and management procedures should be established and maintained for all pathways. Within the OUSD(A&S), the Office of Acquisition Enablers has been working with the pathway owner and the data owners in the components to establish the governance and data standards. While this is a voluntary system of data reporting, the offices responsible for acquisition data in the OUSD(A&S) and the components have worked together for years to maintain and update standards for acquisition data to the benefit of all. In addition, senior leadership has recognized data as an enterprise resource that should be transparent and shared (Deputy Secretary of Defense, 2021; OUSD[A&S], 2020).
- Pathway-specific data challenges are exacerbated by programs interconnected through multiple pathways. Some programs will use multiple pathways for different elements of the system; if those pathways handle data differently, then values for the “merged” program may be misleading. This problem occurs at the juncture of program and portfolio (pathway) perspectives and is a significant analytic challenge that should be addressed.
- The output of this initial set of metrics should be used to inform decisions to refine policy and process and improve pathway performance and outcomes.

It is also important to acknowledge that the data needed for pathway performance metrics are not the only data needed for the operation of the Defense Acquisition System.



References

- Arena, M. V., McKernan, M., Thompson, J., & Newberry, S. J. (2021). [Unpublished RAND Corporation research].
- Bartels, E. M., Drezner, J. A., & Predd, J. B. (2020). *Building a broader evidence base for defense acquisition policymaking* (Report No. RR-A202-1). RAND.
https://www.rand.org/pubs/research_reports/RR-A202-1.html
- Behn, R. D. (2003). Why measure performance? Different purposes require different measures. *Public Administration Review*, 63(5).
- Deputy Secretary of Defense. (2021, May 5). *Creating data advantage* [Memorandum].
- Deputy Secretary of Defense. (2022, February 2). *Principles and standards for analysis supporting strategic decisions* [Memorandum].
- DoD. (2019a, December 30). *Operation of the middle tier of acquisition (MTA)* (DoD Instruction 5000.80).
- DoD. (2019b, December 31). *Urgent capability acquisition* (DoD Instruction 5000.81).
- DoD. (2020a, January 10). *Defense acquisition of services* (DoD Instruction 5000.74).
- DoD. (2020b, January 23). *Operation of the adaptive acquisition framework* (DoD Instruction 5000.02).
- DoD. (2020c, January 24). *Business systems requirements and acquisition* (DoD Instruction 5000.75).
- DoD. (2020d, October 2). *Operation of the software acquisition pathway* (DoD Instruction 5000.87).
- DoD. (2021, November 4). *Major capability acquisition* (DoD Instruction 5000.85).
- Drezner, J. A., McKernan, M., Lewis, A., Munson, K., Hill, D., Hastings, J., McGovern, G., Posard, M., & Sollinger, J. M. (2019). *Issues with access to acquisition data and information in the Department of Defense: Identification and characterization of data for acquisition category (ACAT) II–IV, pre-MDAPs, and defense business systems* [Not available to the general public]. RAND.
- GAO. (2019, June). *DoD acquisition reform leadership attention needed to effectively implement changes to acquisition oversight* (GAO-19-439).
- McKernan, M., Drezner, J. A., Arena, M. V., Wong, J. P., Shokh, Y., Lewis, A., Young Moore, N., Mele, J. D., & Newberry, S. J. (2022). *Using metrics to understand the performance of the adaptive acquisition framework* (Report No. RR-A1349-1). RAND.
https://www.rand.org/pubs/research_reports/RR-A1349-1.html
- Office of the Assistant Secretary of Defense for Acquisition, Office of Acquisition Data and Analytics/Enterprise Information. (n.d.). *Homepage*.
<https://www.acq.osd.mil/asda/ae/ada/enterprise-information.html>
- Office of the Under Secretary of Defense for Acquisition and Sustainment. (2020a, June 15). *Data transparency to enable acquisition pathways*.
- Office of the Under Secretary of Defense for Acquisition and Sustainment. (2020b, October 13). *Promulgation of the acquisition visibility data framework as the common data framework for acquisition and sustainment* [Memorandum].
- Office of the Under Secretary of Defense for Acquisition and Sustainment, Office of Acquisition Enablers. (2020, December). *Acquisition and sustainment data and analysis strategic implementation plan*.
- Performance-Based Management Special Interest Group. (2001, September). *The performance-based management handbook, volume 2: Establishing an integrated performance measurement system*.
- Pinker, A., Smith, C. G., & Booher, J. W. (1997). Selecting effective acquisition process metrics. *Acquisition Review Quarterly*, Spring.
- PricewaterhouseCoopers LLC. (2007). *Guide to key performance indicators: Communicating the measures that matter*. https://www.pwc.com/gx/en/audit-services/corporate-reporting/assets/pdfs/uk_kpi_guide.pdf
- Savitz, S., Matthews, M., & Weiland, S. (2017). *Assessing impact to inform decisions: A toolkit on measures for policymakers* (Report No. TL-263-OSD). RAND.
<https://www.rand.org/pubs/tools/TL263.html>





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

WWW.ACQUISITIONRESEARCH.NET