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**EMBRACING AGILE ACQUISITION WITH
AN AGILE MINDSET**

June 2020

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EMBRACING AGILE ACQUISITION WITH AN AGILE MINDSET

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Submitted in partial fulfillment of the
requirements for the degree of

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EMBRACING AGILE ACQUISITION WITH AN AGILE MINDSET

ABSTRACT

This project will examine Agile acquisition principles and analyze how to capitalize on an Agile mindset across the Department of Defense (DOD). The intent is to identify whether the current workforce culture is structured to embrace innovative acquisition approaches, specifically Agile acquisition.

The methodology and analytical approach for this project will include an analysis of technical literature, reviews, and documentation to identify potential best practices for applying Agile acquisition principles to the DOD.

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LIST OF ACRONYMS AND ABBREVIATIONS

Department	Department of Defense
DOD	Department of Defense
GAO	Government Accountability Office
IT	Information Technology
NDA	National Defense Authorization Act
RIB	rigid inflatable boat
SWOT	Strengths Weaknesses Opportunities Threats

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I. INTRODUCTION

The Department of Defense (Department) needs new innovative and flexible approaches to acquiring hardware and software to make the agency's warfighter capabilities relevant and sustainable. The traditional acquisition processes do not provide flexibility into the acquisition and contracting life cycle process. While the Department understands the necessity to change to innovative solutions, and the current leaders are standing behind this principle, the workforce is leaning on previous processes and practices to acquire capabilities.

A. BACKGROUND

The 2018 National Defense Strategy, issued in January 2018, outlines the Department's strategic objectives and is the planning doctrine for the purpose of strengthening our military advantage. The previous National Defense Strategy was issued ten years prior to this in 2008, and this updated set of guidelines is timely given the current defense threats, which include rapidly changing warfighter technology capabilities. The strategy suggests that modernization, strong leadership, and resilient and Agile logistics systems will be critical to restoring and expanding U.S. competitiveness in the rapidly changing climate of the international community (Department of Defense [DOD], 2018b).

The agency has spent two years working to put this strategy into action and now has the largest annual budget to manage and support these initiatives. The 2020 National Defense Authorization Act (NDAA) supports an overall authorization of \$733 billion dollars for our national defense, intended to maintain military readiness, expand capabilities, and invest in new software and technologies required to defend the country from adversaries. Given the proposed allocation coupled with the goals, the Department will be required to take significant strides to modernize the way requirements are procured.

Building a more lethal force and strengthening our alliances are two primary objectives of the National Defense Strategy, while the third is reforming business practices. The strategy specifically outlines one of the pillars as "continuously delivering

performance with affordability and speed as we change Departmental mindset, culture, and management systems” (DOD, 2018b, p. 4).

The legacy acquisition and program management methods and techniques utilized to acquire supplies, services and equipment will not transform our capabilities and achieve the necessary results to protect and defend our country. The Department must develop innovative ways to procure systems that are affordable, Agile, and interoperable while being available now and flexible for future operations.

Agile acquisition is one framework that has been utilized in the private sector and has been at the forefront of discussion for implementation in the Department. Agile acquisition is not a process; it is an innovative way of thinking to break down barriers and work with stakeholders to determine the most flexible, advantageous and cost-effective solution to a problem set.

Significant research has been conducted on Agile acquisition and Agile principles. The commercial marketplace has adopted Agile thinking across multiple platforms and successfully yielded positive outcomes across the technological field. The Department could potentially embrace industry best practices to stay relevant and current in a rapidly changing environment.

New directives and policies are forcing the Department’s workforce to be Agile and innovative in executing warfighter requirements. How does the Department succeed in this endeavor? Is it through training, industry collaboration, mandated policies and new procedures? While there is a need for each of these, the rudimentary change needs to be in the culture. The current structure and organizational environment do not lend themselves to Agile execution of needed capabilities and technology. Agile processes are needed; however, an Agile mindset is what will make the Department successful.

B. PURPOSE

This project examines Agile acquisition and determines how the Department can benefit from and successfully implement Agile methodologies. Agile is becoming the common way to do business and requires a cultural shift in the way the agency acquires

hardware and software capabilities. Department leaders and acquisition professionals increasingly recognize the need for innovative and adaptable methods of procurement. However according to Lapham, “in order for the DOD to successfully employ Agile it needs to embrace a culture change. The way it thinks about oversight, documentation, team structure, user interaction with the development team and flexible change must be altered” (Lapham, 2010, p. 43).

Chang and Modigliani developed Figure 1 to illustrate how Agile methods, acquisition policy, and program office operations must interact. Each component comes with its own set of drivers and current way of doing business. The need for understanding each component and what the internal and external forces are is paramount to shift the current acquisition life cycle process and workforce mindset (Chang, 2014, p. 1).

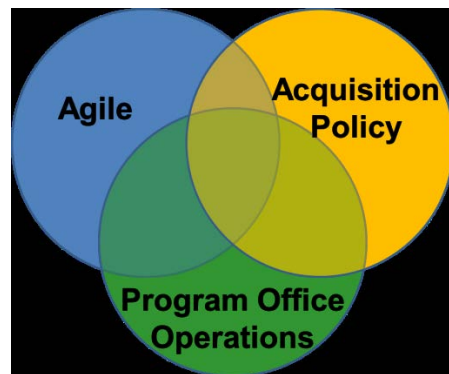


Figure 1. Agile acquisition guidebook Venn diagram.
Source: Chang and Modigliani (2014).

This project seeks to provide principles of Agile acquisition and recommendations specific to the Department for successful implementation. The analysis examines what must change, if anything, to overcome the institutional resistance to changing the current acquisition paradigm to harness Agile methodologies and principles. It is not feasible to address all the arguments concerning the adoption of Agile methodologies across the Department in one thesis: however, the intent is to capture the key issues surrounding implementation of such innovative techniques and present recommendations for key stakeholders to consider. It is also anticipated that the data presented in this project will be

a conduit for future comparable study within the acquisition and program management community.

C. PROBLEM STATEMENT

In theory, the Department believes it can be innovative and Agile by implementing processes, policies, and guidance to successfully adapt an Agile workforce to acquire state of the art capabilities. The problem is the Department is not structured to effectively embrace the change of implementing Agile principles across the agency. The primary objective of this research is to determine how the Department can culturally move toward adopting Agile processes.

This research will examine an Agile mindset and identify how the Department can empower the workforce to adopt Agile acquisition principles.

D. METHOD

This project will conduct a literary review to examine the Agile acquisition framework and impacts of applying Agile business practices in the Department and what other researchers in this field have concluded. The Agile mindset and cultural implications of adapting new, innovative frameworks will be examined. The 2018 National Defense Strategy and other implementing Department reports and guidance will provide the foundation for addressing the problem and is the driver of this project.

Relevant data and information will be compiled to identify areas to improve efficiency as it relates to adopting Agile practices and the cultural shift required across the Department. The review will present opportunities and challenges unique to the Department, and observations will be made and synthesized in order to identify key themes.

A SWOT analysis will be created to support the data analysis and proposed recommendations. A SWOT analysis is a useful tool for this research, because it will assist in identifying the full scope and all the relevant factors, internal and external, to evaluate potential strategic decisions. It will assess the organization's current environment and the strengths, weaknesses, opportunities, and threats of implementing a strategic

organizational change. Identifying the vision, the direction the agency wants to go, the strategy, and the barriers, is key to any substantial organizational change. The intent is to examine the risks and benefits and then provide recommendations for the Department to consider.

The expected result from the project will be the need for further research as well as the need for an implementation strategy to foster an innovative, collaborative and empowered organization.

E. SCOPE

The scope of this study is limited to the Department and will include an analysis of relevant concepts and the applicable literature surrounding adopting an Agile organizational culture and workforce.

In order to ensure that the scope of this effort was achievable, it was important to narrow the problem statement to only the Agile mindset and cultural implications of adopting Agile methodologies. This research will not evaluate the Agile requirement development process but analyze the need for a paradigm shift in thinking and mindset of the current workforce.

The literature review was structured to focus on concepts and guiding principles rather than reviewing data or providing case study analyses.

F. WHY IS THIS RESEARCH IMPORTANT

Resiliency and the ability to innovate continues to prove to be difficult for the Department. The challenge is that the Department must acquire robust and complex systems necessitating detailed coordination making it difficult to abruptly shift as needs change.

The Department stresses the need to balance and monitor cost, schedule and performance goals within programs and projects. Many standard and conventional federal procurement practices have not yielded the intended results or met the original goals. The current way of doing business and the cultural approach need to be studied to understand the potentials for optimizing cost, schedule, and performance.

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II. LITERATURE REVIEW

Chapter I introduced the subject of innovative acquisition and the relevance of providing flexibility in the acquisition and contracting life cycle process across the Department. It also introduced the fact that the current Department leadership is tasking the workforce to develop innovative solutions to current bureaucratic business practices but not providing the means to do so nor any specific direction. This chapter opens the discussion and reviews literature relevant to the opportunities and challenges of building flexible and Agile acquisition solutions.

A. EXPLAIN BACKGROUND RESEARCH IN ORDER TO DEFINE THE PROBLEM

The below literary review will provide the framework to assist in defining the problem addressed in this research. How can the Department culturally move toward adopting Agile processes? Opposing viewpoints will be present to assist in developing sound recommendations for implementation of innovative business strategies, specifically, Agile acquisition.

Agile principles can be applied to any program management or project development. It is a way of thinking incrementally and iteratively involving end users from the start of the project throughout each task. Tasks are prioritized and worked in short iterations and reprioritized as necessary. Agile principles are relevant to other requirements outside of software development, including services, hardware, and other complex system requirements involving ever-changing mission needs. An organization is more receptive to cultural changes when it adopts the Agile principles (Chang, 2014, p. 28). Currently, this is something the Department could vastly improve upon.

The subsequent paragraphs will provide background on Agile principles, cultural implications, and current Department policies and reports to assist in formulating an analysis and providing recommendations.

1. Agile Mindset

“An Agile mindset is the set of attitudes supporting an Agile work environment. These include respect, collaboration, improvement and learning cycles, pride in ownership, focus on delivering value and the ability to adapt to change” (McIntosh, 2016, p. 2). Agile as it relates to businesses is simply the ability to adapt to change and redirect courses quickly throughout a process. In general, the meaning of an Agile mindset is entirely contradictory to the bureaucratic mindset that is prevalent in the Department.

Understanding an Agile mindset is important as it relates to this effort and the problem statement, because it can directly affect the success of adopting innovative and flexible business practices.

Agile is often thought of in terms of processes, methods, and principles. While this is true, it is important to include the human factor that is the key component of making Agile methods, processes, and principles a success. The human factor, people or in this context the workforce, are the root of all successes and failures within an organization and ultimately drive all desired outcomes.

According to S. Denning, “The Agile management revolution is transforming the world of work. A striking feature of the revolution is the widespread view among Agile practitioners that success in Agile management depends on an Agile Mindset” (2019, p. 1).

Currently, the Department operates as a bureaucratic agency. It oversees the U.S. armed forces, including the Army, Navy, Marine Corps, and Air Force, thus making it a complex agency with multiple levels of hierarchy striving to accomplish complex tasks. The tiered, hierarchical structure requires the Department to enforce policy and follow strict legislative regulations. The bureaucratic rules the senior decision makers enact are filtered down to the lower level workforce, who must adhere to them regardless of the situations they face. There is little room for compromise, and the workforce is not empowered to challenge the public policy and implement changes at the strategic level.

While the current leaders state they want the workforce to think “outside the box” and create new, innovative business solutions, historically they have often been frustrated and challenged when the workforce does not follow the policies they published and put in

place, even if they were not working. As a result, the bureaucratic process is full of “red tape.” While the intent of the Departmental procedures and rules is to ensure the bureaucracy functions as planned, it can hinder the ability to be flexible and adjust to changes. It puts the workforce in a more reactive state rather than a proactive one.

Given this, it is important to understand the differences in an Agile mindset and a bureaucratic mindset. Table 1 illustrates some of the differences.

Table 1. The Agile mindset vs. the bureaucratic mindset.
Source: Denning (2019).

	The Agile mindset	The bureaucratic mindset
Goal	<i>The Law of the Customer</i> —an obsession with delivering steadily more value to customers.	<i>The Law of the Shareholder</i> : A primary focus on the goal of making money for the firm and maximizing shareholder value.
How work gets done	<i>The Law of the Small Team</i> —a presumption that all work be carried out by small self-organizing teams, working in short cycles, and focused on delivering value to customers	<i>The Law of Bureaucrat</i> : A presumption that individuals report to bosses, who define the roles and rules of work and performance criteria.
Organizational Structure	<i>The Law of the Network</i> —the presumption that firm operates as an interacting network of teams,	<i>The Law of Hierarchy</i> : the presumption that that the organization operates as a top-down hierarchy, with multiple layers and divisions.

There are striking differences in the two mindsets and deploying Agile practices will take a comprehensive transformation. In generalities, the Department has a disengaged workforce, and that workforce is directed vice empowered. The workforce turns to the status quo and legacy ways of conducting business and acquisitions. The transformation from a bureaucratic mindset to an Agile mindset will be equivalent to turning a battleship around in a small harbor while fighting an outgoing tide, while the Agile mindset would be more like turning multiple RIBs (rigid inflatable boats) within that same harbor against that same tide. Or simply put, converting one complex (bureaucratic) organization incapable of abruptly changing courses of action into multiple smaller (Agile) organizations shifting and adapting to change successfully.

The Department must create a workplace where the human factor is at the forefront and the balance of power is equally spread between management and subordinate teams. Autonomy must exist and be trusted. Pushing boundaries and taking risks must be rewarded. And finally, the primary goal should not be meeting milestones and staying within budget but providing the most flexible, adaptable, and efficient solution to the warfighter need and requirement. The commitment and “buy-in” must be from the entire workforce from the bottom of the chain up to the most senior leader.

2. Agile Manifesto

The Agile manifesto was developed in 2001 when a group of seventeen lead software gurus retreated to a Utah ski resort to discuss and find new approaches for the document-driven, burdensome software development process. They wanted to make software development easier and were seeking a set of values based on collaboration and trust. What emerged was the Agile manifesto.

The guiding principles of the Agile manifesto are contradictory to the current Department’s perspective, strategy and structure. It is essential to understand both perspectives to recognize how they affect an organizational change. Both have positive and negative implications and understanding both will be important to provide sound recommendations.

a. Agile Manifesto Principles

The twelve principles behind the Agile manifesto are below.

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software. Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale. Business people and developers must work together daily throughout the project. Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation. Working software is the primary measure of progress. Agile processes promote sustainable development. The sponsors, developers, and users should be able to

maintain a constant pace indefinitely. Continuous attention to technical excellence and good design enhances agility. Simplicity—the art of maximizing the amount of work not done—is essential. The best architectures, requirements, and designs emerge from self-organizing teams. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly. (Beck et al., 2001b, p. 1)

For the context of this thesis, the *customer*, is considered the warfighter. While the term *software* can be described as hardware, software, or any warfighter requirement.

b. Agile Manifesto Values

The four Agile values expounded from the twelve principles are:

1. **Individuals and interactions** over processes and tools.
2. **Working software** over comprehensive documentation.
3. **Customer collaboration** over contract negotiation.
4. **Responding to change** over following a plan. (Beck et al., 2001b, p. 2)

The Agile manifesto found that “while there is value in the items on the right, we value the items on the left more” (Beck et al., 2001b, p. 1). The underlying message of the Agile manifesto, and its four values, is intriguing and enlightening as it pertains to the Department principles and values for acquisition.

Thinking in terms of the current Department methodologies and how they are applied to acquisition, the Department tends to value the right more than the left, contrary to the Agile manifesto values. The agency focuses on processes and tools, comprehensive documentation, contract negotiation, and following a plan (Beck et al., 2001a, p. 1).

The underlying factors in the Agile manifesto principles and values are people and trust. Motivated individuals, interactions, collaboration, customer, support, team, and face-to-face discussions are key themes in the Agile principles. The manifesto stems back to the culture of an organization and the need to put the people aspect first before addressing any adoption strategies.

3. Organizational Cultural Norms

“When an organization adopts agile, it fundamentally changes its culture to be more collaborative and responsive to change” (Agile Government Leadership, 2016, p. 1). A cultural paradigm shift of leaders, teams, and individual stakeholders will be required. Leaders will have to release control, lessen policies, and empower subordinate teams and stakeholders. Teams will have to take ownership, collaborate, “think outside the box,” and be empowered to take risks, and in some cases fail, in order to succeed. Analyzing the current culture and Agile culture directly applies to the problem statement and requires a review to determine best approaches for adopting Agile.

a. Culture and Agile Defined as it Relates to the Department

Culture is embedded and interlinked in everything an organization does. “Organizational culture is a set of shared assumptions that guide behaviors” (Ravasi & Schultz, 2006, p. 433). It influences the way employees interact, share ideas, value the organization and vision, and respond to organizational changes. It encompasses “organizational structure, leadership style, rewards system, communication and decision-making styles, and staffing model” (Carnegie Mellon University, SEI, 2017).

Table 2 provides a generalized comparison of a typical Agile and traditional Department cultural environment.

Table 2. Cultural dimensions as reflected in typical Agile and traditional DOD environments. Source: Carnegie Mellon University, Software Engineering Institute (SEI) (2017).

	Agile DoD	Traditional DoD
Organizational Structure	Flexible and adaptive structures	Formal structures that are difficult to change
	Self-organizing teams	Hierarchical, command and control based teams
	Collocated teams or strong communication mechanisms when teams are distributed	Integrated product teams that have formal responsibilities
Leadership Style	Facilitative leadership	Leader as keeper of vision
	Leader as champion and team advocate	Leader as primary source of authority to act
Rewards System	Team is focus of reward systems	Individual is focus of the reward system
	Sometimes team itself recognizes individuals	
Communications and Decision Making	Daily stand-up meetings	Top-down communication structures dominate
	Frequent retrospectives to improve practices	External regulations, policies and procedures drive the focus of work
	Information radiators to communicate critical project information	Indirect communications, like documented activities and processes, dominate over face-to-face dialogue
	Evocative documents to feed conversations	Traditional, representational documents used by the PMO throughout the development life cycle to oversee the progress of the developer
	"Just enough" documentation, highly dependent on product context	PMO oversight tools focused on demonstrating compliance vs. achieving insight into progress
Staffing Model	Cross-functional teams including all roles across the life cycle throughout the lifespan of the project	Uses traditional life cycle model with separate teams, particularly for development and testing
	Includes an Agile advocate or coach who explicitly attends to the team's process	Different roles are active at different defined points in the life cycle and are not substantively involved except at those times

The “Traditional DOD” is the as-is state for most of the Department’s culture. While some Department program offices have an Agile culture, most of the agency relies on the traditional category and methods. The “Agile DOD” contradicts the “Traditional DOD” from an oversight, policy, workforce structure, and end user engagement perspective in the requirement documentation process. “In our interviews with the successful DOD Agile projects, we have consistently confirmed that adopting Agile methods requires a mindset change for government program management offices and the

other acquisition entities with which the projects interact, such as the Office of the Secretary of Defense (OSD)” (Carnegie Mellon University, SEI, 2017).

Implementation of Agile practices require an understanding of the differing approaches and the stakeholders they impact. To successfully enact change in an organization, internal and external conditions and the business environment need to be understood. Organizational changes affect people, processes, and structures, and to keep pace with the ever-changing demands of the warfighter, the Department must ensure and implement change on a recurring basis and be structured to support these new initiatives.

b. Top-Down versus Bottom-Up Management Approach

“The Department of Defense’s enduring mission is to provide combat-credible military forces needed to deter war and protect the security of our nation” (Department of Defense [DOD], 2018b). To support an Agile organization, implementation of the mission should start at the bottom of an organization while the top provides the support necessary to achieve the vision. The buy-in must start with the workforce. Generally, the workforce is resistant to change, but if it is empowered to come up with the solutions on how to achieve the vision, there is a greater likelihood of participation, collaboration and therefore results. Figure 2 provides a comparison of the two approaches and the organizational factors surrounding them.

	BOTTOM-UP	TOP-DOWN
LEVEL OF ANALYSIS	Micro-level	Macro-level
FACTORS	User-context, lifestyle, behaviour, values and enabling technologies.	Political, environmental, social, technological, economic and demographical.
TYPE OF KNOWLEDGE	Tacit and emerging	Explicit and Quantitative
ANALYSIS	Context-based	Trend-based
TYPE OF INNOVATION	Radical	Incremental
ORIENTATION	Solution- and action-oriented	Decision- and policy-oriented
MAIN ACTORS	Front-line workers	Top managers

Figure 2. Comparison of the bottom-up and top-down innovation approaches.
Source: Munnecke and van der Lugt (2006).

According to other Agile researchers in the field, shifting perspectives from governance to support can be beneficial when applying Agile practices.

Oftentimes in government there is an effort to standardize through governance and policy making, resulting in lack of [user] enthusiasm. By shifting perspective from one of governance to support, teams will be more likely to think outside the box and collaborate on new ideas. Employees must feel safe to experiment—and even to fail—in order to fully implement an Agile cultural mindset. The support of leadership is integral to this approach. (Agile Government Leadership, 2016)

4. Current Department Research and Documents

The literature on an Agile mindset, Agile manifesto, and organizational culture norms provide general ideas for consideration. Research has also been conducted on the Department as it relates to Agile acquisition, some of which is depicted below. To fully address the problem statement, Department documents should be assessed to determine the current environment and intentions of moving toward Agile acquisition principles.

a. GAO Report: Effective Practices and Federal Challenges in Applying Agile Methods

The Department has attempted to implement flexible and Agile acquisition principles for nearly the last decade. Some federal government agencies applied Agile practices to their projects with minimal success. The goal of adopting less restrictive and flexible approaches compounded with the need to better manage government spending required an external review to ensure the taxpayer dollars were allocated and aligned appropriately and to ensure no misuse or negligence. Introducing new methodologies to any large organization requires some level of oversight.

The Government Accountability Office conducted a study and issued a report in 2012 on the effective practices and federal challenges in applying Agile methods. The intent of this study and report was to identify effective practices in applying Agile and document federal challenges in implementing Agile techniques. The result of this report was a recommendation to include best practices and promote Agile development in the federal government.

GAO found:

thirty-two practices and approaches as effective for applying Agile software development methods to IT projects. The practices generally align with five key software development project management activities: strategic planning, organizational commitment and collaboration, preparation, execution, and evaluation. Officials who have used Agile methods on federal projects generally agree that these practices are effective. (Government Accountability Office, 2012)

Ten of the thirty practices found effective in this report are provided below.

Table 3. Practices used and found effective by five agencies' practice.
Adapted from Government Accountability Office (2012).

Practices Used and Found Effective by Five Agencies Practice
1. Start with Agile guidance and an Agile adoption strategy.
2. Enhance migration to Agile concepts using Agile terms and examples.
3. Continuously improve Agile adoption at both project and organization levels.
4. Seek to identify and address impediments at the organization and project levels.
5. Obtain stakeholder/customer feedback frequently and closely.
6. Empower small, cross-functional teams.
7. Include requirements related to security and progress monitoring in your queue of unfinished work (backlog).
8. Gain trust by demonstrating value at the end of each iteration.
9. Track progress using tools and metrics.
10. Track progress daily and visibly.

The GAO report sparked the Agile revolution within the Department and initiated the dialog to start moving toward Agile practices. However, this movement came before a strategic approach, an analysis of the current environment, and how these changes would impact the workforce. The top-down management approach discussed above does not support a successful implementation of the results from the GAO report.

Historically, the immediate reaction and response from an agency to a GAO report have been immediate, quick, band-aid approach responses to satisfy the data call. How can we close this finding immediately with little impact to our mission? This type of response is not appropriate or warranted for the study's recommendation. One response to this GAO report was from the Department of Veterans Affairs, "VA generally agrees with GAO's findings" (Government Accountability Office, 2012). The VA agreed with the report but

did not provide any strategies to adopt the report’s recommendations. Other agencies were completely silent on the matter.

It is clear from this that a Department document, report, or study will not adequately support the Department’s intent to develop innovative, flexible approaches to meeting the warfighter’s rapidly changing requirements.

b. U.S. Federal TechFAR Handbook

In an effort to address the GAO report discussed above as well as to further implement the 2018 National Defense Strategy goals, the TechFAR Handbook was developed to provide tools and resources for the acquisition workforce including suggested best practices in digital service acquisitions. The TechFAR playbook provides this information on the handbook, “The TechFAR Handbook highlights the flexibilities in the Federal Acquisition Regulation (FAR) that can help agencies implement ‘plays’ from the Digital Services Playbook that would be accomplished with acquisition support—with a particular focus on how to use contractors to support an iterative, customer-driven software development process, as is routinely done in the private sectors” (U.S. Digital Service, 2014a).

It is important to this project to review this handbook, as it is another endeavor by the Department to assist the workforce’s adoption of Agile acquisition methods. The handbook is one resource the agency can leverage to understand how current governance and related policies can be used to meet Agile practices more efficiently and effectively.

The U.S. Federal TechFAR Handbook highlights six key reasons why government should adopt Agile for project management and development.

- Improvement in investment manageability and budgetary feasibility;
- Reduction of overall risk;
- Frequent delivery of usable capabilities that provide value to customers more rapidly;
- Increased flexibility;
- Creation of new opportunities for small businesses;
- Greater visibility into contractor performance. (U.S. Digital Service, 2014b)

5. Summary

While the Department's documents, handbooks, and related guidance are helpful to the workforce, to capitalize on the benefits of Agile processes and principles, the current organizational culture and mindset must be reset. Tools and resources exist but are only good if they are utilized, optimized, accepted and understood. Ultimately, people must completely buy-in to the proposed changes, and those with a vested interest must be empowered to take risks and given free rein to make changes at the lowest level.

B. IDENTIFY KEY STAKEHOLDERS AND THEIR INTEREST IN THE PROJECT

Stakeholders influence acquisition decisions within the Department and develop proposed business cases for acquisition strategies within their program. Often these strategies are adopted and approved by senior leadership with minimal regard to innovative techniques for requirement development, source selection, and contract structure. Therefore, each stakeholder in the process is critical and must buy-in to building flexibility in requirement packages.

A stakeholder can simply be defined as anyone with a vested interest in the project or requirement or who has influence on the end product. The following are just some of the key stakeholders in the acquisition process that could bring change to the acquisition decision and/or have value in the process. The bottom up or top down management approach the Department endorses will drastically affect the stakeholder's role and contribution in the process.

1. Key Stakeholders

a. End user

The end user is a critical stakeholder in any acquisition but especially critical as they relate to Agile acquisition. The end user develops the requirement and is responsible and accountable for ensuring the requirement is defined properly. Within the confines of Agile acquisition, the end user must actively participate throughout the acquisition process

and provide feedback on capabilities and how those capabilities need to be adjusted to ensure flexibility and interoperability.

b. Program Manager

The Program Manager is responsible for managing the aspects of cost, schedule and performance of the requirement within the overall program's objectives. They serve as the higher authority over the end user to plan each requirement increment and ensure the end user, as well as themselves, are providing valuable feedback to the team on the needed capability.

c. Milestone Decision Authority or Approving Official

The Milestone Decision Authority is the designee with the overall authority and responsibility for acquisition and program decisions. In the current Department environment, the MDA initiates and approves the acquisition program as defined in the DOD Instruction 5000.02. Many of the approvals and regulatory check points and practices are at the discretion of the MDA (DOD, 2018a).

In an Agile setting, the MDA will need to be the supportive body of accepting an Agile process within a program (DOD, 2018a). The MDA will need to delegate to the Program Manager and rely on the workforce team to make decisions and approve changes in strategy.

d. Contracting Officer

The Contracting Officer, as in any acquisition, is the warranted official who ultimately awards the contract but also manages the pre-solicitation, solicitation, source selection technical evaluation, award, and execution of the contract. The Contracting Officer is the facilitator of communication between the government stakeholders and the contractor. They ensure the communication is appropriate and within legal limits to provide clear boundaries for the roles and responsibilities of the team.

e. Fiscal Officer

The Fiscal Officer is responsible for tracking costs and ensuring the overall program remains within budget. They ensure that funds are available if modifications are needed during the acquisition life cycle and ensure that the time, purpose and amount of funds are appropriate given the requirement. They are the gatekeeper of all funds and in Agile acquisitions must stay diligently tied to the program's progress and account for any estimated changes during each increment.

f. Contractors

The contractors are key to Agile acquisitions as the Department relies on them heavily and coordinates with them throughout the process. The contractor implements the technical solution and documents progress to the government (Chang, 2014, p. 34). The contractors are a more difficult aspect of utilizing the Agile approach as they fall outside the Department. In Agile environments, many contractors are required to help plan program needs and provide the most optimal solutions for the requirement (Chang, 2014, p. 7). The government-contractor team must be in constant communication and collaborate as one for a successful Agile environment.

2. Summary

The above stakeholders are merely some of the key players of the acquisition and Agile acquisition process. Each subordinate department and program will have their own identified stakeholder group dependent on the project. Additional stakeholders may include the project manager, developers, quality assurance specialist, systems engineer, and cost estimator, among others.

In an Agile culture within acquisition, the major stakeholders' roles and responsibilities must be clearly defined. There must be a constant feedback loop among all participants, and each need to take ownership of the program. The commitment must be set up front and adhered to throughout the acquisition; from cradle to grave. Cross-functional collaboration must occur, and the teams must be kept small to enable rapid decisions and changes in course.

The main point remains constant: the human factor of an Agile acquisition is critical to the success of a project. They all must have a shared vision, collaborative approach, and trusting relationship to provide the most flexible capabilities available to provide the end product.

C. EXAMINE OTHER RESEARCH / VIEWS

1. Opposing Views

Contrary to the research annotated and presented above, some research concludes that Agile principles, methods, and techniques are a bad idea and unachievable regardless of the environment they are deployed in. This section provides a limited number of anecdotal findings opposing an Agile mindset and Agile principles.

The Agile manifesto provides a foundation for a more streamlined way of acquiring software solutions. The research has shown that adopting Agile principles can be highly successful as it was developed based on sound and solid concepts and methodologies. The process is not as structured as the conventional way of acquiring systems. It includes less documentation, is less burdensome and breaks down the requirement in small increments vice a whole project.

Unfortunately, some in the field have claimed to accept Agile methodologies but do not fully practice or embrace the underlying concepts. They state they are leading an Agile project, but they merely do not document and make claims they are Agile. Like any new process improvement initiative, there are those that claim they are adhering to new processes, but they ultimately do not, and that can skew an organization's successful execution of new business opportunities.

Opponents also highlight the drawbacks and disadvantages of applying this methodology. Five are depicted below.

a. Time Commitment / Schedule Risks

Deploying an Agile acquisition will take a significant time commitment from all vested stakeholders. Face-to-face meetings and collaboration are encouraged, and daily interactions to formulate plans and progress will require carving out the necessary time in

everyone's schedule. The disadvantages of this approach vice working in more of a siloed environment is the fact that time is scarce, and meetings need to be set with agendas, outcomes, and action items. Participation and the time commitment will affect the end product's quality and overall program success. Using the Agile methodology will require more peoples' time and can hinder the project's schedule, cost and quality.

b. Hard to Maintain / Less Oversight

Agile only works if an organization has a committed team maintaining the required level of collaboration, communication and decision making. When these begin to fail, the process suffers from longer periods between deliverable, unmet expectations, and misconstrued goals. Accountability is key, and with less oversight it can be hard to hold key players accountable, especially given the team dynamic approach.

Expectations are often not clearly defined, and if the details of the deliverable are not understood. it can result in an undesirable end product. As a result, this wastes time, money, and valuable resources.

c. Less Predictability

Agile is an effective method for continual requirement development but can offer less predictability than other conventional acquisition methods. Shifting direction throughout the requirement and contractual process can lead to cost, schedule and effort unknowns, and the projects deadline can easily be missed if the requirement is not outlined upfront. Milestones in traditional methods can help projects stay on task and within budget, but with Agile there are risks of schedule slips and budget increases due to the continual fluctuation of requirement specifications. The overall project is less predictable given the variables.

d. Limited Documentation

Documentation is limited in Agile methods, which can be both positive and negative. The negative aspects include a lack of knowledge transfer. When team members are new or have not been included in a part of the process, there is no documentation to

help them quickly get up to speed and understand the current requirement status. This can create misunderstandings and poor decisions on key increments.

e. Scope Creep

The Agile methodology has the potential for scope creep due to the continual revision of the requirement. Since Agile aims to build flexibility and changes into the requirement development and contractual process, many anticipate, or perceive, that it could be a never-ending process. When is good enough? The end user will always have a new need, or the operational landscape will change, and therefore the team must set realistic expectations of when to finalize the requirement and deliver the end product to the user.

2. Opposing Views Summary

Whether the Department is a proponent of Agile or firm on using traditional methodologies, they are going to need to find a way to embrace this new way of doing business in order to stay relevant with industry as well as our adversaries. The world around us is changing, and the Department needs to change with it while understanding the risks and opportunities.

D. SUMMARY

This chapter reviewed four concepts and perspectives that impact implementing Agile practices within the Department. Given the current constraints of adopting innovative approaches in the Department, it was relevant to introduce the topics and surrounding literature.

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III. DATA

A. PRESENT AND EXPLAIN DATA

Agile acquisition is difficult to master given the concepts, principles, and methodologies, but the culture of an organization exasperates the complexities of successful implementation. This is especially true in a bureaucratic organization with layers of hierarchy and a workforce that continually looks at historical business practices and outdated ways of thinking.

Prevailing opinions and literature suggest that executing Agile methodologies in the Department will require a paradigm shift in the workforce's thinking, structure, and culture. The undertaking will be immense and will require a complete revamp of the current strategies that underpin the Department's mission and vision.

While no data was presented in this thesis, the overwhelming research and number of literary documents surrounding the Agile framework and implementation provides the necessary information to support the recommendations provided in Chapter IV.

To reap the benefits of Agile, the Department must depart from their traditional practices. The ability of the Department to remain relevant and at the forefront of technological changes is imperative (Chang, 2014, p. 6). To keep pace with industry and ensure the warfighter has the tools capable of overcoming and outmaneuvering their adversaries, the Department must make a drastic change in the current acquisition process.

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IV. DISCUSSION / ANALYSIS

A. ANALYZE DATA: WHY METHODOLOGY USED IS APPROPRIATE TO GENERATE THE NECESSARY KNOWLEDGE AS OPPOSED TO ANOTHER MODEL OR SIMULATION

This chapter will analyze the Department's ability to capitalize on an Agile mindset. Fundamental concepts found in the literature review chapter will be compiled and organized to formulate recommendations for how the Department can embrace innovative acquisition approaches. The literature analysis methodology was utilized for this research due to the ongoing study of the four concepts addressed: (1) Agile mindset, (2) Agile manifesto, (3) organizational cultural norms, and (4) current Department research and documents. The juxtaposition of these concepts is critical to implementing innovative acquisition processes within the Department.

A SWOT analysis will be performed to provide a link to the current environment and the strengths, opportunities, and threats of implementing a culture change to adopt Agile principles in the Department.

Finally, recommendations will be proposed to aid the Department in developing a strategy to implement a global change in the workforce culture to embrace innovative acquisition approaches. The recommendations will center around the strategic and tactical approach, and how leadership can enlist the support of the workforce to buy-in to Agile concepts.

1. Data Discussion

Agile methods “can provide both tactical and strategic benefits. The tactical benefits of lower cost within schedule and increasing quality are important; however, the strategic benefits of being responsive and being able to adjust to the current situation more rapidly might be of even greater value” (Boehm & Turner, 2004, p. 1).

Figure 3 is intended to show the complexity of the current integrated defense acquisition, technology and logistics life cycle management framework. The figure is not included to be analyzed but rather to simply show the intricacy of the current acquisition life cycle and the massive undertaking of implementing a new inventive mindset to the process. It can clearly be seen that the current process has layers of decision-making check points and milestones and layers of internal stakeholder reviews. There is little to no flexibility for abrupt changes in the requirement development and acquisition process. An innovative or Agile approach to acquisition would require a less conventional, constrained, and risk adverse environment.

The DOD 5000 series is the Department's "management framework for translating user needs and technology opportunities into stable, affordable and well-managed acquisition programs" (DOD, 2018a). While the DOD 5000 does not prevent the use of innovative and Agile acquisition methods, it is also not structured to encourage the use. According to Lapham et al., "While we do not know of any regulations that expressly preclude or limit the use of Agile, many in the acquisition community seem to fear the use of Agile because of their prior interpretations of the regulations" (2010, p. 11). The limitations are embedded in the bureaucratic pages of the document and the prescribed policies and procedures for managing acquisition programs.

Significant research has been conducted and published on various acquisition reform methods, including Agile acquisition. While research exists on which method is optimal, no process can be successfully implemented without a significant culture change.

The commercial marketplace is leveraging Agile principles in their business models for a myriad of reasons. This includes the flexibility to adapt and change courses quickly. It is more productive than previous acquisition methods because it quickly and routinely assesses and adapts throughout the acquisition process. The Agile methodology ensures issues are identified and resolved quickly before additional funds are obligated unnecessarily and project milestones are not met within performance goals.

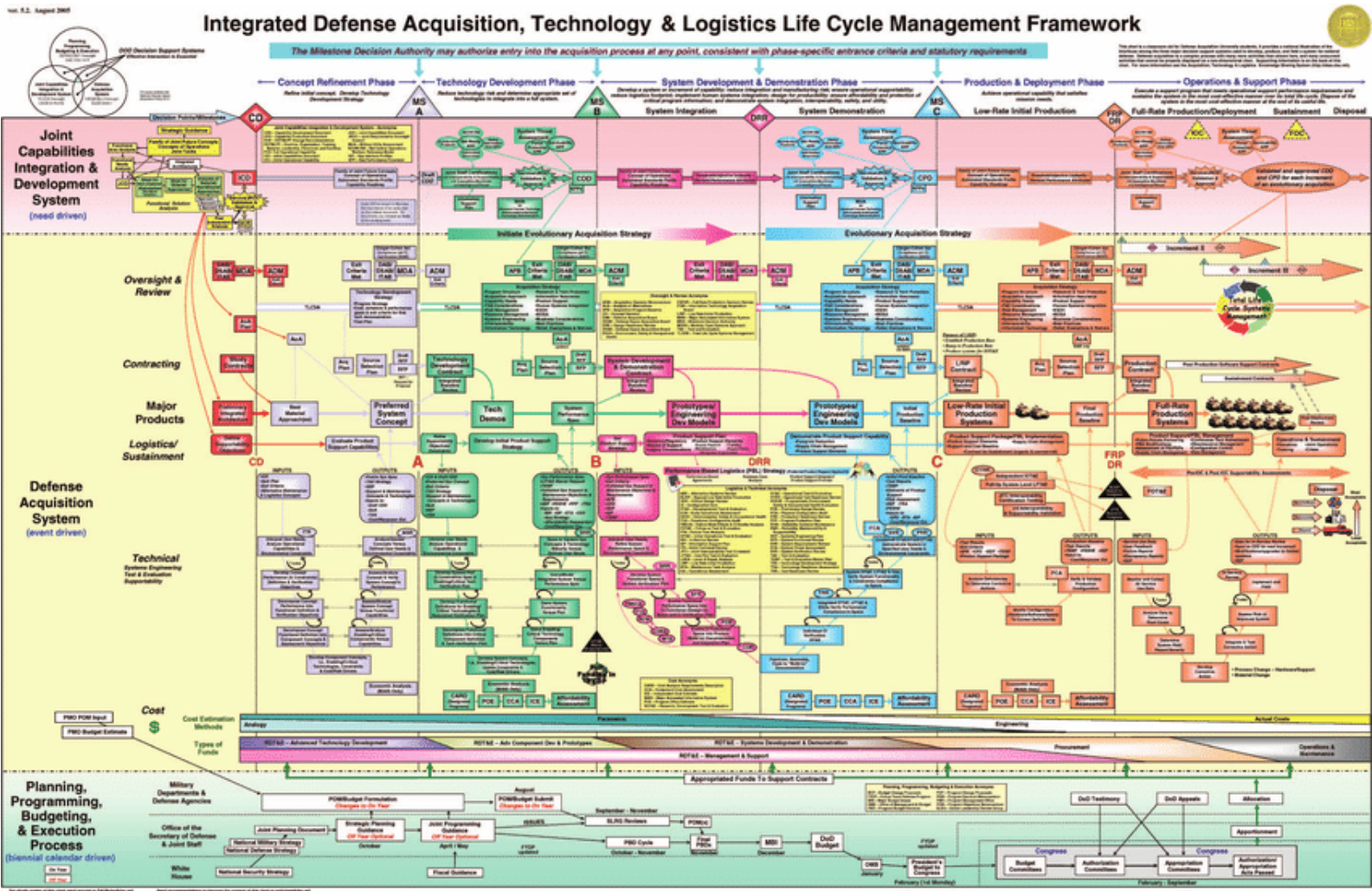


Figure 3. Integrated Defense Acquisition, Technology & Logistics Life Cycle Management Framework. Source: Defense Acquisition University (2009).

The Department's current leadership encourages "out of the box" thinking and innovative ways of procuring requirements, yet the workforce has a tendency to lean on previous practices to acquire requirements without considering innovative approaches. It is imperative to understand why the workforce is not thinking strategically and not utilizing differing approaches. Program office, contracting, and acquisition professionals are under constant pressure to meet milestones and award contracts regardless of what the requirement states or to whom it is awarded (so long as it is the incumbent or favored contractor). What the agency is tracking is: if the program met its milestones, when the contract will be awarded, and when it will be delivered to the warfighter. In most cases following antiquated procedures that are known and proven to be processed and approved by stakeholders, including legal, are the quickest and least contentious to get on contract. However, the conventional contracting solutions often fail to offer requisite flexibility during and after contract award.

It is encouraging that the current leadership encourages innovative acquisition methodologies, but it is the acquisition workforce that must be better equipped and embrace new techniques. The role, business, and workforce of acquisition and contracting is changing. The Department's mission hinges on acquisition professionals to develop new solution sets within months rather than years. The business is evolving as new technology quickly and continually develops new efficiencies. The workforce requires a new set of competencies and skills to think more strategically and less within the confines of scripted policies. Senior leaders understand the need to "overcome a culture of risk aversion to allow for speed, agility, and innovation" (National Contract Management Association, 2019, p. 4). However, there is a missing link that is paramount to mission success; what are the plans to address the current gaps and changing environment and how does the agency go about implementing these plans?

Should Agile be the common industry and government way of doing business, the Department of Defense will need to find out how to operate within the current confines or make drastic changes to manage it successfully.

2. SWOT Analysis

The SWOT analysis methodology will focus substantially on assessing the initial business decision related to applying an Agile mindset to the Department. The intended result is an understanding of the maturity of the Department and the current business environment in terms of its processes and organizational structure. It will provide the current strategic position of the Department and unveil opportunities and threats of implementing the change to Agile methods, processes, and culture.

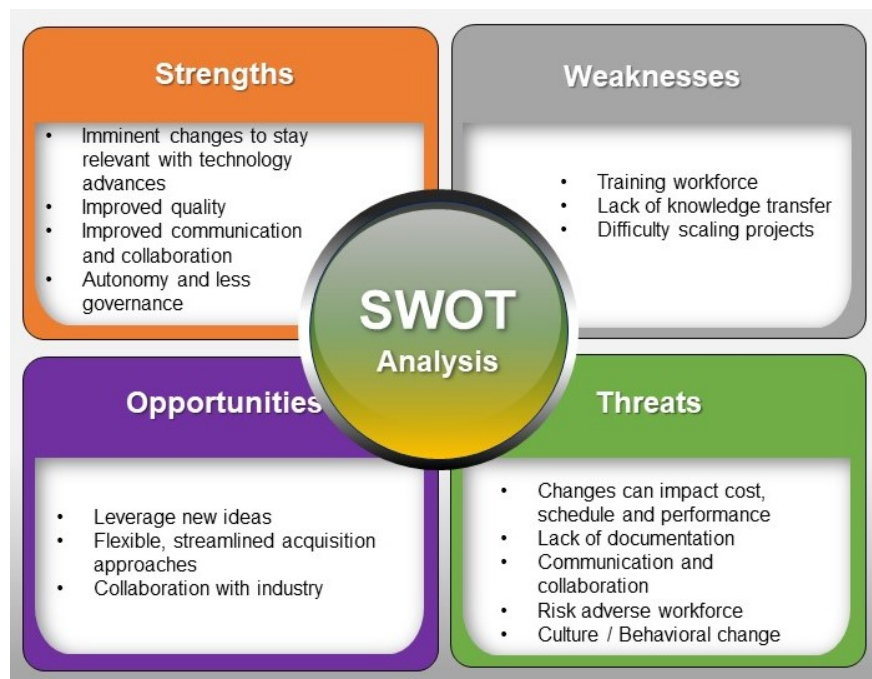


Figure 4. SWOT analysis

a. Strengths

- (1) Imminent changes to stay relevant with the industrial market and new technology advances

Agile practices ensure the team is focused on delivering an agreed to set of product requirements during each phase or iteration. There is an opportunity to continually assess and reprioritize based on current market advances and new technology. The conventional acquisition methodologies lead to systems that are obsolete and ineffective when integrated

and fielded. Agile solutions afford the Department with an acquisition strategy that is expedient while able to increase capabilities. It provides a means to get the requirement to the warfighter more quickly while taking advantage of the latest and future technologies.

(2) Improved quality

By breaking down a requirement into manageable tasks, the project teams can focus on high-quality, forward thinking, and state-of-the-art deliverables. Assessing each iteration and allowing for needed changes in design can improve the overall product. Finding and fixing defects early can ensure that issues are addressed prior to deployment. The ability and agility to change enables the end-user to provide valuable feedback early in the project.

(3) Improved communication and collaboration with internal and external stakeholders

It is important to note that communication and collaboration is seen as both an opportunity and a threat of Agile methods. The threat will be addressed in the next section.

The opportunity for improved communication and collaboration is in the knowledge sharing, groupthink, continuous assessment and improvement and “out of the box” thinking from varying perspectives. The age old saying ‘two heads are better than one’ is true in Agile practices. Agile will create opportunities for the workforce to form networks and teams to work on value-creating requirements. Finally, it will create cross communication and a means for resources from different functions to partner, leading to the identification of multiple ideas and assessment of the best alternative.

(4) Autonomy and less governance

Streamlined decision making is a benefit of Agile acquisition methods. The reporting structure is minimal, and more autonomy is given to the project team to make decisions.

The Department is structured with their governance bodies at the top and the decisions flow down the hierarchy. This is contrary to Agile organizations where a unified

vision is shared, and decisions are made by the team members and stakeholders most closely affiliated with the project.

b. Weaknesses

(1) Training the workforce

The current competencies of the workforce are not in line with the Agile way of thinking and doing business. Acquisition professionals will need to shift from a process and document-driven decision-making system to an assessment, continual improvement, problem-solving, and collaborative decision-making environment. Interpersonal skills, critical thinking, and leadership will need to be fostered in the workplace and will take time to mature and deploy across the Department. The training will need to be applied up, down, and across the organization and should be intertwined so both senior level executives and the lower workforce are together in programs. Leadership and managers will need to inspire and empower and model and mentor rather than direct.

(2) Generational learning curve

The Department has all generations embedded in the workforce, and Agile principles will certainly be difficult for some to accept. The incoming generation is expecting instant access to information and have the ‘need it now’ mentality, while the older generation is more rigid and procedurally exposed (National Contract Management Association, 2019, p. 11). Melting all the generations and ensuring all are collaborating on projects together in unison will prove challenging.

(3) Limited understanding of Agile

Stakeholders who have a limited understanding of Agile principles and practices can overcompensate and inundate the process with team members who have little or no value to the overall project outcome.

(4) Lack of knowledge transfer

Given Agile projects rely on verbal communication, Agile methods can impact the Department’s ability to properly transfer knowledge on a project. It is inevitable that there

will be government personnel that will depart the agency and leave a void in the project that could be critical. Not documenting or having historical information and decisions on paper means that when a team member leaves the project, so does the information that vested member contributed.

(5) Difficulty scaling the Department's projects.

A significant weakness of Agile is the ability to tailor Agile practices to large, complex organizations or programs. Given the Department's size, complexity, and layers of subordinate departments, Agile may not be feasible in some cases. Typically, an Agile team is three to eight when a Department program office can range in upwards of fifty. Each subunit in the Department will need to be broken down department by department, program by program, project by project. The transparency of the Agile project will become less visible to higher level leadership. However, that is the intent of Agile: to empower teams to make decisions quickly to gain the most effective and efficient solution.

c. Opportunities

(1) Leverage new ideas that were undiscoverable at the time of requirement development

In the current acquisition life cycle, there is typically only one chance to get the requirement right. In Agile acquisition, the requirement is continually reviewed and revisited throughout the life cycle. Reevaluation occurs often and there is always a chance to move in another direction or shift courses of action. Agile takes the approach of inspect and adapt, reducing the development time and cost while providing opportunities to recalibrate given successes or failure in the field.

(2) Flexible, streamlined acquisition approaches

Contractual processes have been followed and regulated by the Federal Acquisition Regulation since 1974. The need for acquisition to move to more innovative solutions is challenging the way products and services are solicited and acquired. This unveils numerous opportunities for not only IT and software procurement but for the full portfolio of requirements the Department procures.

(3) Collaboration with Industry

Agile requires constant communication and collaboration with industry, resulting in better business partners and more vested interest. Results can be seen in the form of industry competition, driving down costs, and interdisciplinary approaches to multiple projects and problem sets.

d. Threats

(1) Too many changes can impact schedule, cost, and overall performance objectives

Agile attempts to minimize requirement planning, estimating, and cost tracking in an effort to make changes quickly throughout the project. While this can be beneficial for the final deliverable it can pose a threat to the Department and program's overall milestones, budget, and goals. In addition, it can potentially negatively impact the contract under which the requirement is being developed. Cost and schedule creep are threats of this approach as well as ensuring contractual terms and conditions are met. Should the government team be uncooperative or unresponsive, government delays can also occur.

(2) Lack of documentation

Agile methods have an informal documentation structure and require less 'paperwork' and approval processes than traditional means. While there are benefits to this approach, this can be seen as a threat. The threat of not having the necessary information on previous decisions can lead to confusion or misinterpretations. In addition, it is more difficult to hold team members and stakeholders accountable for their actions since there are no prevailing records.

(3) Collaboration and communication among stakeholders

Communication is key in any process, but communication and collaboration are key in Agile. Conflict can severely hinder a project's success. Team members can either cooperate and add value to the team, or they can threaten the deliverable and group dynamic. Managing stakeholder expectations and ensuring maximum participation is a challenge for adopting Agile methods. The overall objective is to reduce conflict and

realize each member's strengths and potentials and assign them tasks and roles that lead them to be high performing in the group. The team's ability to successfully function is dependent on communication and collaboration.

(4) Risk adverse workforce

The current workforce is stagnant and resistant to change. The federal government has always been thought of as an employer that offers job security. Part of that can be attributed to the risk averse culture and the fact that the government remains the status quo in nearly all aspects.

This risk aversion translates to adopting new acquisition practices as well. "Several senior leaders highlighted contracting organizations' tendency to over-engineer processes and overreact to isolated risks as major obstacles to increasing innovation within the contracting profession. They described a tendency to over-emphasize the rules and to let risk aversion hold back the use of existing authorities for fear of repercussions" (National Contract Management Association, 2019, p. 4).

(5) Culture / behavioral change

Change is difficult in any organization but changing the habits of the way people work is an immense undertaking for the Department. The typical saying, "that's the way it has always been done" or "this approach was approved last time so it must be approved this time" resonates throughout the Department. Accepting a change means challenging a person's natural instinct. Agile pushes this boundary in an effort to break through norms.

B. IDENTIFY WHAT THE END PRODUCT IS, HOW IT WAS ARRIVED AT, AND WHY IT IS SUPPORTED BY THE ANALYSIS

The Department bureaucracy, regulations, historical systems and processes, and inability to effectively embrace change all present unique challenges to the implementation of Agile principles. Cultural barriers exist that are complicated by the resistance to accept change. This hinders the transformation needed to successfully adopt Agile across the Department. The analysis concluded that significant shifts in thinking are required and some of the analysis provided solutions to begin the enterprise conversion.

Recommendations will be provided for further studies and propose implementation recommendations to ensure the Department can begin to embrace this new way of critically thinking.

C. RECOMMENDATIONS BASED ON ANALYSIS

“Any enterprise-wide Agile transformation needs to be both comprehensive and iterative. That is, it should be comprehensive in that it touches strategy, structure, people, process, and technology, and iterative in that not everything can be planned up front” (Daniel et al., 2019, p. 1). This reference statement summarizes what is required to transform the Department from the conventional methods and mindset to the Agile. The culture must be changed from the people, processes, strategy, structure and technology aspect if the Department chooses to continue to demand to adopt Agile practices.

a. Recommendation 1: Focus on change management and people

A departmental culture change is required for adopting Agile practices. In addition, the fundamental concept of Agile is based on assuming that the actual requirement will change as a project develops. Therefore, a change is required not only at the strategic level but also the tactical level. The Department must challenge the current culture and existing mindset of the workforce.

Creating an Agile culture requires a solid vision, senior executive support and a clear roadmap. “Despite its advantages, many organizations struggle to successfully transition to Agile, leading to an unnecessarily high Agile project failure rate. While there are several common causes for this failure rate, one of the top causes—if not the leading cause—is the lack of an Agile -ready culture” (CGI, 2016). It is envisioned that this will be the case with the Department if the entire workforce does not focus on change management, specifically culture change management.

It is recommended that the Department invest resources to market this new methodology and practice as a cultural change. In addition, it should emphasize that with this cultural change and methodology the Department is aiming to align more with the

private sector. It will be important to align the cultural change marketing campaign to the vision of providing more timely and relevant capabilities to the warfighter.

While it is inevitable that this will prove to be an immense undertaking, the primary recommendation of changing the mindset and culture is a must.

b. Recommendation 2: Hierarchy structure and leadership

“Agile is most suited by a bottom-up approach, which advocates autonomy and self-organizing teams” (Consultancy.uk, 2018). For the Department the right balance of accountability and authority needs to exist, and clearly defined roles and responsibilities are necessary. Agile still requires this but takes more of a collaborative approach.

It is recommended that the leadership structure empower the lower level workforce to solve problems and be given more roles and accountability in the acquisition process. This recommendation will require a shift in senior and middle management. The workforce will not take this on themselves, and senior leadership needs to start this transformation by lessening the orders, directives, and mandates that are put on the workforce. More autonomy and less governance are needed at all management levels. With that, the workforce staff have to be held accountable and held to making sound business decisions as stewards of the taxpayer’s dollar and supporters of the warfighter. The key factor to making Agile successful is complete dedication to the vision, and this responsibility must rest not only at the top but also at the bottom.

c. Recommendation 3: Think small, move up, and implement pilot program offices

Changing the entire Department to think in Agile terms and adopt Agile methodologies will not happen overnight. It is recommended that the Department incorporate Agile in individual program offices and select specific projects to tackle first. The Department needs to assess where it makes sense to implement Agile practices and then guide the transition. It is recommended that the Department has a well-defined transition strategy and plan which may require the enlistment of external resources and subject matter experts.

It is recommended that the Department select a program or project that is already familiar with Agile, potentially an information technology driven program, before extending to other departments. Let this program act as a pilot and have the practitioners become the mentor and coaches for other departments across the organization. It should be noted that Agile can be of value for those requirements such as new product development, IT, software, and supply-chain. These programs are where the Department should emphasize and exert its resources first.

d. Recommendation 4: Training

Training is essential to deploy Agile practices; however, training alone is not enough. It is recommended that the Department not only train the workforce but appoint coaches, mentors, and embed subject matter experts in programs that are undertaking an Agile project. Resources are available throughout the Department and in the external environment, but since this is a new methodology and new approach for the Department, it is recommended that Agile programs do not rely on current Department guidance, standard operating procedures, and documents. The workforce should clear all legacy information when starting an Agile process and think from the ground up without historical documentation. For some, this will be challenging as it is changing the way of their typical work behavior, and it is necessary to have coaches and mentors assist along the way.

The mentors should be onsite with the team members and act as a liaison to bounce ideas off. The mentor should provide probing questions to get the team on track and thinking in terms of Agile development.

e. Recommendation 5: Emulate successful Agile companies (Microsoft)

Finally, there are considerable best practices that can be mirrored and tailored from private industry. The mega-giant Microsoft has implemented Agile successfully. Again, it is important to note that Microsoft is an IT-driven firm who may have already been familiar and at the cutting edge of accepting Agile practices. That stated, it is recommended the Department review their business case and structure. In addition, it is recommended that Department officials from all levels of the organization with a vested interest in Agile intern at the company or shadow a key member of their staff. It will be critical for those

members to bring back what they learned to the Department and share with all. A cohort type program is recommended for the most advantageous and strategic approach for learning best practices and employing them at all levels.

V. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSIONS AND RECOMMENDATIONS BASED ON ANALYSIS

The literature review and analysis provide a sound basis for potentials the Department should consider when adopting Agile practices and methodologies. While there is not a one-size-fits-all approach, the recommendations provide a framework for the areas the Department should consider.

Agile is more than just a process and is based on fundamental practices that provide the manifesto, principles and values. Through this, it is seen that the human factor and treating people and teams as assets and providing them the opportunity to develop solutions rather than directing them makes logical sense. Agile puts this in to practice and supports an organization by focusing on beliefs, principles, and values and empowers the workforce through servant-leadership. In this way, the workforce and Agile teams feel more engaged and committed to accomplishing the mission.

In conclusion, the Department must look at the organizational culture and the impacts of a drastic change in acquisition. The feat will not be easy and will take time to accept. However, relying on past practices will leave the acquired systems obsolete, risky, and less interoperable when integrated and fielded. The U.S. will lose its competitive advantage.

B. SUMMARY

This project captures a significant problem statement which is analyzed to determine recommendations for Departmental acquisition improvement. Can the Department effectively embrace the change of implementing Agile principles across the agency? The answer is yes, but it will come with a need for a cultural change in the way of doing business, specifically in relation to the workforce and their current approach to acquisitions. The workforce from the lowest level to the most senior appointed leadership will be affected by this cultural change, and each will have a vested interest and effect the overall success of implementation.

In summary, the Department needs to prepare and plan for the future now. The Department is already behind the power curve, but it has great opportunities to learn from others in the industry and leverage best practices. The Department needs expedient ways to acquire adaptable systems while increasing future capabilities. The current systems and processes do not adequately support the warfighter needs and expanding requirements.

C. LESSONS LEARNED

The Department continues to face an everchanging operational and tactical landscape with technology driving the warfighter needs. Therefore, there is a need for the Department to stay relevant and adopt new and flexible principles, methods, and approaches to acquisition. In order to do so, the Department must change the current cultural mindset and move to a more Agile mindset to rapidly stay in front of its adversaries.

Departmental guidance and policies exist that illustrate the Department's desire to move to flexible acquisition processes; however, what is missing from the documentation is the roadmap and plan to get there. Tools and resources are available, but what is missing is the workforce buy-in. The workforce is risk averse and introducing new processes will require a change in the way the agency is structured in addition to the way strategies are employed.

Senior leaders are still unsure of what it will take to right the ship and move the Department to Agile methodologies, as is apparent in the agency's responses to the GAO report. It is known that a change is needed, but the future actions offered by some agencies reveal gaps. The significant gaps would devalue the Agile acquisition life cycle process allowing the Department to retreat to outdated conventional methods of procuring antiquated systems.

D. FUTURE AREAS OF RESEARCH

The literature and current studies on the topic of Agile acquisition principles are adequate; however, further research is recommended on how to apply these principles across the Department. Potential research questions to be analyzed include: (1) what

specifically needs to change in the complex organization, at what level and to what extent? (2) How is the Department going to lead this cultural change? (3) Is an outside contractor or think tank going to be commissioned to facilitate the new processes? (4) What project or department should be earmarked first for the Agile transformation?

Leadership knows they need to make changes, but simply providing documents and reports will not be enough to shift the mindset of the workforce and successfully adopt flexible and Agile acquisition approaches.

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