Developing Army Capabilities via Tailored Acquisition Processes: Meeting the Capability Needs of the U.S. Army Warfighter

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Abstract

Historically, the traditional acquisition process has taken too many years to design, develop, assess performance, deliver and produce warfighter capabilities. Alternative acquisition processes are implemented to deliver capabilities to the warfighter quicker. This research explores tailored acquisition methods and reviews how tailoring the acquisition approach supports accelerated delivery of urgent and emerging warfighters' capabilities.

The Department of Defense Instruction (DoDI) 5000.02, Operation of the Adaptive Acquisition Framework (AAF), identifies a 2 year and 5 year accelerated acquisition pathway. These pathways guide the Department of Defense (DoD) in developing an accelerated acquisition strategy to deliver capability in a relevant timeline. The Army, in response to the AAF, provides guidance for tailoring the acquisition of operational capabilities, to include urgent operational requirements, in the Army Regulation (AR) 71-9. A Directed Requirement (DR) is one acquisition approach implemented by the Army that enables design, integration, and accelerated delivery of urgent capabilities. In 2018, the Maneuver Short Range Air Defense (MSHORAD) Product Office executed a DR to meet an urgent Army air and missile defense operational need. The Product Manager implemented a tailored acquisition strategy to meet the requirements identified in the DR.

Overall, the efforts were successful, however, this research provides recommendations for modifications and potential future research. Two programs, Mine Resistant Ambush Protected (MRAP) and Initial Maneuver Short Range Air Defense (IM-SHORAD), are highlighted to provide examples of the Army's accelerated delivery of warfighters' capabilities via tailored acquisition approaches. This research will examine whether tailoring the acquisition approach facilitates accelerating the delivery timeline of warfighters' capabilities.

Chapter 1 - Introduction

"The Army Futures Command will deliver reliable and decisive capability to the hands of Soldiers faster." - LTG Jim Richardson, Deputy CG, AFC (Massachusetts National Guard, 2019)

Background

The need for a non-traditional acquisition process is not a new concept. In fact, Coleman, Lopez , and Luntz (2015), reports that for many years, a more streamlined acquisition process has been implemented when the military really needed capability more quickly (Coleman, Lopez, & Luntz, 2015). Combat Commanders and warfighters in theater continuously identify capability gaps required to save lives and establish overmatch, a stronger position, against the adversary. To support warfighter's capability gaps, the DoD sometimes bypass the traditional acquisition process to provide capabilities in response to warfighter needs (Conley, 2016). For this research, capabilities are the abilities, (e.g. weapon systems) warfighters require to fight the war. An example of bypassing the traditional acquisition process is the joint, Army and Navy, developed Mine-Resistance Ambush Protected (MRAP) program. The MRAP provided the warfighter improved protection against underbody mines and improvised explosive devices, rocket-propelled grenades, and small arm fires (Buckley & Davis, 2013).

In 2003, DoD initiated several rapid or accelerated approaches to meet urgent operational needs (Van Atta, 2016). To support the streamlined approach to meeting Combatant Commanders urgent needs, in 2016, the U.S. Army established the Rapid Capabilities Office (RCO) with the task of expediting critical capabilities to meet Combatant Capabilities' needs (McKernan, Drezner, & Sollinger, 2015). The term used to address the urgent needs streamlined acquisition process is 'rapid acquisition'. Rapid acquisition is defined as the procurement of critical military capabilities in support of current operations, where those capabilities cannot be

provided through standard 'traditional' acquisition processes (Arellano, Pringle, & Sowell, 2015). The Army Regulation (AR) 71-9 - *Warfighting Capabilities Determination* provides the guidance and processes for rapid acquisition in response to urgent needs (U.S. Army, 2019).

In accordance with the AR 71-9, warfighters' urgent operational requirements for warfighting capabilities are documented, submitted and executed via an Operational Need Statement (ONS). The execution of the ONS is completed via the streamlined ONS process (U.S. Army, 2019). In addition to the streamlined ONS process, the Headquarters Department of the Army (HQDA) implements a DR to accelerate responses to an urgent need statement initiated by the user as opposed to an ONS. The DR resolves urgent needs that, if unaddressed, could result in serious danger to personnel or the continued success of the effort (Coleman et al., 2015). In 2018 a DR was issued by the Vice Chief of Staff of the Army to deliver capability in response of an urgent need identified by a Combatant Commander. The DR was a tailored requirement in that it provided 'must do' and 'desired to do' criteria for the materiel solution to meet an air and missile defense capability gap in the maneuver forces (U.S. Army, 2018). The AFC AMD CFT management of this tailored approach demonstrated how streamlining the requirements process can provide capability with the speed of relevance.

Statement of Purpose

Historically, the traditional acquisition process has taken many years to design, develop, assess performance, deliver and produce warfighter capabilities. Alternative processes are implemented to deliver capabilities to the warfighter at the speed of relevance. This is especially true when Combatant Commanders have identified an urgent need to fill a capability gap (Coleman et al., 2015). The purpose of this research is to explore how tailoring the acquisition process supports accelerating delivery of weapon system capabilities to the U.S. Army air and

missile defense warfighter. The research will assess tailored acquisition processes and how they compare to traditional acquisition processes in response to warfighters needs.

Research Questions

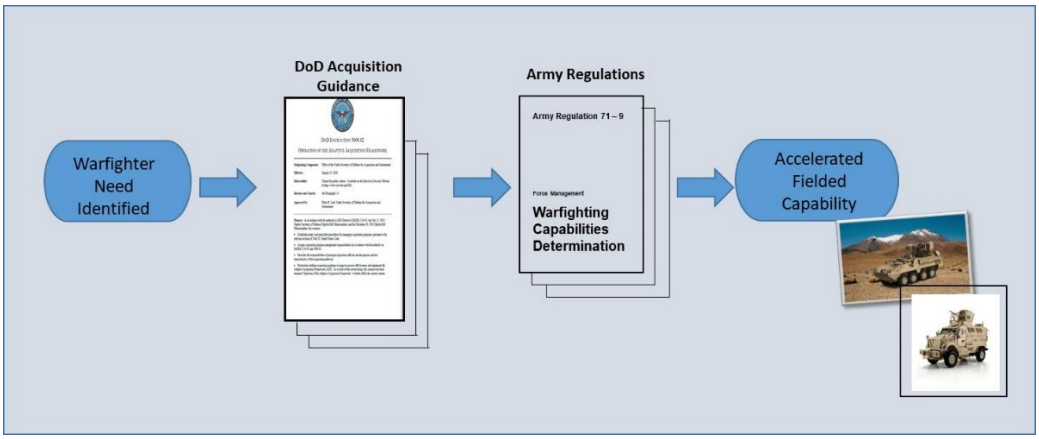
Following are the research questions that will be addressed in this paper.

1. What is a tailored acquisition?
2. How do tailored acquisition processes support accelerated delivery of warfighters' capabilities?

Conceptual Framework

Delivery of capabilities to address warfighters' needs must be addressed in a relevant timeframe. The acquisition approach for meeting the warfighter need is determined based on DoD policy and Army regulations. The DoDI 5000.02, Operation of the Adaptive Acquisition Framework (AAF) has identified a 2 year and 5 year accelerated acquisition path to field solutions quicker to the warfighter (Department of Defense, 2020). The Army's response for streamlining its process to provide capabilities in an accelerated timeframe is identified in AR 71-9. The model in Figure 1 identifies the conceptual framework for this research. The conceptual model depicts how the DoD policy on acquisition flows to the Army regulations. The Army's tailoring processes, via ONS or DR approaches, streamlines the development of the materiel solution against the warfighter's identified gap. This streamlined approach supports accelerating the fielding of the developed capability.

Figure 1 – Conceptual Model



Significance of This Research

The traditional Army acquisition process to deliver capabilities to the warfighter takes many years. The process requires development of regulatory and statutory documentation, conduct of the acquisition reviews, and extensive testing prior to production and fielding of the materiel solution. This process typically takes years before the capability has been developed, fully tested, produced and delivered to the warfighter. Advances in the adversary's technology, battlefield tactics, and weaponry has left the U.S. military facing new threats and scenarios that resulted in a need for faster alternatives to the traditional acquisition process (Arellano, Pringle, & Sowell, 2015).

This research will provide insight into the tailored requirements process supporting the acceleration of capabilities development to fill the warfighter needs. It will educate the reader on applicable policy and approaches to support tailoring requirements to meet relevant delivery timelines.

The Defense Acquisition University (DAU) glossary provides multiple definitions for streamlining. One definition is that streamlining is simply a curtailed approach of the acquisition process (DAU, 2009). The glossary provides the following as the definition of tailoring:

> The manner in which certain core issues (program definition, program structure, program design, program assessments, and periodic reporting) are addressed in a particular program. Tailoring may be applied to various aspects of the acquisition process, including program documentation, acquisition phases, the time and scope of decision reviews, supportability analysis, and decision levels consistent with all applicable statutory requirements (DAU, 2009, p. B 180).

For the purpose of this research, the term tailored and streamlining will be used interchangeably.

Overview of the Research Methodology

The intent of this research is to provide information on tailoring the requirements and processes for assessing those requirements in meeting the Army's streamlined guidance identified in AR 71-9. The conceptual model identified in Figure 1 provides the qualitative approach for this research. The research is a compilation of information gathered from existing literature on DoD policy and Army Regulations. Published reports and journal articles that addresses tailored acquisition and tailored requirements processes to meet warfighter's needs were also reviewed. The objective of reviewing the literature is to provide insight into tailoring requirements to meet the warfighter needs, assessment of the materiel solution, and fielding of the end-product. The research will look at tailoring requirements processes, to include use of DR and waiving of traditional statutory and regulatory requirements to accelerate the delivery of products to fill warfighter capability requirements.

The Army Regulation (AR) 71-9 defines capability requirement as:

> A capability required to meet an organization's roles, functions, and missions in current or future operations. To the greatest extent possible, capability requirements are described in relation to tasks, conditions, and standards in accordance with the universal Joint task list or equivalent DoD component task list. If a capability requirement is not satisfied by a capability solution, then there is also an associated capability gap. A requirement is considered to be 'draft' or 'proposed' until validated by the appropriate authority (U.S. Army, 2019, p. 70).

The Commanding General, Army Futures Command is given the authority to approve DRs to fill Army warfighters' capability gaps (U.S. Army, 2019).

Limitations of the Study

This research is limited to qualitative information from public released information in academia, on-line libraries, reports, and government documentation. The selected qualitative approach and timeline, including review and approval cycle, also constrained the content of the research. Lastly, unintended bias, due to the author's past experiences and over 15 years of working weapon systems requirements, should be considered when reviewing this research.

Summary

Army warfighting units face challenges in theater that require immediate responses to meet capability gaps. The traditional acquisition process takes many years to field capabilities to the warfighter. For urgent capabilities required to save lives or provide overmatch of the adversary, the time line can be tailored. The Army uses the Operational Need Statement process to expedite the development and delivery of capabilities in response of the identified urgent need. Tailoring the requirements development process, DR being one method, to develop the identified capability solution assists in the assessment and quicker fielding of the solution.

Chapter 2 – Literature Review

Introduction

Creswell and Guetterman (2019) defines a literature review as "a written summary of articles, books, and other documents that describes the past and current state of information on the topic of your research study" (Creswell & Guetterman, 2019, p. 624). This literature review was conducted to identify approaches to guide the Army's Materiel Developer on tailored acquisition processes. The tailored processes supports accelerated delivery of capabilities to Army warfighters. The literature review for this research explored DoD acquisition policies and Army acquisition regulations. Peer reviewed reports and archived articles on tailored acquisition processes were also reviewed. The literature supports the need for the speed of relevance required to design, develop, assess, and deliver capabilities to the warfighter. Following are brief summaries of the documentation reviewed that supports this research.

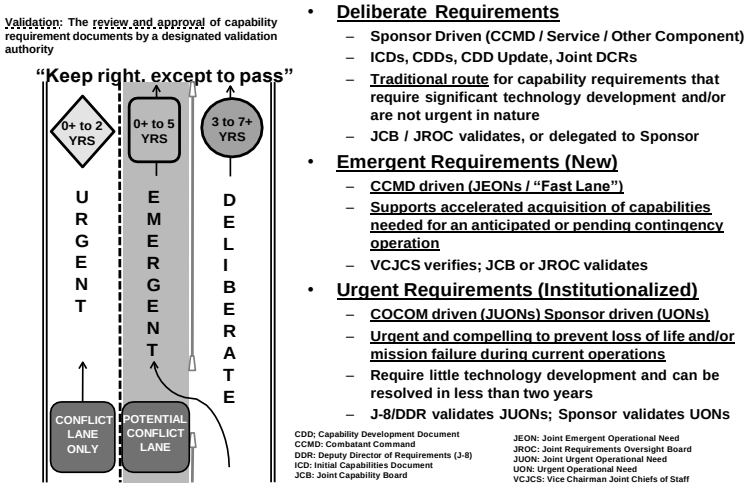
The Department of Defense publishes policies which provide guidance to the U.S. Armed Services that identify and regulate DoD responses to laws. In response, the U. S. Army publishes regulations that govern the Army's implementation of the guidance handed down via the DoD policies. The policies and regulations not only address traditional acquisition processes but also provide alternative paths for accelerating capability to the warfighter, through tailored acquisition processes. The following are specific DoD Instructions and Army Regulations that contains guidance to govern tailoring of requirements that were used to support this research.

Acquisition Approaches

The research revealed that the there are three timelines for acquisition of warfighter's capabilities. The 2020 'How the Army Runs Handbook' identifies these timelines for fielding

capability as urgent, emergent, and deliberate (U.S. Army, 2020). Figure 2 shows the three joint processes and provides a summary of each timeline.

Figure 2 – Joint Acquisition Process



What is key in Figure 2 is that the distinct differences amongst the three joint processes are identified. The deliberate requirements process is synonymous with the traditional acquisition approach now identified in the Adaptive Acquisition Framework as the Major Capabilities Acquisition (MCA). In chapter one of this research paper, tailoring/streamlining is described as the effort that programs can use to decrease the acquisition timeline (DAU, 2009). Tailoring/streamlining approaches are used for the urgent and emergent acquisition timelines identified in Figure 2. This literature review uses the terms traditional and deliberate synonymously. Likewise, tailoring/streamlining will be used to identify the urgent or emergent acquisition timelines.

The Department of Defense acquisition policy and assigned responsibilities are addressed in the DoD Directive 5000.01(DoDD 5000.01) - *Defense Acquisition System* (DAS) (Department of Defense, 2020). The DAS, which is applicable to Military Departments, supports the National Defense Strategy, regardless of the year developed, in acquiring warfighter's capabilities in a

timely manner. Six policies are identified in the DAS to achieve relevant delivery. The DoDD 5000.01 (2020) identifies these six policies as:

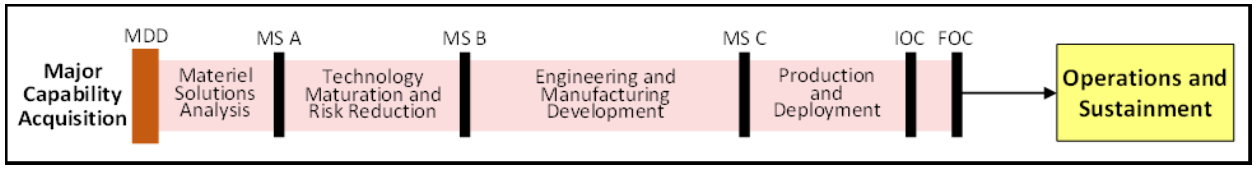
1. "Empower program managers (PMs)
2. Simplify acquisition policy
3. Employ tailored acquisition approaches
4. Conduct data driven analysis
5. Actively manage risk, and
6. Product support and sustainment" (Department of Defense, 2020, p. 4)

Given that the traditional acquisition process takes many years, an adaptive acquisition framework, as identified in the DoDI 5000.02 (Department of Defense, 2020), enables expediting relevant delivery of warfighter's capabilities, when needed. Focusing on delivering warfighter's capabilities at the speed of relevance, a comparison of the traditional, urgent needs, and rapid fielding timelines should be understood.

Major Capability Acquisition Pathway

Research revealed that the traditional timeline, shown in Figure 3, for major capability acquisition, takes years to complete (Department of Defense, 2020). The traditional acquisition approach is applicable for developing future threat capabilities or replacing fielded systems with obsolescence issues (Van Atta, 2016). It begins with a capability gap analysis and follows a precise, phased approach through milestone decisions resulting in a fielded system in the operations and sustainment phase.

Figure 3 – Major Capability Acquisition Pathway



In the traditional acquisition process, the validation of the requirement alone can take up to two years (Williams, Drezner, McKernan, Shontz, & Sollinger, 2014). There are regulatory and statutory requirements associated with each phase of the traditional acquisition. The regulatory and statutory documentation requirements are identified in the Adaptive Acquisition Framework Document Identification Tool (AAFDID). Documentation must be developed to provide evidence that the statutory and regulatory requirements have been met before proceeding to the next acquisition phase. After development of the statutory and regulatory documentation, documents are reviewed for compliance and to gain approval from the Milestone Decision Authority (MDA). Upon MDA approval, the program advances to the next phase (Acquisition Process Overview, 2021).

Tailored Acquisition

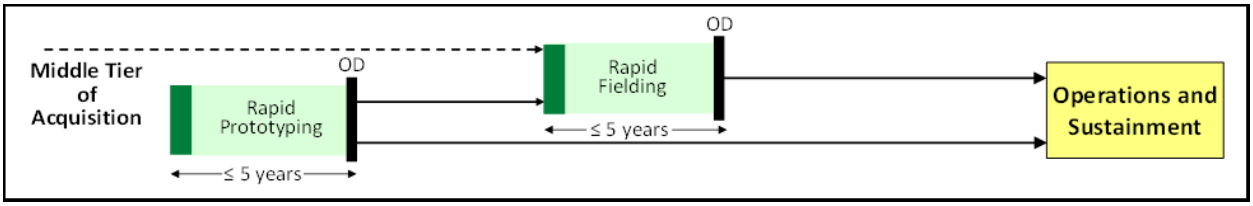
The Adaptive Acquisition Framework (AAF) offers six pathways for acquiring warfighter capability (Department of Defense, 2020). After assessing the six pathways, there are two pathways that enable accelerated delivery of warfighter's weapon systems. The other four pathways focus on acquiring major capability, acquiring software, defense business systems, and services.

The urgent capability acquisition pathway, Figure 4, provides an acquisition path for fielding capability in less than two years. This path is implemented in response to urgent existing emerging operational, or quick reaction warfighters' needs. The middle tier acquisition pathway (MTA), Figure 5, allows for rapid prototyping of new capabilities or rapid production quantities requiring minimal development. The MTA pathway supports rapid development of new capabilities or rapid production of systems that has proven capability and require little

development. The rapid prototyping and the rapid production fielding of capabilities is a less than five year approach (Department of Defense, 2020).

Figure 4 – Urgent Capability Acquisition Pathway

Figure 5 – Middle Tier Acquisition Pathway



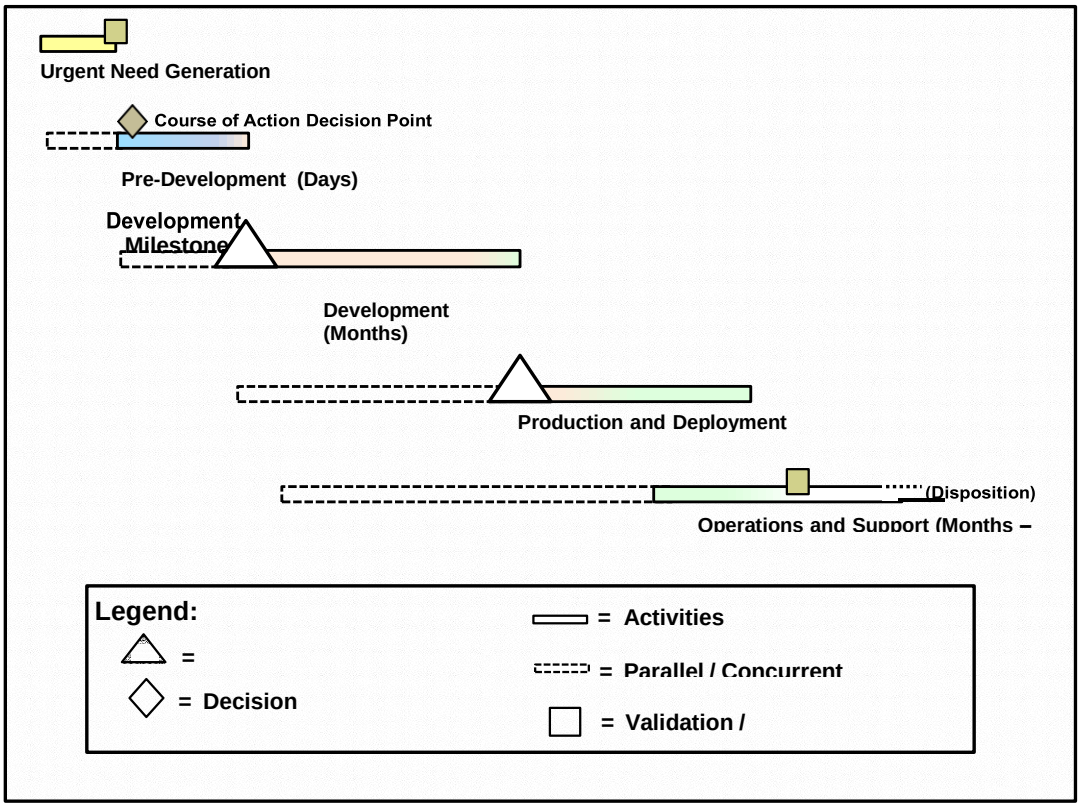
The urgent capability pathway is the most accelerated pathway of all three acquisition approaches in that it delivers capability to the warfighter in two years or less.

Just as with the traditional acquisition process, statutory and regulatory documentation is required for these alternative acquisition pathways. The AAF Document Identification Tool (AAFDID), replaced the Milestone Document Identification Tool (MDID) used in the traditional acquisition process for governing regulatory and statutory requirements (Adaptive Acquisition Framework Document Identification Tool (AAFDID) Background, n.d.). The AAFDID supports tailoring/streamlining by providing the materiel developer flexibility in what documentation will be used to inform leadership on the status of their program. The materiel developer recommends to the MDA, for approval, the regulatory information that will be applied to the program. The

statutory requirements are also reviewed to determine applicability to the program. However, statutory requirements are only waived if the statute allows.

In the, *The Department of Defense Rapid Acquisition of Urgent Needs*, Enclosure 13, provides the policy and procedures for acquisition programs that provide capabilities to fulfill urgent needs that can be fielded in less than 2 years and which are below the cost thresholds of Acquisition Category (ACAT) I and IA programs. Paragraph 3 of Enclosure 13 addresses how the acquisition process is tailored to expedite urgent needs. The pre-development and development milestone paths in Figure 6 are where the tailoring of requirements occurs (Department of Defense, 2019).

Figure 6 – Rapid Acquisition of Urgent Needs



The Army Regulation (AR) 71-9 guides Army commands and agencies on determining required warfighting capabilities, to include policy, procedures, and responsibilities. Chapter 7 of the AR71-9 focuses on the urgent operational needs processes. It specifically identifies the organizations and processes for expediting materiel solutions in response to capability requirements. The materiel solutions include experimental prototypes as well as other quick reaction capabilities.

In the Institute for Defense Analyses (IDA), *Assessment of Accelerated Acquisition of Defense Programs*, IDA conducted research that focused on the acquisition timeline to deliver warfighter capabilities. The research looked across DoD approaches, starting in 2003, for rapid acquisition of capabilities to fulfill urgent operational needs. The authors' researched over 300 acquisition efforts and narrowed down to a top 11 to include in the case study. In their research they suggested that there are 'five main categories of accelerated acquisition defined by requirements urgency, requirements specificity, and technology availability'. These five categories are:

1. "Time-constrained acquisition
2. Crash program
3. Rapid acquisition
4. Early fielding experiments
5. Spiral/evolutionary acquisition" (Van Atta, 2016, p. iii)

Included in the IDA down select of acquisition programs was the Mine-Resistant Ambush-Protected Vehicle (MRAP) program. The MRAP program was successful; and it took 33 months, after the initial urgent need was identified, to deliver the capability. The report does address how concurrent testing assisted with quickly fielding the MRAP (Van Atta, 2016) .

The *Analysis of Rapid Acquisition Processes to Fulfill Future Urgent Needs* report is a review of implemented policies and regulations that led to the success of rapid acquisition during the Iraq and Afghanistan missions. It defines rapid acquisition as "the procurement of critical military capabilities in support of current operations, where those capabilities cannot be provided through standard acquisition" (Arellano, Pringle, & Sowell, 2015, p. 2). The research also references the streamlined approach of tailoring and waiving regulatory requirements and a condensed Test and Evaluation Master Plan (TEMP) found in the DoDI 5000.71 - Rapid Fulfillment of Combatant Commander Urgent Operational Need (Arellano, Pringle, & Sowell, 2015).

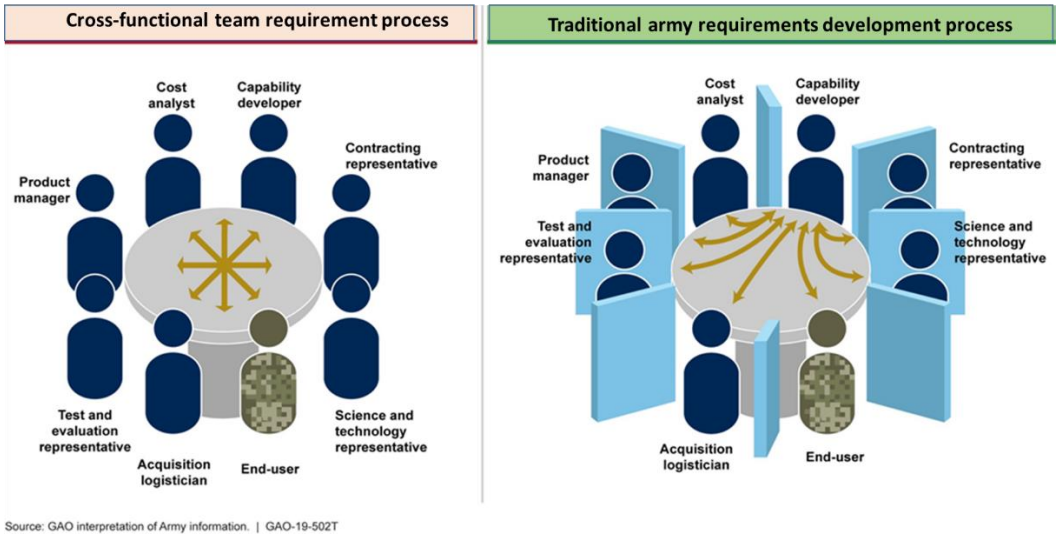
In his book, *Getting Defense Acquisition Right*, the Honorable Frank Kendall shares his experiences from the many roles he's served in defense acquisition. The book includes a compilation of Honorable Kendall's published articles from Defense AT&L Magazine. In Chapter 5: Responding to External Forces and Events, Honorable Kendall references the MRAP program as an urgent need acquisition. He also alluded to the fact that some rapid capability has been disastrous, however, the MRAP is one case where rapid acquisition was successful. There are references to trade-offs and risks of rapid acquisition, one risk being the reduction in quality (Kendall, 2017).

Tailored Requirement Approaches

The Government Accountability Office (GAO) report on *Steps Needed to Ensure Army Futures Command Fully Applies Leading Practices* provided an assessment on the Army's approach to addressing acquisition change (Government Accountability Office (GAO), 2019) . The report highlights the Army Futures Command's (AFC) approach to prioritizing efforts to align their focus with the National Defense Strategy. Also highlighted in the GAO report is the AFC

Cross Functional Teams (CFT) process for tailoring the requirements process and how it differs from the traditional requirements process. Figure 7 illustrates the CFT tailored requirements development process with the traditional Army requirement development process (Government Accountability Office (GAO), 2019) .

Figure 7 – Comparison of Army Requirements Development Process



What is illustrated in Figure 7 is that the traditional requirements process is a serial requirements development approach in which each participant provides input separately. The CFT requirements approach depicts how participants collaborate to develop the requirements.

In the report, *A Dissection of Multi Domain Operations: Assessing the Army's Future Force,* Myers (2020) assesses the Army's transformation to the multi-domain operations (MDO) in response to the challenges of the current near-peer threats. Included in the transformation is the establishment of the Army Futures Command (AFC). The AFC was given the authority over the Army's modernization concepts and established eight Cross Functional Teams (CFT) to provide oversight of the modernization priorities. In delivering the warfighter capabilities, the CFT not only will rely on industry but also on academia in their efforts to "identify opportunities and

improve the efficiency of requirements development" (Myers, 2020, p. 3) in acquiring the capabilities. The Acting Secretary of the Army, Ryan McCarthy, is also referenced as stating that 'the Cross Functional Teams will enable the delivery of leader-approved capabilities to the operating force'. The research addresses challenges of each modernization priority, to include air and missile defense, as well as the budget required to support the CTFs' efforts. The report also references a January 2019 Government Accountability Office (GAO) that addresses the CFT's role in Army modernization (Myers, 2020).

The researchers in the *Analysis of Army Rapid Acquisition* report gathered information to address "Do the current regulations and policies facilitate our ability to conduct rapid acquisition in a repeatable and manageable way" (Coleman et al., 2015, p. 2). The report speaks to how over the years traditional acquisition processes have been streamlined to meet the urgent needs of the warfighter. The Army Regulation 71-9 is referenced as the regulation that outlines the Operational Needs Statement (ONS) in response to warfighter's urgent needs. The report also describes the use of the directed requirement process as the process executed to provide capabilities in response to urgent needs that "if unaddressed, could result in serious danger to personnel or the continued success of the effort" (Coleman et al., 2015, p. 6). Two programs, The Joint Direct Attack Munition (JDAM) and the Mine-Resistant Ambush-Protected Vehicle (MRAP) are identified as efforts that implemented a rapid acquisition process to fulfill urgent needs. One of the lessons learned from their research on the MRAP program is that 'simple' requirements allows for 'speed and agility' for delivering warfighter's capability. The research identified streamlining approaches, to include not developing and executing a traditional TEMP, in order to meet the time line for delivering the materiel solution (Coleman et al., 2015).

In a RAND Project AIR FORCE (PAF) report on '*Strategies for Acquisition Agility*' the report identifies different aspects of acquisition that impacts agility, or the ability to tailor processes. The report is an assessment of decades of acquisition agility approaches, to include those used by Department of Defense rapid-acquisition organizations. Based on the assessment results a tool, in the form of a spreadsheet, was developed to assist program managers with acquisition acceleration approaches. The tool is a list of domains (e.g. budget, staff, and requirements priorities) that program managers can select to assist in determining an acquisition acceleration approach. The report recognizes that acquisition agility not only depends on the budget and technology but agility also depends on the requirements. The requirements domain addresses the flexibility, urgency, and risk associated with requirements to assist with acquisition strategies. The report offers that requirements flexibility is a 'common way to enable acceleration' (Anton, et al., 2020, p. xv) of fielding capabilities. It also speaks to the impact that the evolving threat has on accelerating schedule to deliver capability (Anton, et al., 2020).

The *United States Army's Balance of Capabilities to Meet the Warfighters' Needs* report addresses the competition and need for balancing resources between Army's urgent needs and the rest of the Army's efforts. In Cleve's research, the author looks at that impact of a directed requirement (DR) on program of record efforts. The report identifies that a DR is:

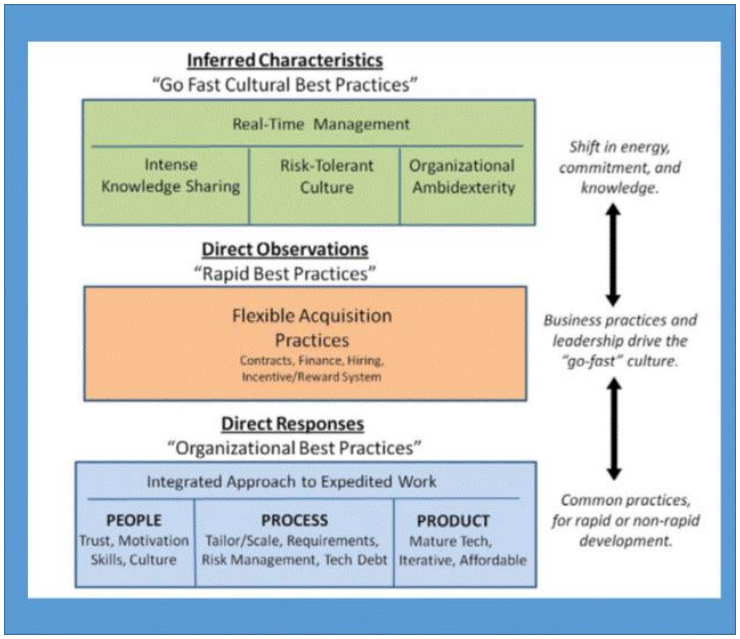
> Prepared by the Director, DAMO CI for approval by the VCSA if an operational assessment of a JUON or ONS, or the results of a JCTD or ATD indicate that a "specific limited but necessary need" exists and has application within the Army (Cleve, 2018, p. 51).

The report also references the Capabilities Development for Rapid Transition (CDRT) process and specify that the CDRT does not follow all the Defense Acquisition Framework processes and

actions. The CDRT process assists with accelerating delivery of warfighter capabilities by delaying delivery of documentation, specifically test documents, in contrast to the Defense Acquisition Framework process. One of the key findings in the research is that directed requirements (DR) are 'limited'. Due to the DR being 'limited, there is no long-term sustainment planning for the system developed via a DR. (Cleve, 2018).

The purpose of the *Expedited Systems Engineering (SE) for Rapid Capability and Urgent Needs* research was to focus on activities, specifically in systems engineering that positively impacted the rapid acquisition. The research provided insight on tailoring, and possibly removal, of systems engineering tasks to expedite rapid acquisition. The focus was on organizations with experience in responding to Joint Urgent Operational Need Statements (JUONS) of which the Prototype Integration Facility (PIF) at the Combat Capabilities Development Command (CCDC) Aviation and Missile Center (AvMC) (formally known as U.S. Army Aviation and Missile Research, Development Engineering Center (AMRDEC)) was included. The data Lepore and Columbi collected provided information on the organizations' processes that made them successful in their efforts. One area from the organizations' responses included processes for task reductions. Most important was that reduction of tasks required leadership support and the right team to make it happen (Lepore & Columbi, 2012). Lepore and Columbi (2012) also identified 3 keys to tailoring the SE process. The 3 keys are cultural best practices, rapid best practices, and organizational best practices. The research resulted in the development of the expedited SE framework. The expedited SE framework, Figure 8, is a result of observations, interviews, and literature reviews. The rapid best practices key is a result of observations and highlights flexible acquisition practices, including required documentation, as part of the expedited SE framework.

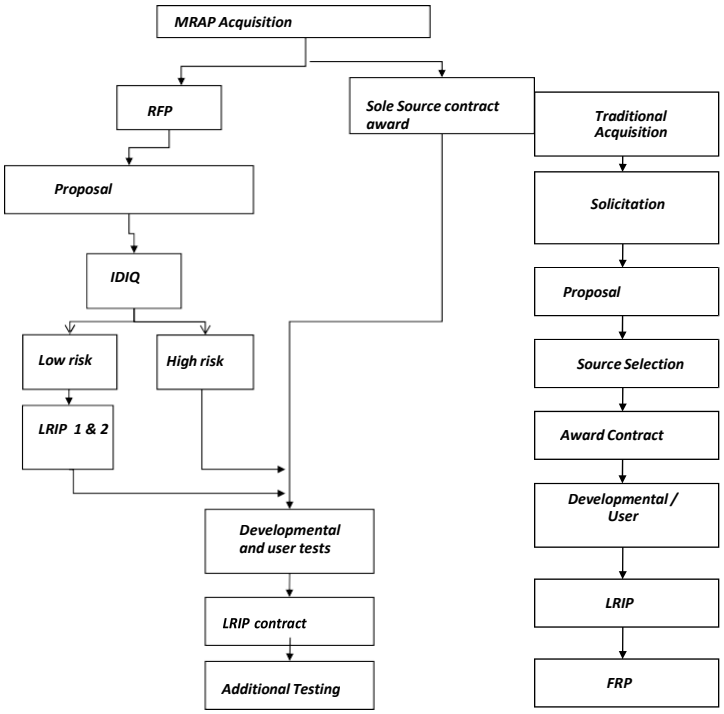
Figure 8 – Expedited SE Framework



The Study of the Mine Resistant Ambush Protected (MRAP) Vehicle Program as a Model for Rapid Defense Acquisition details the process undertaken for the delivery of the MRAP in response to an urgent operational need. The study outlines the Army Warfighter Rapid Acquisition Process (WRAP) and identifies the Bradley Stinger Fighting Vehicle – Enhanced (BSFV-E) aka 'Bradley Linebacker', as the initial program to deliver capability under the WRAP. Most interesting is that the MRAP, developed via tailored processes, did not waive documentation and processes required for traditional acquisition of materiel solutions. In Figure 9, the MRAP tailored approach is shown in relation to how programs traditionally acquire products (Blakeman, Gibbs, & Jeyasingam, 2008). Initially, the MRAP program awarded a Sole Source contract to an existing production line to expedite production. In parallel, the MRAP program requested proposals from industry, similar to the traditional acquisition approach. Risks were assigned to industry's responses, and contracts awarded to low risks companies while given the higher risks companies time to prove that they could meet specific requirements. The MRAP program did not waive the

documentation required for the traditional acquisition approach. As a result of not waiving documentation and processes, the MRAP tailored acquisition approach mirrored, in some ways, a traditional acquisition process.

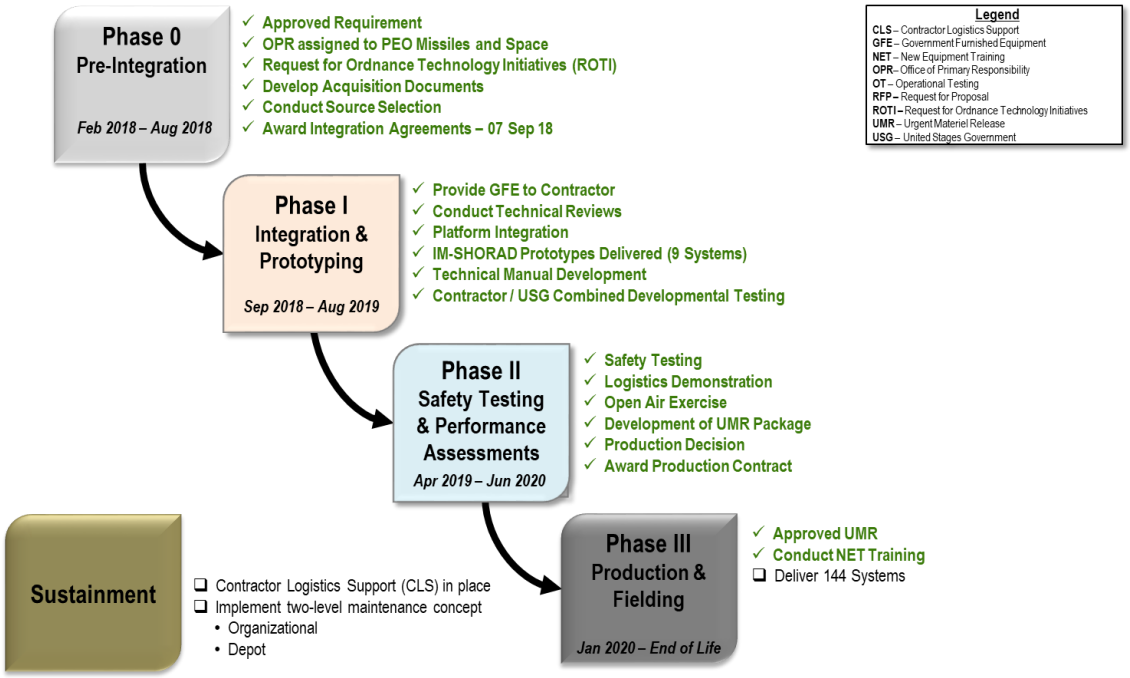
Figure 9 – MRAP Tailored Acquisition



The Directed Requirement to Initiate Integration and Procurement of an Initial Maneuver – Short Range Air Defense Capability on a STRYKER memorandum addresses the purpose for the urgent need as well as provide the specific criteria to meet a capability gap. The memorandum enclosures provide the details for the capabilities as well as the testing requirements to produce the data for analysis that supports the fielding of the materiel developer's solution. Paragraphs 5 (a) and 5 (b) defines the 'Must Do' and 'Desire to Do' criteria for the capability gap. The 'Must Do' and 'Desire to Do' criteria established the tailored requirements as well as the quantity and time line in which the materiel developer product must be delivered. (U.S. Army, 2018).

The Maneuver-Short Range Air Defense briefing identifies the accelerated acquisition strategy for the IM-SHORAD. The IM-SHORAD implemented a phased tailored acquisition strategy as depicted in Figure 10. The phases are analogous to milestones in the traditional acquisition process. Each phase identified timelines and specific tasks for monitoring progress. The accelerated acquisition strategy also identified the path for integrating, testing, and assessing initial prototypes capabilities prior to awarding a production contract. (MSHORAD Product Office, 2018)

Figure 10 – IM-SHORAD Accelerated Acquisition Strategy

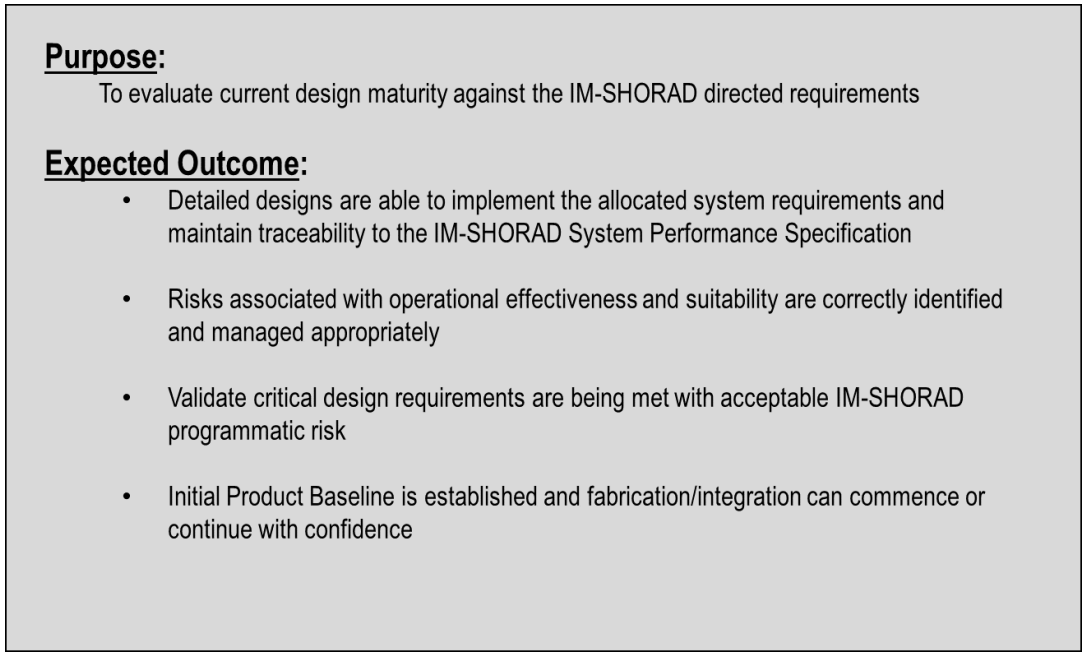


Prior to the development of the IM-SHORAD acquisition strategy, the MSHORAD Product Office conducted a demonstration at White Sands Missile Range in New Mexico. During the demonstration, industry was provided the opportunity to show their current M-SHORAD capability against live targets. The Army Test and Evaluation Command (ATEC) provided an

independent Operational Assessment (OA) based on data collected during the demonstration. (MSHORAD Product Office, 2017)

The IM-SHORAD Integrated Design Maturation Review (IDMR) briefing provided information on how the traditional Systems Engineering (SE) technical reviews were combined into one meeting. The IDMR was conducted in December of 2019, three months after contract award and was the only technical review meeting conducted. The MSHORAD Product Office established expected outcomes for the IDMR. The purpose and four expected IDMR outcomes are identified in Figure 11. Mutually, government and vendor, entrance and exit criteria framed the IDMR discussion (MSHORAD Product Office, 2019).

Figure 11 – IM-SHORAD IDMR Purpose and Expected Outcome



Summary

The literature review identified DoD policies and Army regulations that are available to guide the Army's Material Developer in tailoring the acquisition approach. Reports and articles

were also reviewed and analyzed to explore the effectiveness of tailored acquisition approaches.

Chapter 3 discusses two research methodologies and identifies the method chosen for this research.

Chapter 3 – Research Methodology

"Research is something that everyone can do, and everyone ought to do. It is simply collecting information and thinking systematically about it." - Raewyn Connell (Lib Quotes, n.d.)

Introduction

The purpose of this research is to explore how tailoring the acquisition process supports accelerating delivery of weapon system capabilities to the U.S. Army air and missile defense warfighter. The details below describe the method utilized for this research. Providing capability to the warfighter in a relevant time has become more important due to innovative technology and the adversary's evolving threats. This research offers an approach to achieving a quicker delivery of the capability.

Research Process

Creswell (2019) identifies two major tracks, qualitative and quantitative, for writing and designing educational research. The problem and associated questions of the research determine which track researchers select. The quantitative track is applicable for research that looks at numeric data. The numeric data is used to describe trends or compare variables in the data to answer the research questions. The qualitative track is applicable for research that uses text data. The text data is used to describe themes and is analyzed to answer the research questions (Creswell & Guetterman, 2019).

The researcher conducted a qualitative review of published information on DoD and Army acquisition processes. The researcher reviewed the Department of the Defense guidance on streamlining the acquisition process. Afterwards, the researcher explored Army documents to identify the Army's methods for complying with the DoD streamlining acquisition guidance. To

determine how tailoring the requirements process supports the Army's guidance, a review of several tailored requirements processes and how they have been implemented were explored.

The findings will provide a comparison of the traditional acquisition timeline against the streamlined acquisition timeline. Beyond the timeline comparison, the findings will provide insight into implementation of the Army's streamlined requirements processes. Finally, the researcher provides the responses to the two research questions.

1. What is a tailored acquisition?
2. How do tailored acquisition processes support accelerated delivery of warfighters' capabilities?

Summary

This research is a qualitative review of the DoD acquisition processes, Army regulations, and examples of implementation of tailored acquisition processes. The documents and processes were explored to define tailored acquisition and gather information on how tailoring the acquisition process supports accelerating delivery of warfighters' capabilities. Unintended bias, resulting from the researcher's years of systems engineering experiences, should be considered when reviewing this research. Chapter 4 will present the findings of this research and Chapter 5 will provide conclusions and recommendations.

Chapter 4 – Findings

"After all, the ultimate goal of all research is not objectivity, but truth." - Helene Deutsch (Dictionary - Quotes, 2008)

Introduction

This chapter will provide the findings gathered in the DoD and Army Policies, articles, and reports reviewed. The literature review provided clear definitions for tailored acquisition, tailored requirements, and provided examples of successful programs using tailored processes. Tailoring, according to the DAU glossary, describes how core program issues, to include program structure and design, are addressed to minimize the acquisition timeline to meet an identified warfighter need. Similarly, the DAU glossary describes streamlining as how acquisition processes are shortened. Both definitions align with the tailoring/streamlining acquisition guidance outlined in DoD and Army policies and instructions for accelerating the acquisition process.

The DoD and Army policies reviewed also identified policies for implementing accelerated acquisition of U.S. Army air missile defense weapon systems. The AAF provides multiple pathways, outside of the traditional acquisition approach, for tailoring the acquisition process to accelerate delivering capabilities to the warfighter. The urgent capability acquisition pathway is implemented in response to urgent or quick reactions needs. Using the urgent capability pathway, capability is delivered to the warfighter within two years. The Middle Tier Acquisition pathway is for rapid prototyping of new capabilities or rapid production quantities requiring minimal development. The middle tier acquisition pathway is a phased approach in which prototypes with initial capability is delivered within five years. The AAF guidance allows for blending the acquisition pathways to achieve relevant delivery of warfighters' capabilities. The findings below will delve into the details of the policies and identify how these policies have been implemented.

Statement of Purpose

The purpose of this research is to explore how tailoring the requirements process supports accelerating delivery of weapon system capabilities to the U.S. Army air and missile defense warfighter. The research assesses tailored requirements processes and how they compare to traditional processes for designing, developing, assessing, and fielding capabilities in response to warfighters needs.

Accelerating Delivery of Capabilities

The research revealed how implementation of tailored/streamlined acquisition approaches enabled relevant delivery of warfighter's capability. The materiel developer has the option to tailor/streamline numerous aspects of the AAF accelerated acquisition approaches to deliver a warfighter's capability. Also the application of aspects from multiple AAF pathways may be combined for the acquisition approach (Department of Defense, 2020). To achieve the decreased acquisition timeline, tailoring/streamlining is applied in any phase of the acquisition process.

The Army Modernization Strategy (2019) addresses the Army's transformation to remain the dominant land power while meeting the future responsibilities for defending the United States (U.S. Army, 2019). The strategy identifies six priorities to address near peer competition (U.S. Army, 2019). The six priorities are:

1. "Long-Range Precision Fires
2. Next Generation Combat Vehicle
3. Future Vertical Lift
4. Army Network
5. Air and Missile Defense, and
6. Soldier Lethality" (U.S. Army, 2019)

Near- and far-term goals have been established across the six priorities. The near-term goals are focused on meeting urgent needs. The far-term goals are focused on maintaining superiority via new developments and technologies (Government Accountability Office, n.d.).

The air and missile defense modernization priority focuses on providing capabilities against modern and advanced air and missile threats (Myers, 2020). The GAO report on army modernization recognized the establishment of the cross functional teams (CFT) under the AFC. The CFTs are responsible for requirements development and promoting collaboration. The CFT's established a requirements development process, depicted in Figure 7, which differs from the traditional requirements development process. The most noticeable difference is that the CFT's requirements process is collaborative. Through implementation of the CFT's collaborative process the requirements are developed and refined amongst all the stakeholders. Including the warfighter in the requirements development phase provides clarity on the capability gap.

The CFTs are also tasked with accelerating the requirements process via prototyping, demonstrations, and use of industry and academia expertise (Government Accountability Office, n.d.). Development of prototypes allows for rapid fielding of residual capability to meet the capability gap identified by the warfighter (Department of Defense, 2020). Demonstrations facilitate proving out different or new technology prior to fielding (Defense Science Board, 2009). Both Myers and the GAO report that the CFT requirements approach facilitates a more efficient approach to delivering warfighters' capabilities (Government Accountability Office, n.d.; Myers, 2020). The efficient requirement processes supports accelerated delivery of capabilities to the warfighter.

Systems Engineering (SE) plays a vital role in the requirements process. Tailoring SE management activities, to the point of removing SE tasks (i.e. performance specs, SE plans, technical reviews), assists organizations in accelerating responses to JUONS. The Army's Prototype Integration Facility (PIF) tailors SE to meet JUONS needs. The PIF provides support to the Army's aviation, missile, and the DoD JUONS efforts. The PIF develops, fabricates, integrates, and test/qualify tactical prototypes for ground support systems, subsystems, and components. Tailoring SE tasks assists in providing an impact on delivering a capability in a relevant time to the warfighter. Checklists are available to govern SE acquisition activities. Many factors contribute to identifying which of the checklist SE activities to tailor. Tradeoffs for tailoring SE activities are based on many factors. The requirements, system architecture complexity, cost, and delivery timeline are just a few factors that are considered in the tradeoff analysis. Opportunities for incremental enhancements are also considered in the tradeoff analysis. The bottom line is that there is no standard solution to tailoring SE activities. Each effort is analyzed to determine what SE activities can be traded to support accelerating the delivery of the capability to the warfighter.

Examples of Accelerated Acquisition Strategies

In 2018, the Maneuver Short Range Air Defense (MSHORAD) Product Office (PO) implemented a DR approach to acquire an initial capability in response to an operational urgent need. The specifics of the DR enabled the MSHORAD PO to integrate and deliver the capability for testing and fielding within the AAF urgent capability acquisition pathway timeline. The DR identified not only the requirements but also the quantity and delivery date for the prototypes that provided initial capability to the warfighter.

Gathering data prior to developing requirements for the materiel developer supports accelerating the acquisition process. Prior to the development of the IM-SHORAD DR a demonstration was conducted at White Sands Missile Range (WSMR) in September of 2017. The September 2017 demonstration served three purposes. First, it informed the Army of current industry IM-SHORAD capabilities. Secondly, it informed the Army of which acquisition approach and strategy to pursue. Finally, it informed the details for the requirements outlined in the DR. Data analysis of the demonstration results supported tailoring the requirements and determining the appropriate acquisition strategy.

Traditionally, a Capability Development Document (CDD) provides the requirements for the end-item that is developed to meet warfighters' gaps. In lieu of a CDD, the IM-SHORAD was developed via a HQDA DR. The DR listed 'must do' and 'desire to' requirements. The specific requirements outlined in the DR facilitated accelerating the timeline. The MSHORAD Product Office utilized the September 2017 demonstration final report information to structure the accelerated acquisition approach. A phased acquisition approach was implemented for delivery of the urgent capability (MSHORAD Product Office, 2018).

The design and integration phase was tailored to support the IM-SHORAD acquisition timeline. Instead of conducting the traditional SE requirements activities (i.e. system requirements, preliminary design, and critical design technical reviews), a more streamlined approach was implemented. The IM-SHORAD technical reviews were combined during the design phase into a single review, an Integrated Design Maturation Review (IDMR). The IDMR was conducted within 3 months after contract award. The IDMR was a feasible streamlined approach due to knowledge gained from the September 2017 demonstration. Similar to the traditional technical design reviews, the IDMR was conducted using mutually agreed upon

entrance and exit criteria. Instead of a traditional nine to twelve month technical review timeline, the IDMR was conducted in a week. Conducting and completing the combined technical reviews in a week decreased the design and integration phase by at least eleven months. Following the IDMR, the Product Office conducted a series of focused Technical Interchange Meetings (TIMs) with the prime contractor to track design and development progress. Implementing this tailored approach streamlined the SE activities, thus, supporting an accelerated acquisition schedule.

The execution of the IM-SHORAD demonstration influenced the content and guidance outlined in the DR. The tailored SE process facilitated the accelerated delivery of initial prototypes to meet the air and missile defense warfighters' urgent capability gap. After the September 2018 contract award, integration of prototypes and testing was planned over a two year period. The IM-SHORAD capability was approved for Urgent Materiel Release (UMR) authorizing fielding in accordance with the DR specified timeline. The tailored acquisition approach implemented by the MSHORAD Product Office is a blend of the urgent capability acquisition and middle tier acquisition accelerated acquisition pathways. The MSHORAD delivered capability within the urgent need timeline by providing prototypes to meet the initial capability gap.

Prior to the development of the AAF, the Army tailored/streamlined the traditional acquisition approach to acquire the MRAP. During Operations Enduring Freedom (OEF), an urgent warfighters' need was identified to survive two catastrophic threats. The first threat was the Improvised Explosive Device (IED). The second threat was the adversary's conventional mine and ambush tactics (Blakeman, Gibbs, & Jeyasingam, 2008). When MRAP was identified as top priority by then, Secretary of Defense Robert Gates, the acquisition and procurement process were accelerated. The MRAP program applied a concurrent tailored acquisition approach to accelerate delivery of an urgent capability.

Unlike IM-SHORAD, specific requirements were not provided in a DR for acquiring the MRAP. However, due to the urgency of the MRAP capability, an accelerated process began immediately. Within two months after the MRAP requirement was validated a request for proposal was released. The MRAP Joint Project Office (JPO) was established in December of 2006 with the requirement of developing vehicles for multiple services, including the Army. The rapid fielding of the MRAP capability was a primary basis for an accelerated acquisition approach.

Similar to the IM-SHORAD acquisition approach, the MRAP Product Office conducted early rapid testing, analogous to a demonstration. The purpose of the rapid testing was to gather data on industry's capability to meet MRAP threshold requirements. The data collected from the rapid testing informed the MRAP JPO acquisition strategy. Traditionally, testing activities are conducted post approval of the acquisition strategy. The MRAP rapid testing informed the acquisition strategy, thus, demonstrating a non-traditional acquisition approach to providing quick response capabilities to meet warfighters' needs. Also, similar to the IM-SHORAD, the MRAP was acquired via a phased approach and delivery quantity was specified (Government Accountability Office (GAO), 2009). The incremental delivery of the MRAP capability supported accelerated delivery of the capability to the warfighter.

Multiple contracts were awarded to meet the timeline to deliver the large quantity, total of 6,935, MRAP vehicles. Whereas the traditional acquisition approach is a serial process, the MRAP implemented concurrent acquisition and procurement approaches. The tailored MRAP acquisition plan allowed for concurrent implementation of the acquisition activities outlined in the DoD acquisition process. The parallel activities included testing, production, and fielding of the MRAP vehicles. The concurrent acquisition approach proved to support accelerating delivery of the capability gap identified by the warfighter.

Keeping the MRAP requirements to a minimum also enabled the tailored acquisition process. Having minimum, not necessarily directed, requirements was important in MRAP achieving the accelerated timeline. The focus of the requirements was on the survivability of the vehicle. By prioritizing the requirements, the MRAP JPO accelerated development and quickly delivered the capability to enhance survivability and the warfighters' overmatch against the adversary's threat. Under an accelerated acquisition strategy initial operation of MRAP capability was delivered within 3 years.

Summary

In this chapter the researcher provided the analysis of the information revealed in the literature review documentation. Included in the analysis are examples of how the Army tailored the acquisition process to quickly deliver capabilities to meet warfighters' operational needs. There were differences and similarities in how each example tailored the acquisition process, illustrating that there is no one size fits all tailored acquisition approach. The next chapter will summarize the conclusions, provide recommendations based on the research findings, and offer areas for additional research.

Chapter 5 – Conclusions and Recommendations

"My goal is to invite readers to think along with me and draw their own conclusions" – Meghan Daum (AllGreatQuotes, n.d.)

Introduction

This chapter provides the conclusions of the research based on the two research questions. It also provides recommendations for future research. The purpose of this research is to explore how tailoring the acquisition process supports accelerating delivery of weapon system capabilities to the U.S. Army air and missile defense warfighter. The research assessed tailored requirements processes and how each compare to traditional processes for designing, integrating, and fielding capabilities in response to warfighters' needs. The key questions of the research are:

1. What is tailored acquisition?
2. How do tailored acquisition processes support accelerated delivery of warfighters' capabilities?

In addition to the conclusion, this chapter offers recommendations for future researchers to explore on the research topic.

Conclusions

This section provides the conclusions of the research based on the key research questions and analysis discussed in Chapter 4. Following are the 4 conclusions.

For urgent or emerging capability needs, the AAF offers two pathways to expedite delivery of warfighters' capabilities. The urgent capability acquisition pathway is implemented in response to urgent or quick reactions needs. The middle tier acquisition pathway is for rapid prototyping of new capabilities or rapid production quantities requiring minimal development.

At the center of the DoD acquisition process are requirements. The requirements process is a critical part of the overall acquisition process. The Defense Science Board Task Force (2009) reported that requirements are referenced as sacred in the traditional acquisition process (Defense Science Board, 2009). The DoDI 5000.81, Urgent Capability Acquisition, addresses procedures for acquiring urgent capabilities for the warfighter. Section four of the DoDI 5000.81emphasizes that the urgent capabilities procedures are 'highly-tailored' activities to streamline requirements for documentation traditionally required in the acquisition process (Department of Defense, 2019). Having specific or focused requirements has proven to enable the accelerated delivery of urgent warfighters' capabilities.

For both the MRAP and the IM-SHORAD, executing demonstrations, prior to developing the acquisition strategy, supported the accelerated deliver of warfighter's capabilities. Incremental delivery of the capability also enabled accelerating delivery of urgent warfighters' capabilities for both MRAP and IM-SHORAD. The MRAP program applied a concurrent tailored acquisition approach to accelerate delivery of an urgent capability. The MSHORAD PO delivered an urgent capability need, based on the AR 71-9 guidance, via a DR. For the I-MSHORAD effort, tailoring the SE activities supported the accelerated delivery schedule of the end item.

The documents reviewed revealed that there are clear guidelines at both the DoD and Army levels for streamlining the acquisition process. Implementation of tailored requirements support the streamlining of Army's acquisition of warfighters' capabilities. Tailored acquisition approaches have been successful, however, not all acquisition activities are available for tailoring. The following sections in this chapter will provide recommendations, based on the analysis in Chapter four, and areas for future research.

Recommendations

The research resulted in the following three recommendations. First, due to the timing of this research there is limited data to assess how the 2020 AAF accelerated acquisition pathways accelerate delivery of warfighters' capability. This research recommends that metrics be established to monitor the impact of implementation of the AAF accelerated pathways. As the sample size of implementation of the AAF acquisition pathways increases, assessment of the metrics should be conducted and documented. The assessment results can help determine effectiveness and inform modifications, if required, to the AAF accelerated acquisition pathways. Requirements for documenting the metrics must be woven into the overall accelerated delivery timeline.

Secondly, the MSHORAD product office tailored systems engineering activities, combining technical reviews, via an IDMR. However, there is no reference to an IDMR in DoD or Army policies and instructions. This research recommends the development of a policy with instructions on tailoring SE activities to support the accelerated pathways identified in the AAF.

Finally, documentation and reports reviewed for this research identified that the Army implements DRs to accelerate responses to urgent needs. This research recommends that lessons learned from implementing DRs are archived. The repository of lessons learned can assist future organizations in more effectively accelerating development and delivery of warfighter's capabilities.

Areas for Future Research

Based on the findings in this research and the above recommendations there are several potential areas to explore in future research. First, at the time of this research there is limited information on organizations' implementation of the AAF accelerated acquisition pathways.

Future research can focus on a single accelerated acquisition pathway to expand on execution of the pathway and document lessons learned. Secondly, there was limited information to support this research on Army's execution of a DR. Exploration of Army's accelerated acquisition of warfighter's capabilities via DRs is another area for future research. Third, future research can explore how tailoring functional areas, (i.e. testing, production) in the acquisition process will assist with accelerating delivery of warfighter's capabilities. Finally, future research can expand beyond the 'how' (e.g. the processes) and focus on the 'how well' (e.g. operational performance; sustainability) of end item delivered via accelerated acquisition pathways. The 'how well' research will require feedback from the COCOMs.

Summary

This chapter provides the conclusions, recommendations, and potential areas for future research. Overall, the research revealed that there are specific DoD and Army policies, instructions, and regulations to allow tailoring of the Army's acquisition of air and missile defense warfighters' capabilities. To support tailored acquisition approaches, the AAF provides multiple accelerated acquisition pathways to execute. The accelerated acquisition pathways inform the development of acquisition strategies for responding to urgent and emerging warfighters' capability gaps. There are several areas of future efforts recommended by this research. The efforts range from adding metrics to assessing impacts of execution of accelerated acquisition approaches to documenting lessons learned. There are future areas of research identified to focus on not only the 'how' but the 'how well' aspect of accelerating acquisition to develop and deliver warfighters' capabilities. The overall objective of the relevant delivery of capabilities is to ensure that the Army's air and missile defense warfighters maintain overmatch of the adversary. This research concludes that tailoring the acquisition approach, when

applicable, facilitates accelerating the delivery timeline of warfighters' capabilities. By tailoring the acquisition process, the materiel developer invokes a process to quickly provide capabilities to combat the adversary's advances in technology and battlefield tactics.

References

Acquisition Process Overview. (2021, June 7). Retrieved from https://acqnotes.com.

Adaptive Acquisition Framework Document Identification Tool (AAFDID) Background. (n.d.). Retrieved from https://www.dau.edu>aafdid.

AllGreatQuotes. (n.d.). Retrieved from allgreatquotes.com: https://www.allgreatquotes.com/quote-303624

Anton, P., Tannehill, B., McKeon, J., Goirigolzarri, B., Holliday, M., Lorell, M., & Younossi, O. (2020). *Strategies for Acquisition Agility.* Santa Monica, CA: Rand Coporation.

Arellano, R. L., Pringle, R. G., & Sowell, K. L. (2015). *Analysis of Rapid Acquisition Processes to Fulfill Future Urgent Needs.* Monterey, California: Naval Postgraduate School.

Blakeman, S., Gibbs, A., & Jeyasingam, J. (2008). *Study of the Mine Resistant Ambush Potected (MRAP) Vehicle Program as a Model for Rapid Defense Acquisition.* Naval Post Graduate School.

Buckley, M., & Davis, G. (2013). *The Study of the Rapid Acquisition Mine Resistance Ambush Protected (MRAP) Vehicle Program and its Impact on the Warfighter.* Monterey, CA: Naval Postgraduate School.

Cleve, B. (2018). *The United States Army's Balance of Capabilities to Meet the Warfighters' Needs.* Defense Acquisition University.

Coleman, S., Lopez, L., & Luntz, D. (2015). *An Analysis of Army Rapid Acquisition.* Monterey, California: Naval Postgraduale School.

Conley, S. F. (2016). *A Conceptual Model for Urgent Acquisition Programs.* Aberdeen Proving Groound, MD: The Defense Acquisition University.

Creswell, J., & Guetterman, T. (2019). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research.* Saddle River, NJ: Pearson Education Inc.

DAU. (2009). *Glossary: Defense Acquisition Acronyms and Terms.* Defense Acquisition University Press.

Defense Science Board. (2009). *Report of the Defense Science Board Task Force on the Fulfillment of Urgent Operational Needs.* Washington, D.C.: Office of the Under Secretary of Defenses, for Acquisition, Technology, and Logistics.

Department of Defense. (2019). *Urgent Capability Acquisition*. Retrieved from DoDI 5000.81: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500081p.PDF?ver=2019-12-31-133941-660

Department of Defense. (2020). *Operation of the Adaptive Acquisition Framework*. Retrieved from DoDI 5000.02: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500002p.pdf?ver=2020-01-23-144114-093

Department of Defense. (2020). *The Defense Acquisition System*. Retrieved from DoDD 5000.01: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/500001p.pdf?ver=2020-09-09-160307-310

Dictionary - Quotes. (2008, November 23). Retrieved from Dictionary of Quotes: https://www.dictionary-quotes.com

Government Accountability Office (GAO). (2009). *Defense Acquisition, Rapid Acquisition of MRAP Vehicles- GAO-10-155T.* Washington, D.C.: U.S. Government Accountability Office.

Government Accountability Office (GAO). (2019). *Army Modernization - Steps Needed to Ensure Army Futures Command Fully Applies Leading Practices.*

Government Accountability Office. (n.d.). *Army Modernization: Will Army Futures Command Create Informed Change- GAO-19-132;GAO-19-511.*

Kendall, F. (2017). *Getting Defense Acquisition Right.* Defense Acquisition Press.

Lepore, D., & Columbi, J. (2012). *Expedited Systems Engineering for Rapid Capability and Urgent Needs.* Hoboken, NJ: Systems Engineering Research Center, Stevens Institute of Technology.

Lib Quotes. (n.d.). *Raewyn Connell Quotes*. Retrieved from https://libquotes.com/raewyn-connell/quote/lbl1h2k

Massachusetts National Guard. (2019, March 14). *Army Futures Command - Command Brief, Creating a New Culture of Innovation, version 03.14.2019.* Retrieved from The National Guard Bureau: https://www.massnationalguard.org/HSI/publications/AFC.pdf

McKernan, M., Drezner, J., & Sollinger, J. (2015). *Tailoring the Acquisition Process in the U.S. Department of Defense.* Santa Monica, California: Rand Corporation.

MSHORAD Product Office. (2017). *Maneuver-Short Range Aid Defense (M-SHORAD) Demonstration Test Plan.*

MSHORAD Product Office. (2018). *Acquisition Strategy.*

MSHORAD Product Office. (2019). *Integrated Design Maturation Review (IDMR).*

Myers, J. H. (2020). *A Dissection of Multi Domain Operations: Assessing the Army's Future Force.* Norfolk, VA: Joint dvanced Warfighting School.

U.S. Army. (2018). *Directed Requirement to Initiate Integration and Procurement of an Initial Maneuver - Short Range Air Defense Capability on a STRYKER Vehicle.*

U.S. Army. (2019). *Army Modernization Strategy: Investing in the Future*. Retrieved from https://www.army.mil/e2/downloads/rv7/2019

U.S. Army. (2019). *Army Regulation 71-9: Warfighting Capabilities Determination.* Retrieved from https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN56331_R70_1_FINAL.pdf.

U.S. Army. (2020). *How the Army Runs: A Senior Leader Reference Handbook.* Carlisle, pa: U.S. Army War College.

Van Atta, R. K. (2016). *Assessment of Accelerated Acquisition of Defense Programs.* Alexandria, Virginia: Institute for Defense Analyses.

Williams, S., Drezner, J., McKernan, M., Shontz, D., & Sollinger, J. (2014). *Rapid Acquisition of Army C2 Systems.* Santa Monica, CA: RAND Corporation.

Appendix A – Glossary of Acronyms

AAF.....Adaptive Acquisition Framework

AAFDID .....Adaptive Acquisition Framework Document Identification Tool

ACAT.....Acquisition Category

AFC.....Army Futures Command

AMD .....Air and Missile Defense

AR.....Army Regulation

AT&L.....Acquisition, Technology and Logistics

ATD .....Advanced Technology Demonstration

AvMC…… Aviation and Missile Center

BSFV-E.....Bradley Stinger Fighting Vehicle-Enhanced

CDD .....Capability Development Document

CDRT.....Capabilities Development for Rapid Transition

CCCD …….. Combat Capabilities Development Center

CFT .....Cross Functional Team

COCOM.....Combatant Commander

DAMO CI .....Deputy Chief of Staff - Capabilities Integration Directorate

DAS.....Defense Acquisition System

DAU.....Defense Acquisition University

DoD.....Department of Defense

DoDD.....Department of Defense Directive

DoDI .....Department of Defense Instruction

DR.....Directed Required

GAO.....Government Accountability Office

HQDA.....Headquarters Department of the Army

IDA .....Institute for Defense Analyses

IED .....Improvised Explosive Device

IDMR.....Integrated Design Maturation Review

IM-SHORAD.Initial Maneuver Short Range Air Defense

JCTD.....Joint Capability Technology Demonstration

JDAM.....Joint Direct Attack Munition

JPO.....Joint Program Office

JUON .....Joint Urgent Operation Need

MCA .....Major Capability Acquisition

MDA .....Milestone Decision Authority

MDO .....Multi-Domain Operation

MSHORAD PO ...Maneuver Short Range Air Defense Product Office

MRAP .....Mine-Resistance Ambush Protected

MTA .....Middle Tier Acquisition

OA.....Operational Assessment

OEF .....Operations Enduring Freedom

ONS.....Operational Need Statement

PAF .....Project Air Force

PIF.....Prototype Integration Facility

PM.....Program Manager

RCO .....Rapid Capabilities Office

SE.....Systems Engineering

TEMP.....Test and Evaluation Master Plan

WSMR .....White Sands Missile Range

VCSA.....Vice Chief of Staff of the Army

ALT.....Acquisition, Logistics, and Technology

Appendix B – Author Biography

SENIOR SERVICE COLLEGE FELLOWSHIP
HUNTSVILLE, ALABAMA

Yolanda Alexander

Ms. Yolanda Alexander assumed her current duties as the Director, Systems Engineering and Integration (SE&I) Directorate for the Short and Intermediate Effectors for Layered Defense (SHIELD) Project Office in August 2017. She is responsible for Software (SW) and Hardware (HW) development, weapon system integration, performance analysis and Cyber Security and Information Assurance for the Iron Dome Defense System Army (IDDS-A), Maneuver-Short Range Air Defense (M-SHORAD) and Indirect Fire Protection Capability Increment 2 (IFPC) Air Defense Programs.

Prior to joining the SHIELD team, Ms. Alexander served as the Director of Systems Engineering (SE) Directorate for the Terminal High Altitude Area Defense (THAAD) Project Office at the Missile Defense Agency (MDA). She was responsible for the requirements development and system integration and verification of the THAAD weapon system. Her management and leadership of the Models and Simulation (M&S) and analysis efforts were critical in providing performance data that directly supporting the Materiel Release of the THAAD Weapon System.

Ms. Alexander has a Bachelor's degree in Physics from Talladega College and a Master of Science degree in Management from Florida Institute of Technology. She is Level III Certified in Systems Planning, Research, Development and Engineering and Level II Certified in Program Management, a member of the Army Acquisition Corps, and has 30+ years of engineering experience. Ms. Alexander is also the recipient of the Order of Saint Barbara and the Department of the Army Outstanding Civilian Service Acts Award.

Ms. Alexander is active in her local church where she serves as a Children's Church teacher. She currently resides in Huntsville, AL, with her husband Judson. She and Judson have two adult children, Judson III (Theo) and Ashlee.