



ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

Enhancing Acquisition Strategy Processes within the Program Executive Office Integrated Warfare Systems

December 2024

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Prepared for the Naval Postgraduate School, Monterey, CA 93943

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ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

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ABSTRACT

This capstone project, sponsored by Program Executive Office, Integrated Warfare Systems (PEO IWS), utilizes the Lean LaunchPad methodology to enhance acquisition strategy processes and address challenges faced by assistant program managers (APMs). The research identifies challenges in developing robust acquisition strategies, including lengthy lead times, complex stakeholder management, and the need for detailed, sustainable content. The primary research question focuses on the interrelated challenges within PEO IWS through the application of Lean Launchpad to create an effective Minimum Viable Product (MVP). The project objectives include leveraging the Lean Launchpad methodology to validate core challenges and developing MVPs to address those challenges. This research methodology includes stakeholder interviews, iterative testing, hypothesis-driven development, and continuous feedback within PEO IWS's various Acquisition Category (ACAT) programs. The final MVP is an AI-enhanced database called Ask Sage, tailored to PEO IWS by ingesting comprehensive knowledge and artifacts from PEO IWS. By integrating Ask Sage into the acquisition strategy development process, PEO IWS can benefit from improved efficiency, better decision-making, enhanced security, and effective collaboration, ultimately leading to more successful acquisition outcomes. This innovation will contribute significantly to the U.S. Navy's operational readiness and superiority.



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LIST OF ACRONYMS AND ABBREVIATIONS

ACAT	Acquisition Category
AI	Artificial Intelligence
API	Application Programming Interface
APM	Assistant Program Manager
CMMC	Cybersecurity Maturity Model Certification
CMP	Common Mission Project
CP	Contracting Plan
DAU	Defense Acquisition University
DPM	Deputy Program Manager
DoD	Department of Defense
FEDRAMP	Federal Risk and Authorization Management Program
GPT	Generative Pre-Trained Transformers
H4D [®]	Hacking for Defense [®]
IL	Impact Level
MDA	Milestone Decision Authority
MMC	Mission Model Canvas
NPS	Naval Postgraduate School
MVP	Minimum Viable Product
NIST	National Institute of Standards and Technology
NSIN	National Security Innovation Network
PEO IWS	Program Executive Office Integrated Warfare Systems
PM	Program Manager
PPBE	Planning, Programming, Budgeting, and Execution
SME	Subject Matter Expert
VPC	Value Proposition Canvas



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I. INTRODUCTION

Applying the Lean LaunchPad method, this sponsored capstone aims to enhance the acquisition strategy development process within Program Executive Office Integrated Warfare Systems (PEO IWS) and address the significant challenges that assistant program managers (APMs) face in developing acquisition strategies. PEO IWS is tasked with developing and delivering naval warfare systems, which are critical in supporting the U.S. Navy's operational readiness and superiority. These systems are integral to the Navy's ability to project power and maintain maritime dominance. (Naval Sea Systems Command, n.d.). PEO IWS oversees many complex and advanced combat systems and needs precise and efficient acquisition strategies to ensure the systems meet the Navy's stringent operational requirements. Challenges often hamper the effective deployment of these systems in acquisition strategies. Based on the sponsored problem, PEO IWS faces several hurdles in the acquisition process, including managing extensive documentation, coordinating among various stakeholders, and adapting to rapidly changing technological landscapes. These challenges can lead to schedule delays, increased costs, and potential gaps in capability deployment. This project aims to improve the acquisition processes within PEO IWS by determining the root causes of the challenges and developing minimum viable products (MVPs) to test potential solutions.

Our sponsored project focuses on various levels of acquisition category (ACAT) programs within PEO IWS, encompassing ACAT I, II, and III acquisitions. The research primarily involves interviews and collaboration with APMs, deputy program managers (DPMs), and acquisition professionals within PEO IWS, as these stakeholders are directly engaged in the development and execution of acquisition strategies and contracts.

A. SUMMARY OF METHOD

The primary method utilized by our research team is the Lean LaunchPad, learned through the Hacking for Defense® (H4D®) curriculum taught at Naval Postgraduate School. Hacking for Defense® is a graduate level program powered by BMNT, Inc. and the Common Mission Project (CPM) that serves as a bridge between student teams and government organizations to solve real-world problems threatening national security



(Common Mission Project [CMP], 2023). To fully comprehend the Lean LaunchPad method, it is crucial to first delve into its origins and evolution. The concepts and principles of this method initially stemmed from what is known as the Lean Startup, which Eric Ries pioneered. The core tenets of his approach revolved around “rapid iteration, validated learning, and continuous innovation. The Lean Startup methodology advocates for building products incrementally, testing them with real users, and adapting based on feedback, all while minimizing waste and maximizing learning” (College Hive, 2024). This method subsequently allowed other entrepreneurs to apply his approach to addressing real-world problems.

In 2011, Steve Blank built upon Reis’s ideas and introduced the Lean LaunchPad. According to Steven Blank, the Lean LaunchPad intends to achieve a sustainable business model through iterative testing of hypotheses and customer-focused feedback which echoes Reis’s intent (Steve Blank, 2024). The Lean Startup is more business oriented while the Lean LaunchPad is more mission focused tailored to serving the DoD. Blank is a notable entrepreneur, author, and academic recognized for his work on the customer development methodology, which sparked the Lean Startup movement. Moreover, he is acclaimed for his involvement in creating the National Science Foundation Innovation Corps program, dedicated to aiding researchers and scientists in commercializing their technology and research (Steve Blank, n.d.).

The DoD and universities worldwide quickly adopted the Lean LaunchPad method’s core principles. Recognizing the Lean LaunchPad’s value and applicability to real-world national security challenges, the DoD used the method’s principles to establish the H4D® program. H4D® applies the Lean LaunchPad method to address complex national security issues by bringing together interdisciplinary teams of students and mentors. According to Stanford, the program focuses on developing innovative solutions, fostering entrepreneurship, and bridging the gap between the tech industry and national security organizations (Stanford Video, 2020).

The Lean LaunchPad is a qualitative approach centered around a build-measure-learn loop. Students create an MVP based on the beneficiaries’ needs, measure its



effectiveness, and learn from the results. This iterative process continues until the MVP achieves its intended goal and solves the beneficiaries' problems.

The Lean LaunchPad Methodology consists of a launchpad model with three main components: the mission model canvas (MMC), beneficiary discovery, and the MVP. These elements work together systematically to address problem-solving and innovation. The following sections contain brief overviews of these components; further details about our use of this methodology are provided in Chapters V and VI.

1. Mission Model Canvas

Per the CMP H4D[®] Lesson Plans, “MMC plays a pivotal role within the Lean LaunchPad method, providing a structured framework for teams to organize their thoughts and systematically make assumptions” (CMP, 2023, Concept 1, Slide 2). This document is regularly updated during research and holds significant importance in guiding the development of an MVP and determining beneficiaries. Nine boxes are categorized into three distinct sections: desirability, feasibility, and viability as shown in Figure 1.

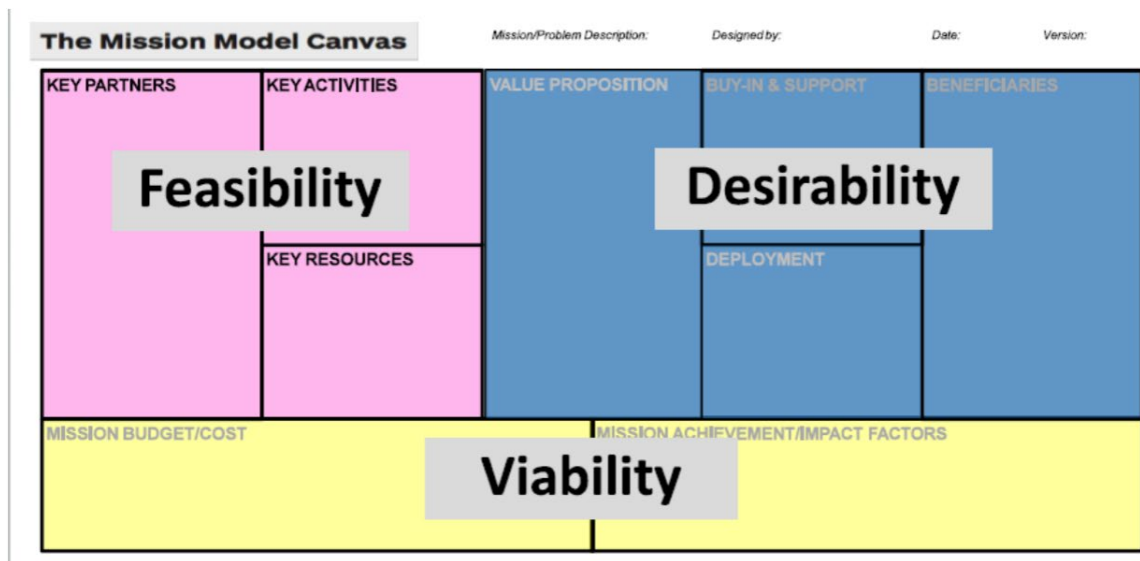


Figure 1. Blank MMC.
Source: CMP (2023, Concept 1, Slide 4).

The desirability section is dedicated to gaining a deep understanding of the problem ecosystem, meeting the needs of beneficiaries, and developing compelling value propositions. This involves employing critical thinking and empathy mapping to create

value propositions that alleviate specific problems and offer tangible benefits. The feasibility section, a crucial and realistic component of the process, assesses the practicality of the proposed MVP by considering resource availability and operational limitations. Key partners are essential in collaborating and validating solutions for the defense sector. Lastly, the viability section, which emphasizes revenue generation, and the economic sustainability of the proposed solution addressed in the MMC. Each section is designed to facilitate the development of impactful and sustainable solutions.

2. Beneficiary Discovery

One of the fundamental elements of the Lean LaunchPad is Beneficiary Discovery. This part of the model is utilized to validate the hypotheses and assumptions identified in the MMC. CMP states, “Beneficiary discovery is a comprehensive, evidence-based methodology used to understand the needs, preferences, and challenges of the target population or stakeholders within a specific problem domain, with the [goal] of refining and validating the value proposition of a proposed solution or intervention” (CMP, 2023, Concept 1, Slide 13). This crucial phase focuses on identifying and thoroughly understanding the specific individuals or organizations (beneficiaries) that benefit from the developed MVP. Beneficiary Discovery aims to gain deep insights into the target beneficiaries’ nuanced needs, challenges, and motivations. By delving deeply into the beneficiaries’ perspectives, we aim to tailor the MVP precisely to address the beneficiaries’ unique requirements, enhancing the MVP’s potential for successful adoption. According to CMP, this phase encompasses various methods, including comprehensive market research, in-depth interviews, and systematic feedback gathering, all of which contribute to building a robust and nuanced understanding of the target audience (CMP, 2023, Concept 3, Slide 4).

3. Minimum Viable Product

The MVP, the final stage of the Lean LaunchPad model, is a concept used for addressing defense and security requirements. It enables the rapid development of testable solutions and the collection of feedback from the intended beneficiaries. By adopting the MVP approach, organizations demonstrate their commitment to resource



efficiency and strategic development. It's important to note that the MVP's primary goal is to facilitate validated learning through incremental and iterative methods. CMP states that this learning is achieved by engaging with the target audience, which can be customers or beneficiaries, depending on the organization's focus (CMP, 2023, Concept 5, Slide 16).

As stated earlier, the Lean LaunchPad method integrates the principles of lean startup methodology and mission model canvas to qualitatively identify problems, create solutions, and ultimately solve national security challenges. This approach enhances problem-solving by promoting a systematic and iterative method to validate assumptions, test hypotheses, and develop viable solutions for national security concerns.

B. SPONSORED PROBLEM

This innovative capstone project started with this problem statement from a sponsor organization: How might we “lean out” the acquisition process, cut the cycle time in half, better position our acquisition workforce, leading to better contracts and better results, all while “learning through doing”?

The primary problems addressed in this capstone are the inefficiencies and complexities that APMs face within PEO IWS when developing acquisition strategies. This issue involves the lengthy approval process, the crucial task of managing multiple complex stakeholder relationships, ensuring comprehensive and detailed content inclusion, and accurately identifying critical elements necessary for long-term sustainability. Effective stakeholder management is not just important, it is a necessity for the success of this project. Specifically, developing acquisition strategies often takes years, involves many stakeholders, and requires extensive documentation and content validation. This problem is exacerbated by the rigid and bureaucratic nature of existing processes that must be redesigned with the agility needed in contemporary defense environments. The complexity of these processes increases the cognitive load on APMs, leading to added errors and inefficiencies. Addressing these challenges requires a comprehensive approach leveraging innovative methods like the Lean LaunchPad to streamline processes and improve efficiency.



C. PROJECT OBJECTIVES AND HYPOTHESIS

The objectives of this project are multifaceted:

1. Objective: Validate the problem statement and understand the problem ecosystem utilizing the Lean LaunchPad Methodology
2. Objective: Develop a minimum viable solution that addresses the core issues identified during the beneficiary discovery process.
3. Hypothesis: Applying the Lean LaunchPad method enables us to better understand shared challenges and develop an MVP that improves the acquisition strategy development by reducing lead time and managing stakeholder complexity.



II. SUMMARY OF STAKEHOLDERS AND BENEFICIARIES

APMs are the beneficiaries and are directly responsible for developing acquisition strategies. According to the Defense Acquisition University, Program managers (PMs) are “[d]esignated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority (MDA)” (Defense Acquisition University [DAU], n.d.). After we conducted numerous interviews during the beneficiary discovery process, it became evident that APMs are of utmost importance. In the hierarchical structure within PEO IWS, APMs are below the program manager and have less decision-making authority, but still contribute to the development of acquisition strategies. It is essential to note that within the hierarchy of PEO IWS, several subcategories of APMs play a distinct role in developing an acquisition strategy.

A. ASSISTANT PROGRAM MANAGERS

Different APMs play key roles in supporting the overall program management and execution. The various sub-sections of APMs collectively form our beneficiary archetype. Although APMs all have different roles, they collaborate in developing an acquisition strategy.

B. STAKEHOLDERS

Stakeholder insights play a key part in the beneficiary discovery process. Though they may not be the direct beneficiaries, their insight is critical to providing expertise and resources in areas we are not knowledgeable about and nuances to critical components of the acquisition process. Additionally, these individuals and groups help paint the bigger picture, allowing us to see where things fit together.

1. Deputy Program Managers

DPMs provide oversight and support to APMs, ensuring alignment with higher-level strategic goals and regulatory requirements. As a result, they are identified as key



stakeholders in this project. Their role is crucial in maintaining the coherence and compliance of acquisition strategies with organizational objectives and policies. This project's improved tools and solutions enhance the DPMs' ability to provide adequate oversight and support, leading to better-coordinated and more robust acquisition strategies.

2. PEO IWS Sponsor and Leadership

The broader PEO IWS served as a critical stakeholder in this project. The leadership's input and guidance were indispensable during the early stages of the beneficiary discovery process, we sought to understand and refine the initial problem statement. PEO IWS provided invaluable access to its personnel, enabling us to solicit comprehensive feedback, gather diverse opinions, and gain deep insight into the organization's day-to-day operations and challenges. The positive collaboration allowed us to fully immerse ourselves in the PEO IWS culture and accurately identify the problems affecting the acquisition strategy process. The openness and support of PEO IWS leadership and personnel were pivotal in ensuring that the outcomes of this project were relevant, practical, and aligned with the organization's operational needs and strategic goals. Without robust partnership, we would be unable to develop a thorough understanding of the underlying issues or propose effective and sustainable solutions.



III. APPLICATION THE LEAN LAUNCHPAD METHODOLOGY

In this chapter, we explore the application of the Lean LaunchPad methodology focusing on how its key elements guided us in developing our MVP. The central goal is to demonstrate how beneficiary discovery, alongside tools such as the MMC and the VPC, informed our understanding of the challenges faced by APMs and shaped our MVP.

Our journey begins with beneficiary discovery, a vital evidence-based methodology that helps us understand our beneficiaries and validate our assumptions (CMP, 2023, Concept 3, Slide 3). This process is intricately linked to the desirability section of the MMC, where we document our insights about beneficiaries, value propositions, and stakeholder engagement.

The chapter is structured in two phases. In phase 1, we identify and validate key assumptions through interviews while documenting the results in the three sections of the MMC concurrently. We explore how this process illuminates the critical interrelated challenges for APMs, which shapes our final problem statement and provides direction for our MVP development.

In phase 2, we transition into refining our ideas of MVP development and further validating our insights through additional interviews, which leads to the creation of our MVP. While this chapter briefly introduces the MVP, the detailed discussion of its development and iteration is covered in Chapter IV.

Throughout the chapter, we underscore the simultaneous use of beneficiary discovery and the MMC. These tools work in tandem, revealing insights and guiding our decisions. This concurrent use is a key aspect to note, as it provides a structured process for our MVP development.

A. BENEFICIARY DISCOVERY

After gaining the necessary background knowledge to understand the scope, direction, and problem, we discuss beneficiary discovery as one of the most critical components of the Lean LaunchPad method. According to the CMP “beneficiary



discovery is a comprehensive, evidence-based methodology employed to understand the needs, preferences, and challenges faced by the target population or stakeholders within a specific problem domain, with the aim of refining and validating the value proposition of a proposed solution or intervention” (2023, Concept 3, Slide 13). The aim is to refine and validate the value proposition of a proposed solution or intervention. Beneficiary discovery is how the hypotheses in the MMC are validated.

As the first half of beneficiary discovery is conducted, the MMC is filled out to document the discovery process results. In the desirability section, four key boxes are required: beneficiaries, value proposition, buy-in and support, and deployment. There are two phases in beneficiary discovery, each with distinct milestones. Before moving on to phase 2 of beneficiary discovery, it is crucial to fully complete phase 1, as the two phases work harmoniously together. The thoroughness of phase 1 is of utmost importance, as it ensures that the MVP adequately meets the organizations or beneficiaries’ needs. The two phases are described in Figure 2.



Beneficiary Discovery: Phases



Figure 2. Description of Beneficiary Discovery Phases
Source: CMP (2023, Concept 3, Slide 17)

With a deeper understanding of the importance of the beneficiary discovery process, we now discuss in detail how we navigated these phases within PEO IWS, how we determined our stakeholders and beneficiaries, and how we developed our MVP.

1. Problem Statement

The journey into this research started with the National Security Innovation Network (NSIN). NSIN “is an unrivaled problem-solving network in the U.S. Department of Defense that adapts to the emerging needs of those who serve in the defense of our national security. [NSIN] is dedicated to the work of bringing together defense, academic and entrepreneurial innovators to solve national security problems in new ways” (National Security Innovation Network [NSIN], n.d.). PEO IWS submitted its initial problem statement to NSIN to invite an academic team to solve it. The problem sponsor was the senior executive service (SES) director for production, deployment, and fleet readiness within PEO IWS.

In April 2024, NSIN and PEO IWS presented us with the following problem statement: How might we “lean out” the acquisition process, cut the cycle time in half, and better position our acquisition workforce, leading to better contracts and better results, all while learning through doing?

We had our first touchpoint meeting with key stakeholders at PEO IWS on May 16, 2024. The meeting was an important milestone in our research, allowing us to clarify the problem and hone our focus. Our sponsor advocated for streamlining acquisition and enhancing the capability of his acquisition professionals, highlighting the need for more robust strategies. The Chief of Logistics (interview with authors, May 16, 2024) echoed this need, emphasizing the challenges in developing effective contracting strategies. Our sponsor and the Chief of Logistics expressed interest in implementing automation intelligence. They believe there is value in leveraging technology to solve acquisition inefficiencies.

Through this discussion and hearing the pains of the PEO IWS leadership, they believed evident that the crux of the problem was the lack of experience and expertise among program managers and contracting officers. PEO IWS leadership believed many program managers and contracting officers primarily focus on cost, schedule, and performance, often neglecting other critical metrics like cybersecurity, life-cycle logistics, and supply chain management. They believe this gap in knowledge and prioritization was the cause of system reliability and program delays, sustainability, and



operability. Following this meeting, we revised the initial problem statement to align with the discussion with our sponsor. This became iteration 1 of 3 of our problem statement.

a. Revised Problem Statement (Iteration 1)

The revised problem statement is: The acquisition strategy and contracting processes within PEO IWS do not consistently result in comprehensive acquisition strategies and robust contracts. The acquisition strategy and contracting plans currently prioritize cost, schedule, and performance while neglecting cybersecurity, life-cycle logistics, and supply chain considerations.

The extent of poorly developed acquisition strategies and contracts are compounded further by less experienced PM teams and contracting officers who support the delivery of these products. These combined shortcomings led to issues in program sustainability and suitability.

2. Interviews and Problem Statement Evolution

Our first interview in the beneficiary discovery process was with a subject matter expert (SME). Our SME is a professor at the Naval Postgraduate School and previously held positions as an assistant program and deputy program manager. As our first documented interview with an SME (interview with authors, May 13, 2024) he articulated the intricacies of developing acquisition strategies. He emphasized the importance of using templates and previous versions when drafting acquisition strategies, noting that having a template to guide the process can significantly streamline development. However, he highlighted that strategies must be tailored to each program's needs rather than relying solely on standard templates. This balance between structure and flexibility is essential.

Another significant insight from this interview was the validation of the key element of iteration 1 of our problem statement. Our SME's endorsement of the need for experienced personnel in the process reaffirms our direction. He explained that without input from knowledgeable team members, the acquisition strategy is at risk, especially if an APM feels isolated or unsupported. This validation from our SME provides a strong foundation for our work.



This conversation also highlighted the difficulties that arise from dual tasking with program management teams, where limited resources and a lack of dedicated support hinder the development of a well-rounded strategy. He recommended tailoring the acquisition strategy to include essential elements such as cost estimation, scheduling, acquisition logistics, and systems engineering could add rigor and support long-term program sustainability. This insight helped refine our understanding of the problem and guided our subsequent interviews, ensuring we focused on the practical challenges of acquisition strategy development. Although this interview was very informative, we did not modify our problem statement; we used these insights to generate research questions to ask our APM and DPMs.

Our second interview was with the senior officer in charge of PEO IWS (interview with authors, May 17, 2024) who provided a strategic overview of the future of acquisition for the U.S. Navy. She emphasized the importance of agility, particularly in contested environments, noting that different performance metrics applied during peace versus war times. This insight reinforced the need for the Navy to maintain a competitive edge in contested environments and underscored the pivotal role PEO IWS plays in acquisition for the DoD.

One key takeaway from this interview that helped shape our future interviews was the need for a more agile approach to acquisition processes. Our interviewee expressed that collaboration with research teams like ours is a key step in driving these improvements. This interview taught us that IWS consists of 11 program offices, each with domain expertise. Following this interview and using an organizational chart of the program offices, we began interviews with our beneficiaries.

a. First Round of Beneficiary Interviews and Insights

As mentioned earlier, the MMC serves as the framework guiding our research. Before we conducted interviews with our beneficiaries, we established assumptions and hypotheses for each box of the canvas: beneficiaries, buy-in and support, deployment, and value proposition. Based on our foundational knowledge and initial interviews with sponsors and SMEs, these assumptions were educated guesses. With every interview we conducted, these guesses were either validated or invalidated, evolving into facts or



encouraging us to revise our approach. These evolving insights shaped our talking points and questions for our beneficiary discovery interviews, ultimately helping us drill down to the root of the problem. Figure 3 shows the first iteration of our desirability section.

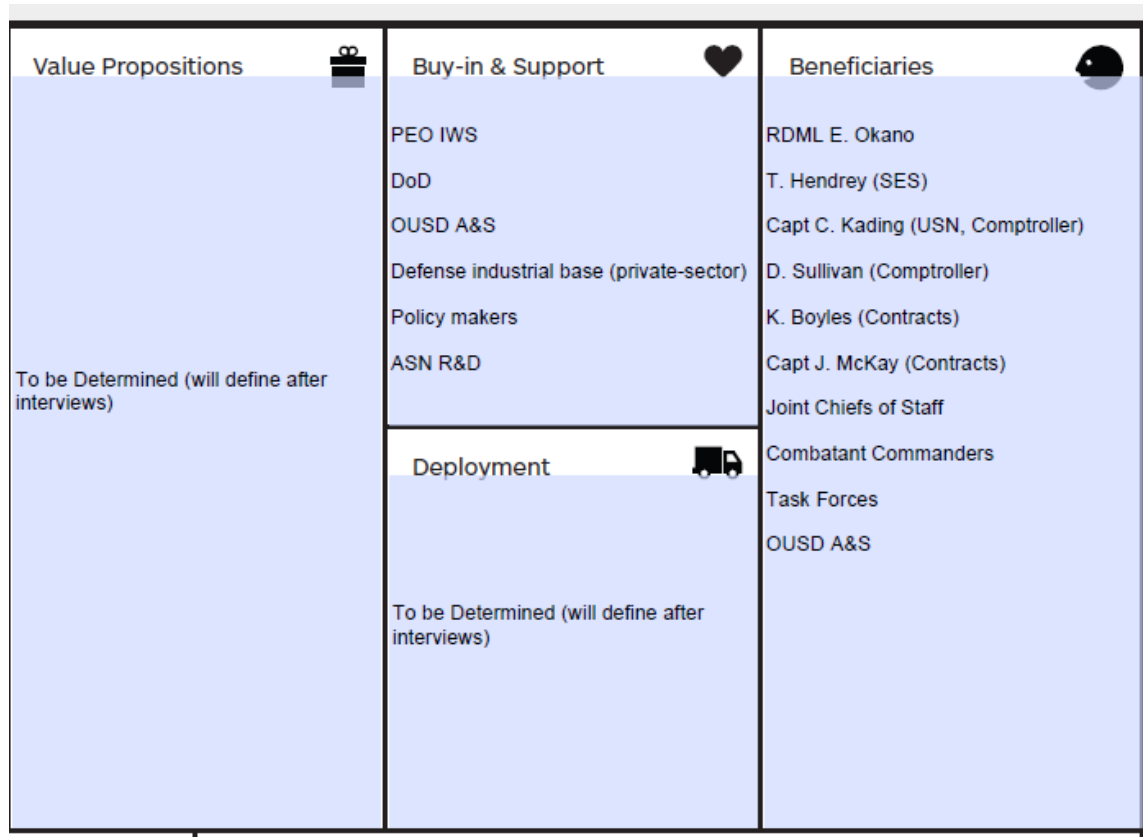


Figure 3. Our Initial Desirability Section of MMC, Adapted from CMP (2023)

Our initial research questions targeted higher-level DPMs. These early interviews focused on broad questions related to current policies and processes, which provided us with critical insights into the roles and responsibilities of DPMs and APMs within the broader DoD acquisition landscapes. Through this discussion, it became evident that there are fundamental distinctions between DPMs and APMs regarding their responsibilities. APMs handle specific aspects of a program, such as logistics, engineering, or financial management, while DPMs directly support the PMs in overseeing the entire program. DPMs also hold greater decision-making power and authority than APMs, but APMs lead smaller, more specialized teams within their functional areas. APMs, for example, coordinate efforts in logistics and financial management, while DPMs align various program components with overarching

objectives and resolve conflicts that may arise between workstreams (Naval Sea Systems Command, n.d).

In total, our team conducted 33 interviews with APMs and DPMs, along with five sponsor touchpoints. These interviews form the core of our research methodology. Through a systematic process of elimination, APMs emerged as the primary beneficiaries of acquisition strategies. This significant finding, which we elaborate on later in this chapter, underscores the crucial role APMs play in the DoD acquisition process and the value they bring to the table. While every interview we conducted was valuable in shaping our understanding of our beneficiary's problems, a few significant interviews guided the revision of our problem statement and the transition to iteration 2.

The first 13 interviews we conducted provided deep insights into the specific challenges faced by APMs and directly influenced the refinement of our problem statement. Through this early discussion, particularly with APMs from IWS 2.0 and the Director of Business Operations in IWS 6.0 (interview with authors, July 18 and 29, 2024), we uncovered that a lengthy process, complex stakeholder management, and the necessity for comprehensive detailed content significantly hinder the development of acquisition strategies. For example, both PMs pointed out how the late involvement of logistics and product support teams often led to rework, increased funding requirements, and delays. Their interviews underscored the need to involve all relevant teams early in the acquisition process to avoid long-term issues in sustainment and operability.

Our interview with an IWS 6.0 SME (interview with authors, July 19, 2024) emphasized the sheer length of the acquisition process, which can take 1–2 years for strategy development and another year for contracting, is a critical pain point. He further noted that the fast pace of technological advancement and evolving threats mean that the initial requirements may already be outdated by the time a contract gets awarded. Instead of re-evaluating unchanged content, his suggestion of focusing review efforts on what has changed opened our eyes to the inefficiencies embedded in the current review processes. This suggestion solidified and further validated the need to expedite the acquisition process.



We also gained key insights from an APM within IWS 11 (interview with authors, July 19, 2024) who highlighted the resource constraints that APMs often face, such as lack of staffing and the overwhelming workload that limits innovation and alternative strategy development. He discussed the significant time delays in awarding contracts, often as much as 2 years from recognition of requirements to award, which significantly slows the delivery of capabilities to the fleet. His suggestion of leveraging AI tools to streamline processes and reduce cognitive load resonated with our evolving focus on technology-driven solutions.

An acquisition lead from IWS 1 and a DPM from IWS 11 reinforced these challenges by emphasizing the need for streamlined, agile acquisition strategies incorporating evolving technologies. The IWS 11 DPM (interviews with author, May 30, 2024) shed light on the lengthy approval processes for ACAT 1 programs, which often take months due to excessive review levels. She recommended more realistic and executable strategies that could move programs forward while addressing the long-term impacts of delays, such as cybersecurity and supply chain vulnerabilities.

From these interviews, it became clear that APMs face significant challenges in developing acquisition strategies. These include the time-consuming nature of the process, the complexity of managing multiple stakeholders, and the need for robust, detailed content that prioritizes long-term sustainability.

However, during these first 13 interviews, we did not find any evidence supporting earlier claims of an untrained acquisition workforce or that APMs only consider the basic metrics of cost, schedule, and performance. This glaring omission led us to iterate further on our program statement, which we discuss next.

b. Revised Problem Statement (Iteration 2)

The next iteration of our problem statement is as follows: APMs encounter several significant challenges in developing acquisition strategies. These challenges include the lengthy development and approval process, which can take up to 2 years, the complexity of managing multiple stakeholders, the necessity for robust and detailed content, and the identification of key elements crucial for long-term sustainability.



The refined problem statement reflects the insight gathered from our initial interviews and sets the stage for further iterations and proposed solutions. These early findings guided our continued exploration into leveraging technological tools and refining processes to streamline acquisition strategy development, ultimately improving outcomes for the DoD and ensuring the timely delivery of capabilities to the warfighter.

3. Further Beneficiary Discovery: Second Round of Interviews

In the second round of interviews, we conducted 25 additional interviews to deepen our understanding of the challenges faced by APMs. The primary goal of this next phase of interviews was to continue learning about the problems using newly framed questions to validate or invalidate the revised problem statement.

While our new problem statement omitted certain components, such as the lack of life-cycle logistics and cybersecurity considerations and an untrained workforce, we still included questions about those topics to ensure the omission was justified. Though our initial findings did not indicate that these factors were central to the challenges of APMs, we wanted to confirm that their exclusion from the problem statement was valid.

a. Validation of Refined Problem Statement

Our next 25 interviews included conversations with APMs, DPMs and SMEs from 2.0 and 3.0 and APMs from IWS X and IWS 2.0. These interviews continued to build on the knowledge gained from the first set while also exploring new dimensions of the acquisition process that were previously overlooked.

Across multiple interviews, one recurring theme was the complexity of executing acquisition strategies. This theme was particularly evident in the discussion with the IWS 3.0 DPM and IWS X APM. Several interviewers raised the issue of stakeholder management. The IWS 9.0 DPM (interview with authors, June 6, 2024) emphasized the broad array of stakeholders involved. He discussed how managing this complex web of stakeholders often requires long-term thinking and a deep understanding of their interests.

These interviews validated much of the new problem statement while also uncovering additional layers of complexity such as a method to incorporate timely feedback as well as new systems to consolidate information. Based on the culmination of



all interviews and validation from our sponsor, the final revision of the problem statement in the next section reflects a more nuanced understanding of the multifaceted challenges APMs face in developing acquisition strategies.

b. Final Problem Statement and Core Interrelated challenges

Our final iteration of the problem statement is the following: APMs face several interrelated challenges in developing acquisition strategies, which impact the efficiency, compliance, and stakeholder alignment necessary for successful program execution.

We dissected the pain points into five core interrelated challenges:

- **Lack of a Central Repository and Knowledge Management System:** APMs struggle with developing acquisition strategies due to the absence of a centralized system for consolidating critical data such as historical documentation, acquisition strategies, contract documents, and program artifacts. This fragmentation results in redundant efforts, inconsistent documentation, and wasted time searching across multiple systems.
- **Compliance and Regulatory Challenges:** APMs face the complex task of ensuring acquisition strategies comply with evolving standards like Cybersecurity Model Maturity Certification (CMMC), Federal Risk and Authorization Management Program (FedRAMP), National Institute of Standards and Technology (NIST), and other DoD regulations. Without streamlined compliance tools, the risk of non-compliance arises, potentially causing setbacks, delays, and legal issues.
- **Inadequate Guidance and Feedback Mechanisms:** Another significant pain point is the lack of timely, constructive feedback on draft documents. APMs face delays receiving guidance, resulting in multiple revisions and prolonged development timelines. The delays frustrate APMs and hampers their ability to iterate and improve their strategies quickly.
- **Complex Stakeholder Management:** APMs must manage diverse stakeholders with varying interests and priorities. The absence of tools for identifying, engaging, and aligning these stakeholders complicates the strategy development process, requiring advanced understanding and communication skills.
- **Lengthy Approval Process:** The acquisition strategy approval process is notoriously lengthy, sometimes taking up to a year or more due to inefficiencies and a lack of tools for speeding up content development and validation. The lengthy process delays program execution and increases the risk of cost overruns; the approval process for acquisition strategies can impact overall program success.



Each pain point represents a barrier to efficiency and effectiveness in the acquisition process. They highlight the need for a more integrated, streamlined approach to managing information and fostering collaboration among stakeholders to ensure the effectiveness of program outcomes.

We must discuss sense-making and other tools aimed at ensuring there is close alignment between beneficiary needs and our value proposition tools utilized in the Lean LaunchPad Methodology. These tools, particularly the value proposition canvas (VPC), helped us document and refine our understanding of the beneficiary needs. The VPC served as the key element and tool that shaped the development of our MVP, which is the focus of phase 2.

By leveraging these tools, we were able to align our proposed solution more accurately with the beneficiaries' interrelated challenges, setting the stage for a well-informed approach in the next phase of our research.

B. VALUE PROPOSITION CANVAS AND FINAL MISSION MODEL CANVAS: DESIRABILITY

The Value Proposition box within the MMC is essential for understanding the pain experienced by beneficiaries. As CMP highlights, “A value proposition is a strategic and persuasive statement that conveys the distinct benefits and advantages of a product or service to its target audience. It articulates the specific value that the offering brings to customers or beneficiaries, addressing their needs, interrelated challenges, or desires” (2023, Concept 1, Slide 12). A compelling value proposition tells a story; it defines the problem and conveys how we intend to solve it for our beneficiaries. The VPC answers questions such as what we are offering them as a student team, and what problems are we solving for the sponsor? In other terms, what pains are we solving and how, and what gains do we give them? This information is key in creating different customer archetypes for each interviewee.

We employed the VPC to effectively articulate our beneficiaries' interrelated challenges and craft a compelling value proposition statement. Although the VPC is distinct from the MMC, it plays a crucial role in connecting each identified pain point to a corresponding pain reliever while facilitating brainstorming of potential products and



services that could address these challenges. In this context, these products and services represent potential MVPs. Figures 4 and 5 illustrate the relationship between the MMC and the VPC.



Value Proposition Canvas

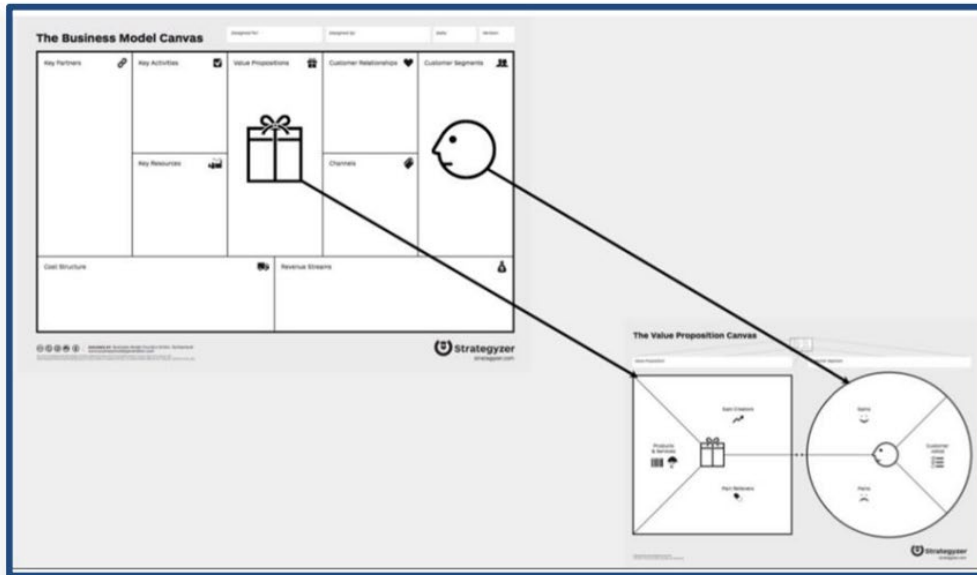


Figure 4. Depiction of the Relationship between the VPC and the MMC
Source: CMP (2023, Concept 1 Slide 10)

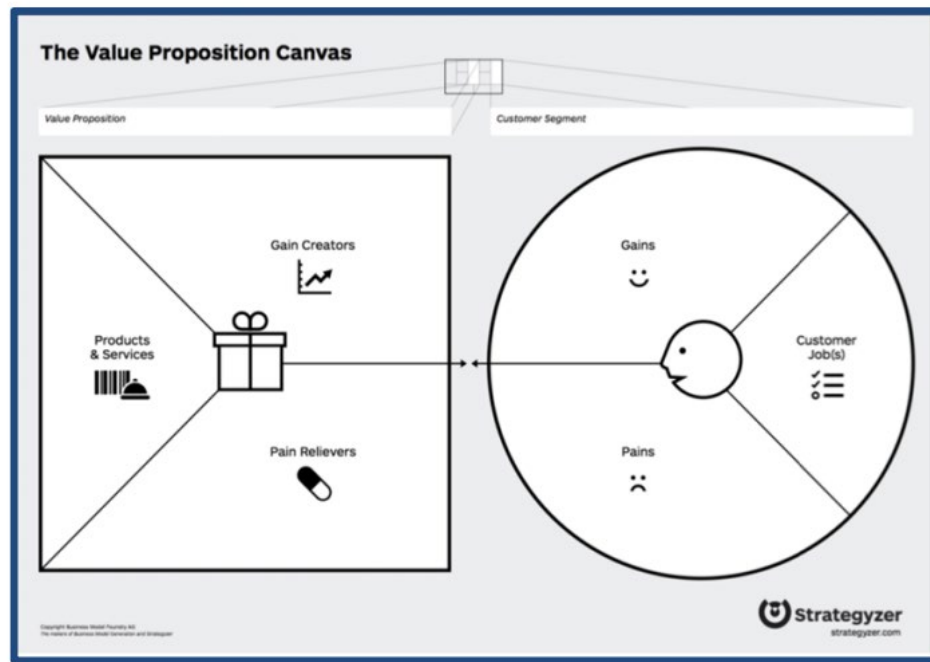


Figure 5. Example of a VPC
Source: CMP (2023, Concept 1 Slide 11)

Throughout our 33 interviews during this phase, our team filled out a VPC for each beneficiary we spoke with. After the interviews, we consolidated the insights into one final VPC that encapsulated the collective pains, gains, potential gain creators, pain relievers, and product/service ideas that could effectively address the identified interrelated challenges. This final VPC was pivotal because it directly informed us of the subsequent phase of our beneficiary discovery process, the development of our MVP. The VPC served as an invaluable tool for market research, guiding our search for potential MVPs and ensuring that each proposed solution directly addressed the interrelated challenges on our VPC.

Another aspect of the desirability section within the MMC is known as product mission fit. The concept is defined as:

“Measure of the extent to which an organization’s value proposition aligns with its target beneficiaries’ needs, preferences, and expectations. It indicates that the organization has developed a highly relevant, desirable, and impactful product, service, or intervention to the intended audience, effectively addressing their specific interrelated challenges and challenges” (CMP, 2023, Concept 1, Slide 7).

Achieving Product Mission Fit is a key success metric for our team; if we attain this alignment, our MVP is more likely to succeed and have a high adoption rate. The final desirability section of the MMC and the consolidated value proposition canvas encapsulate the culmination of one of the main milestones of the beneficiary discovery process. These two documents synthesize the insights we gained from our interviews and market research. Our team's final MMC and VPC are as shown in Figures 6 and 7.



Value Proposition Canvas – Final- PEO IWS APM's

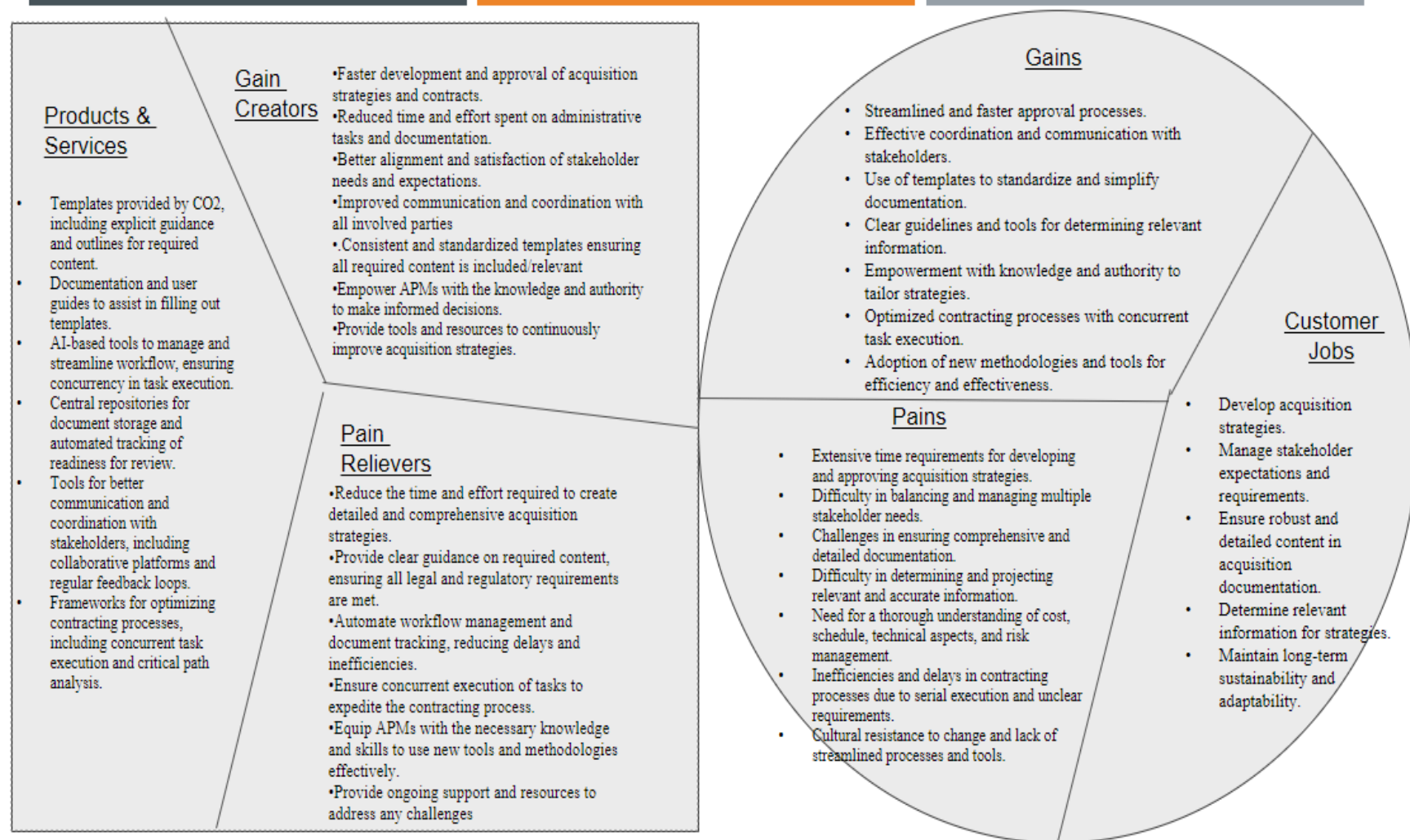


Figure 6. Our Final VPC, Adapted from CMP (2023)



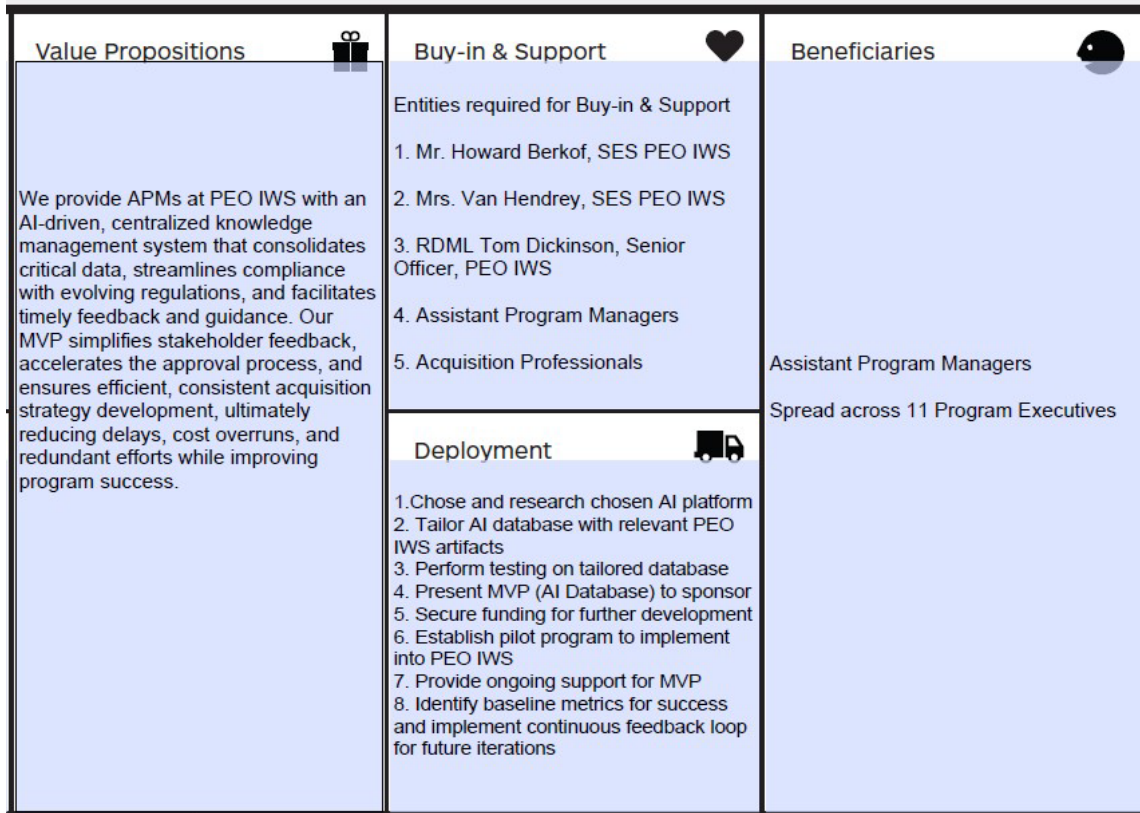


Figure 7. Our Final Desirability Section of MMC. Adapted from CMP (2023)

With the final VPC and complete desirability section, we are now prepared to complete the remaining two sections of the MMC: feasibility and viability. These components are critical for our MVP development, ensuring our proposed solution is desirable but also practical and sustainable for PEO IWS.

C. FEASIBILITY SECTION

According to CMP, feasibility evaluates the resources available to determine if the proposed solution effectively fulfills the mission of PEO IWS and whether it can be successfully implemented and scaled across the organization (CMP, 2023, Concept 4, Slide 2). As highlighted earlier in the beneficiary discovery section, our interviews and VPCs helped refine the scope of our product's mission alignment during market research for a potential solution. Feasibility serves as a critical component of the MMC, allowing us to leverage both internal and external resources available through PEO IWS and our NSIN and Naval Postgraduate School (NPS) counterparts. This section is structured into three key parts: key partners and stakeholders, key activities, and resources.

1. Key Partners and Stakeholders

Key partners and stakeholders represent the essential assets, inputs, and capabilities unique to a mission-driven organization or government entity. These are critical for successfully executing key activities, delivering value propositions, and achieving mission objectives (CMP, Concept 4, 2023). At the outset of our research, we had limited knowledge of who our external key partners and stakeholders would be due to our initial unfamiliarity with PEO IWS. The information we gathered at this stage came from open-source research.

However, through coursework at NPS and early engagement with our sponsor, we identified potential stakeholders, including experts in acquisition planning and strategy. Our sponsor's desire for a tool to prioritize key components of acquisition processes led us to preliminarily explore artificial intelligence (AI) as a viable solution.

Recognizing the nature of PEO IWS, we quickly identified deputy program managers within the organization as key stakeholders. These individuals possess deep insights into acquisition processes at both operational and strategic levels, which were essential for understanding the feasibility of any potential solution. Program managers' expertise would guide our research, ensuring that the proposed solution effectively addressed their interrelated challenges.

Additionally, our thesis advisor, a former program manager, contributed valuable insights from both a practical and strategic perspective, shaping the direction of our research. Another key partner identified early on were data and systems engineers specializing in AI. Since our understanding of AI was limited, these engineers played a critical role in expanding our knowledge and helping us explore how AI could be leveraged to address PEO IWS's challenges. During an acquisition symposium, we encountered the non-profit organization MITRE, which had researched AI implementation in government acquisition, making them a potential partner for further insights.



2. Key Activities

Key activities, as defined by the CMP, encompass the essential tasks, operations, and actions required for a mission-driven organization or project to successfully execute its value proposition (CMP, 2023, Concept 4, Slide 4). Initially, our key activities centered around two primary tasks: developing standardized templates for acquisition strategies and plans along with researching AI tools.

Our sponsor's feedback prompted the development of standardized templates, which highlighted the need for uniform templates to eliminate confusion and reduce manual effort in acquisition planning. Program managers' use of outdated or inconsistent data underscored the need for a streamlined approach to acquisition strategies.

Our second key activity involved researching AI tools that could automate data analysis and support decision-making processes in acquisition planning. Based on our initial engagement with the sponsor, AI's potential to handle large data sets and generate actionable insights reinforced its viability as a solution. As a result, we shifted focus toward exploring AI's current implementation in similar organizations and identifying tools that could be adapted for PEO IWS.

3. Key Resources

The resources section identifies the critical assets and expertise necessary to execute key activities (CMP, 2023, Concept 4, Slide 6). In our case, the key resources included experts in acquisition processes, experienced program managers, data and software engineers, AI specialists, and access to historical acquisition data and current tools used by PEO IWS.

Early in our efforts, our understanding of acquisitions was largely theoretical, based on coursework at NPS. Program managers were crucial resources, providing access to the historical data needed to inform and test our solution. These individuals also offered nuanced insights into acquisition processes, essential for aligning our proposed solution with PEO IWS's operational needs.

Similarly, data and systems engineers with AI expertise were pivotal resources, guiding our understanding of integrating AI into PEO IWS's workflows. Since we lacked



specialized knowledge in AI, these engineers helped bridge the gap between theory and practical application.

4. Final Feasibility Section of Mission Model Canvas

As we progressed, our understanding of feasibility evolved significantly, particularly after analyzing all the products and services in the VPC, which ultimately led us to pursue AI. Program managers remained central throughout this process, providing continuous feedback and refining our solution as we moved through the interview phase. Our key activities shifted toward refining our MVP's functionality.

While our initial key resources remained largely unchanged, our research and interviews introduced new potential resources for future AI applications, particularly in logistics, supply chain management, and contracting. These future directions are explored in greater detail in Chapter V since the scope of our final problem statement is APM-focused. As for key activities, this remained relatively unchanged. As we conducted interviews, many APMs expressed the lack of a tool automating mundane tasks and expedition of analysis. When directly asked about AI, many expressed their openness to try such a tool, as the vernacular surrounding its capabilities proved rather promising in the commercial sector. Such feedback bolstered only our activities and effort to search for an effective AI program that addressed interrelated challenges from an acquisition standpoint.

Lastly, regarding key partners, the main difference was our focus on systems engineers as we sought AI solutions aligned with PEO IWS' needs. This need arose from our limited expertise in generative predictive text (GPT) and similar technologies. These partners were essential in deepening our understanding of GPT programs, given that none of us had formal training in prompt engineering beyond personal use. Overall, our research feasibility was reinforced, keeping us aligned with the problem statement and preventing us from exploring inadequate solutions for PEO IWS' requirements.






<p>Key Partners </p> <ul style="list-style-type: none"> -IWS PEO Deputy Program Managers -Jeffrey Dunlap (Thesis Advisor) -System Engineers -Program managers 	<p>Key Activities </p> <ul style="list-style-type: none"> -Developing standardized templates -researching potential AI tools <hr/> <p>Key Resources </p> <ul style="list-style-type: none"> -experts in acquisition processes and documentation standards -experienced PMs for insight -software engineers -AI specialists/data scientists -access to historical acquisition and current tools being used
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Figure 8. Final feasibility section, Adapted from CMP (2023)

D. VIABILITY SECTION

Once feasibility is established, the viability section builds upon it by ensuring that the product is not only executable, but also financially and strategically sustainable. Viability answers the “why” of the long-term success of our MVP. CMP defined viability as “an evaluation of whether a proposed solution, intervention or product can achieve its intended impact and fulfill the mission, while maintaining financial sustainability and efficiency. It considers the necessary costs and investments required to develop, deploy, and maintain the innovation, as well as the potential mission benefits and impact generated by the mission model” (CMP, 2023, Concept 5, Slide 2). In this section, we delve deeper to assess whether our product, while still undefined in its exact form, is not only feasible but also sustainable in the long run, both financially and strategically. This allows us to evaluate its potential for success without committing to a specific AI tool just yet. The two boxes in the viability section can be seen in Figure 9.



Figure 9. Viability Section of MMC, Source: CMP (2023, Concept 5 Slide 7)

1. Mission Budget/Costs

In assessing the mission budget and costs, it was crucial to recognize that the financial resources and expenditure required for an AI-driven solution span every phase of the discovery process. As noted in the CMP lecture slide, “The mission budget is the financial resources and expenditures required at every phase of the discovery process to carry out the organization’s mission, deliver its value proposition, and execute its key activities. It encompasses the estimation, allocation, and management of funds necessary for implementing the organization’s strategies, products, services, or interventions to achieve the desired impact on its beneficiaries.” (CMP, 2023, Concept 5, Slide 4). This includes operational costs, research and development, production, and distribution. Additionally, we must consider different funding sources- “color of money” is the term use in the acquisition domain- whether it is a small R&D budget, or dual-use funding opportunities.

We conducted preliminary market research at this stage in the research but avoided committing to a particular solution until we saturated our understanding of the interrelated challenges, gain creators, and value propositions tied to our beneficiary. As such, the mission budget is generalized but provides us with a framework to assess the financial implication of AI implementation within PEO IWS. Given that AI has been implemented sparingly at PEO IWS, but not fully embedded in the organization, we expect initial operating costs to be high due to learning curves associated with introducing a new system. However, as personnel gain proficiency with the tool, costs related to training and experimentation decrease. Long-term cost reductions are a key factor for the financial viability of an AI solution. Additionally, funding could come from various sources, operation and maintenance funds, innovation funds, or formal

acquisition budgets-which we must explore further to ensure the sustained success of the solution.

The mission budget outlined above covers not only the direct costs of the AI tool itself but also the broader operational requirements, including training, ongoing support, and system improvements. This approach ensures that the implementation of any AI is aligned with PEO IWS's strategic goals while being financially stable.

With the financial groundwork established, we move beyond cost considerations and examine how we measure the success of our solution. Success is about managing expenses and demonstrating measurable outcomes and long-term mission impact.

2. Mission Achievement and Impact Factors

The achievement factors of our MVP focus on its ability to streamline the acquisition process. It is also required to address the five interrelated challenges we identified in earlier chapters. These factors are critical in determining whether the solution delivers value to PEO IWS. CMP states, "Mission Achievement in a Mission Model is the measurable outcomes and milestones that demonstrate the success of a mission-driven organization in accomplishing its objectives" (CMP, 2023, Concept 5, Slide 12). Our focus was on the tangible impact the AI solution has in improving operational efficiency, ultimately reducing acquisition lead times, and reducing cognitive load of our beneficiaries. We have identified the following desirable outcomes:

- **Reduction in Acquisition Lead Times:** Our AI solution must reduce the time required to draft, approve, and finalize acquisition strategies. These attributes are critical in helping PEO IWS meet tight deadlines while improving the overall efficiency of the acquisition process.
- **Increased Standardization:** One goal is to create more standardized templates and processes for acquisition strategies. The AI tool should assist in producing consistent documents that reduce the variability currently seen in different acquisition programs.
- **Enhanced Stakeholder Alignment:** The AI solution should facilitate better communication and alignment between various stakeholders by providing centralized access to key acquisition data and documentation, ensuring all parties have the necessary information in real time.
- **Reduction of Cognitive Load:** By automating routine and repetitive tasks, AI should allow personnel to focus on more complex, strategic work. This



reduction in cognitive burden leads to more accurate decision-making and better use of time and resources.

To achieve these outcomes, we identified specific steps that guide the implementation of our MVP:

- **Market Research:** The first step is conducting additional market research to identify an AI platform that best meets our outlined interrelated challenges. This process involves researching existing AI tools and their capabilities to determine which AI best suits the unique needs of PEO IWS.
- **Tailoring the Solution:** If no AI platform fully meets all our needs, we focus on figuring out how to tailor a solution. This step involves working with vendors or developing internal capabilities to adjust the platform, ensuring that it addresses PEO IWS's specific challenges in acquisition processes.
- **Presenting to Sponsor:** Once the AI platform is selected or tailored, the solution is presented to the sponsor. This step is crucial for gaining feedback and securing buy-in from key stakeholders and beneficiaries before implementation.
- **Training and Support for Implementation:** If the AI solution is well received, we provide comprehensive training and support to facilitate implementation.
- **Continuous Feedback Loop and Scalability Plan:** Throughout the pilot phase, we establish continuous feedback mechanisms to ensure the AI tool is refined and optimized for PEO IWS's needs. Based on the feedback, we develop a scalability plan that outlines how the solution can be expanded across the organization, ensuring its long-term viability.

By following these steps, we aim to meet the defined outcomes, ensuring that the MVP streamlines the acquisition process and aligns with PEO IWS's mission to enhance overall efficiency and adaptability. Additionally, we will need to establish a baseline to capture these quantifiable metrics to determine if the MVP is meeting the needs of the beneficiaries.

3. Final Viability Section of Mission Model Canvas

Figure 10 shows our final viability section. This figure focuses on the financial and operational aspects we must consider, ensuring that our solution fits within PEO IWS strategic objectives and delivers measurable outcomes that justify its use.





Mission Budget/Cost 	Mission Achievement/Impact Factors 
<ul style="list-style-type: none"> -Initial high costs due to AI learning curve and experimentation -Future cost reduction expected as users become proficient -Budgeting for training, system procurement, and ongoing support -Allocation of resources for research and development -System tailoring if required (identified after phase 1 of beneficiary discovery) -Consideration for long-term operational cost vs. initial investment 	<ul style="list-style-type: none"> -Reduction in acquisition lead time: faster strategy development and approval process -Increased standardization: templates and consistent processes produced with In-a-Box -Enhanced stakeholder alignment: improved communication and access to real time data -Reduced cognitive load: automation of routine tasks, freeing up time for higher -level decision-making

Figure 10. The Final Viability Section, Adapted from CMP (2023)



E. CONNECTING THE THREE SECTIONS OF THE MMC

When we considered our AI solution's desirability, feasibility, and viability from a holistic perspective, it became clear how each element contributed to refining our MVP. By looking at who would benefit most from our solution and their exact pains (desirability), ensuring that our solution could be implemented (feasibility), and assessing its sustainability (viability), we established a path forward in our research to develop an MVP. In the following section, we discuss how this final iteration of our MVP evolved from the initial design to the feedback loops and development stages that ultimately led to the presentation to our sponsors. This transition sets the stage for exploring how the iterative process informed our MVP's refinement and outcomes.



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IV. MINIMUM VIABLE PRODUCT DEVELOPMENT

This chapter outlines the process our team followed in selecting and developing an MVP to address the key interrelated challenges faced by acquisition professionals at PEO IWS. In keeping with the Lean LaunchPad Methodology, we revisited the value proposition canvas and used it as a foundation for brainstorming early MVP concepts. This chapter also details our decision to incorporate AI, the market research we conducted to compare various AI platforms, and the steps we took to arrive at our final MVP.

A. SPONSOR INPUT AND INITIAL MVP CONCEPT

As Ries (2011) stated, “the goal of an MVP is to begin the learning process, not end it” (p.96). With this mindset to guide us and the consensus to utilize AI, the next step involved presenting our initial MVP to our beneficiaries to gather further insights. Our team initiated this learning process by referencing the VPC discussed in Chapter III. The VPC proved an essential tool in guiding our exploration of potential solutions.

To further analyze our beneficiary discovery insights, we interviewed a DPM from IWS 11 (interview with authors, May 30, 2024), who pointed out that there are currently no specific tools or SOPs within the organization for developing acquisition strategies. However, he thinks they would be beneficial (DPM, interview with authors, May 30, 2024). During our first sponsor touchpoint interview, the initial idea proposed by our sponsor at PEO IWS was to leverage technology to enhance the acquisition workforce. He pitched the idea of developing a platform like Turbo Tax. (SES, interview with authors, May 19, 2024). In this guided tool, an acquisition professional can input ideas step-by-step through a guided template to expedite the acquisition process (SES, interview with authors, May 19, 2024). While this template-based approach directly addressed one of the interrelated challenges identified, our team recognized the need for a broader solution that could also tackle the other four challenges. Additionally, our interviews resulted in the collective consensus that there is a need to shift from antiquated share drives and trackers to modern digitalized tools within PEO IWS (APM, interview



with authors, June 6, 2024). As a result, our team, guided by the insights collected in the VPC, brainstormed further ideas to improve acquisition strategies comprehensively.

B. REFINING AND VALIDATING THE MVP

The technology-centric MVP concepts we initially developed were:

- standardized templates within the organization to streamline acquisition documentation
- step-by-step instructional manuals to offer clearer guidance to APMs throughout the creation of acquisition strategies
- enhanced cloud services to improve data recall and storage efficiency
- improved communication tools for better collaboration between stakeholders
- AI-based solutions to manage workflows and automate tedious tasks, reducing complexity and time spent on approvals

Within the DoD, fostering innovation is critical to staying ahead of the nation's adversaries. To achieve this, it is essential to leverage technology to streamline acquisition processes and address the challenges outlined in earlier chapters. According to Verified Market Research (2024), the appeal of using AI in the military lies in its ability to reduce the cognitive load on DoD personnel, thereby improving operational efficiency. Of all the MVP concepts considered, AI is the only option that enables the DoD to remain adaptable and current. We found that AI-enhanced solutions could alleviate the interrelated challenges, not just a subset, further solidifying our decision to focus on developing an AI-enhanced solution for acquisition processes.

During the second round of beneficiary interviews with the APMs, we tested and validated our proposed concept ideas for our MVP. The primary objective was to ensure that our initial MVP aligned with the beneficiaries' needs and identify any areas requiring iteration or changes. Favoring the template MVP concept, an APM from IWS 5.0 (interview with authors, July 19, 2024) emphasized the need for more "plug-and-play" templates to speed up the acquisition process and reduce subjectivity, reinforcing the importance of agility and minimizing bureaucratic delays.

This feedback prompted further exploration. In contrast to the APM from IWS 5.0 who advocated for an MVP template, an APM from IWS 2.0 (interview with author, June 5, 2024) suggested incorporating AI tools to streamline acquisition strategies and



documentation processes. This suggestion led to a pivotal shift in our initial MVP concept of providing a standardized template within PEO IWS to one in which we leveraged AI capabilities. Following this monumental change to our approach, we decided to explore the problem space with an AI-enhanced tool. We learned that AI databases have the potential to utilize templates and automate documentation, effectively absorbing the template-creation MVP into the AI tool. Additionally, an AI tool easily solved our other interrelated challenges, such as enhanced data storage locations and an improved stakeholder communication tool. Further, validating our decision to focus on an AI-enhanced MVP, additional feedback gathered from the beneficiary interviews underscored the growing interest in AI integration:

- “AI-tools’ primary use would be for benign actions.” (IWS 2.0 APM, interview with authors, July 18, 2024)
- “Using AI to streamline document generation and review processes.” (IWS 6.0 Director, Business Ops, interview with authors, July 20, 2024)
- “Interested in using AI to assist in creating acquisition strategies and handling documentation.” (IWS X APM, interview with authors, May 23, 2024)
- “We could see benefits to leveraging AI to create standardized, automated processes for acquisition strategies.” (IWS 11 APM, interview with authors, July 19, 2024)

Based on insights gathered from multiple APMs, it became clear that AI is the most effective MVP for addressing their diverse challenges. The desire for plug-and-play templates and faster, more objective procedures align with AI’s ability to streamline documentation generation and standardization and provide a decision-making tool for our beneficiaries. Furthermore, AI tools reduce the cognitive burden on personnel, automating tedious tasks and improving operational efficiency to allow PEO IWS to better serve the U.S. Navy.

C. MARKET RESEARCH

According to an article by Lawrence Livermore National Laboratory (n.d.), AI first emerged in the 1950s when Alan Turing posed the question, “Can machines think?” (para. 1). Since then, the DoD has served as a key player in leading and funding AI research and by the mid-1960s, there were several AI laboratories across the United States to expand on Turing’s question (Lawrence Livermore National Laboratory, n.d.).



Fast-forward to today, where several organizations across the DoD have been exploring how generative AI could be used to assist the military. With numerous AI platforms to choose from, our team conducted market analysis research to compare our options and choose the one that best fits the needs of PEO IWS.

1. AI-Enhanced Databases

A quick open-source query led to endless numbers of generative AI platforms. In general, the purpose of using these platforms is to help organize and automate business processes, connect data across applications, and enable real-time insights through AI and machine learning. Some examples of AI platforms are ChatGPT, Microsoft365 CoPilot, SnapLogic, MongoDB, AskBrian, Skypoint, and Symphony AI. Our team brainstormed metrics for comparing the AI platforms:

- Purpose and Audience: individuals and their organizations this AI database is directed toward and what can it do for them
- Scope and Functionality: a platform's ability to meet specific requirements
- AI and Machine Learning Capabilities: a platform's ability to utilize AI and machine learning to enhance the tool's functionality
- Data Integration Sources: types of data sources a platform can pull from, such as databases, applications, cloud services, and external application programming interface (API)
- Security Information Protection Level or DoD Impact Level (IL): the security measures a platform implements to protect sensitive data
- Data Governance: policies and procedures that ensure proper data management within a platform
- Collaboration and Decision Support: a platform's ability to facilitate teamwork, information sharing, and collaborative decision-making among users.

These metrics were deemed important to measure the effectiveness of each AI database or tool available in the open-source market. ChatGPT is probably the most mentioned and easily accessible AI tool for our team as students at the Naval Postgraduate School. Though still experimental, ChatGPT offers graduate-level users a more streamlined approach to information management and significantly enhances students' academic work by improving efficiency in research, analysis, and communication. This database, along with the others listed previously, utilizes a more



general AI language model designed for a wide audience, including developers, educators, and businesses.

Additionally, these platforms are appealing for our market research because they use AI integration to assist in document creation, data analysis, and business automation. These tools also focus on scalable database architectures and customer data management. These AI-enhanced tools also provide insights into multiple industries, such as retail, manufacturing, and other businesses. These tools are enhanced by AI to optimize or automate the current processes of their user base and alleviate cognitive load, thus reducing lead time and making the organization more effective overall. The downfall to these listed AI platforms is that they do not have the ability to ingest or handle classified documents and, therefore, cannot serve the DoD.

2. DoD-Compliant AI Databases

With a deeper understanding of diverse AI capabilities, we filtered our open-sourced query for generative AI platforms that are compliant with government requirements. This strategic focus stems from the need to align with our sponsor's high-level information processing capabilities.

Our team met the chief executive officer of Ask Sage (conversation with authors, March 6, 2024) during an acquisition class at the NPS. He introduced his generative AI platform and explained how it is geared toward acquisition and its capability to serve the government sector. This encounter provided us with valuable insights into one generative AI platform, which served as a guide for our future comparative research. To further expand our understanding, we conducted an additional open-source search to identify other generative AI solutions that are compliant with government information. This research uncovered some noteworthy platforms, including IBM Watson X, NIPRgpt, cArmy, AWS GovCloud, Ask Sage, and ADVANA.

Our team evaluated each of these AI-enhanced databases and implemented a systematic elimination process based on our beneficiaries' five interrelated challenges. IBM Watson X was the first to be eliminated due to lower security options and a more general data analysis, which failed to align with the specific needs of our sponsor. The AI



Army platform under Ask Sage, named cArmy, followed next. This platform is tailored for logistical military applications but remains Army-centric, making it less suitable for PEO IWS serving the unique requirements of the U.S. Navy. Furthering this analysis, we decided that the U.S. Air Force's NIPRgpt was next to be cut due to the security level only being DoD Impact Level (IL) 4 authority to operate which does not support national security systems. PEO IWS handles data at a national security level, requiring an IL 5 authority to operate DoD IL 4 only accommodates DoD controlled unclassified information (McCartney, 2020).

This thorough evaluation left three remaining platforms: ADVANA, AWS GovCloud, and Ask Sage. Each of these platforms demonstrates the potential to meet our beneficiaries' needs. ADVANA is a DoD-owned platform owned that offers the same level of comprehensive analytical capabilities that focus on supporting decision-making processes as Ask Sage (Little et al., 2022). AWS GovCloud and ADVANA provide heightened security capabilities, supporting IL6 classified data and surpassing Ask Sage at DoD IL5. Though AWS GovCloud and ADVANA have higher security advantages, Ask Sage offers a wider range of capabilities due to its ability to be specifically tailored for every customer. Ask Sage is an AI-enhanced database designed for user-friendly conversational querying of data, which generates insights by leveraging natural language for users to interact with the data ingested (Ask Sage, n.d.). This user-friendly, tailorable interface bridges the gap between technical complexity and operational utility, making Ask Sage the ideal contender to meet our beneficiaries' strategic and practical needs.

D. ASK SAGE

Ask Sage stands out as a pioneer for secure and agnostic generative AI and is a platform specifically tailored for the government and contractors (Ask Sage, n.d.). Some key benefits of Ask Sage include the following:

- **Security and Data Protection:** Ask Sage prioritizes security with its zero-trust, label-based access control system. This feature ensures that data is only accessible to authorized users, defined by who can see what data, when, and where. This stringent security framework protects sensitive government and contractor information from unauthorized access and potential breaches. According to Ask Sage, Ask Sage is the only



generative AI platform that is IL5 and high FedRAMP compliant, making it suitable for processing and storing sensitive data (Ask Sage, n.d.).

- **Comprehensive Data Ingestion:** The platform allows users to ingest a wide variety of data formats, including DOCX, PDF, JSON, CSV, code, and even real-time APIs and data lakes.
- **Flexibility and Agnosticism:** Using Microsoft's Azure OpenAI, Ask Sage is customizable. It meets the unique needs of government entities by providing robust security features, data flexibility, and versatile integration capabilities. Ask Sage's platform offers more than 20 commercial and open-source large language models effectively preventing vendor lock-in (Ask Sage, n.d.).

Enhanced Efficiency and Productivity: Ask Sage enhances efficiency and productivity by enabling government teams to securely analyze data and automate tedious tasks. A helpful feature of Ask Sage is the various plug-ins that help users automate work. Teams can then focus on higher-level strategic objectives rather than manual data processing, leading to more effective decision-making and operational outcomes.

As previously discussed, the purpose of an MVP is to foster learning rather than deliver definitive conclusions. In this context, Ask Sage fulfills our beneficiaries' needs by enabling teams to leverage the most suitable tools and models that align with their objectives (Ask Sage, n.d.). Ask Sage's flexibility and customizability serve as the key advantages in addressing each of our beneficiaries' five interrelated challenges, which is discussed in greater depth next.

The first interrelated challenge for our beneficiaries was the need for a central repository and knowledge management system. Ask Sage effectively serves as this central repository by allowing users to upload and store historical acquisition documents within the database. This functionality ensures swift and easy access to past references, thus enhancing knowledge management and facilitating informed decision-making for APMs when writing acquisition strategies. Another critical challenge faced by APMs is compliance and regulatory challenges. Ask Sage includes a web crawl capability using the "Live" toggle feature which responds to user inquiries within the chat interface and actively scours the internet for the most current and relevant information. This feature benefits APMs by ensuring their acquisition strategies comply with the newest updates.



Additionally, Ask Sage addresses the beneficiaries' need for adequate guidance and feedback mechanisms. APMs often delay receiving guidance, resulting in multiple revisions and prolonged development timelines. Ask Sage aids APMs with stakeholder management by consolidating feedback from contracting, test and evaluation engineers, cybersecurity engineers, etc., into an easy-to-read chart. This feedback is incorporated into the acquisition strategies to alleviate all stakeholders' concerns. Finally, through the collective features that Ask Sage offers in addition to the use of In-a-box, this helps streamline the lengthy approval process by reducing revisions, improving content, and overall standardization. A unique but separate feature within Ask Sage is In-a-Box, which automates document creation using AI. Users upload their data, select the document type they need, choose a premade template or create their own, and In-a-Box generates a brand-new document. This automation significantly reduces the manual effort involved in documentation, enabling the APMs to concentrate on more strategic tasks. Our findings indicate that Ask Sage uniquely addresses the specific interrelated challenges identified in our research for PEO IWS, demonstrating a superior fit for our needs.

E. ROAD TO INITIAL MINIMUM VIABLE PRODUCT

This section marks a transition from our market research and beneficiary discovery into the actual development of our MVP, which leverages Ask Sage. Our initial market research identified that the platform Ask Sage would be the ideal solution for PEO IWS, given its durability and comprehensive built-in features designed to handle acquisition complexities. As discussed earlier, through our rigorous exploration of AI platform options, Ask Sage stood out as the platform that best aligned with our MVP vision, mainly due to its adaptability and capacity to manage tailored datasets. We now discuss the journey from our initial design concept to our initial prototype.

1. Familiarization With Ask Sage

Following this meeting, we set up individual accounts on the Ask Sage platform and familiarized ourselves with its capabilities. We encountered initial challenges, primarily stemming from our unfamiliarity with generative AI and its potential application. At one point in our exploration, we noted that the platform could have been



more user-friendly. However, this exploration stage was crucial, as it allowed us to conceptualize how to effectively tailor the existing database to service PEO IWS.

During our early brainstorming session, we created an initial design concept illustrated in Figure 11. At the top of the framework, we envisioned PEO IWS Acquisition In-a-Box, which would serve as the overarching structure housing all critical organizational data. This design feeds into the 11 individual PEO programs, with each having tailored access to their relevant data while still drawing from a centralized knowledge base.

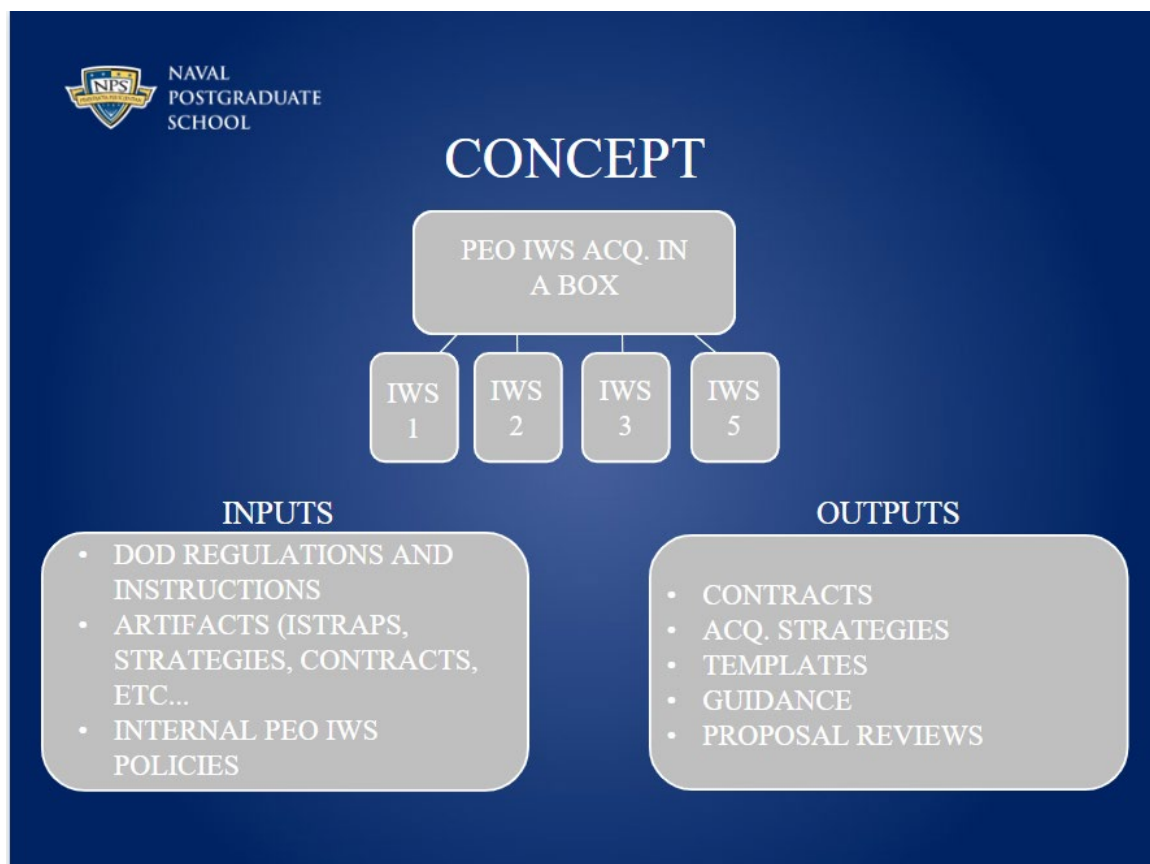


Figure 11. Initial Prototype Design Concept

In the Inputs section, we identified vital data sources to train the Ask Sage platform, including DoD regulations and instructions, acquisition artifacts, and internal PEO IWS policies and procedures. These inputs would enable Ask Sage to generate acquisition strategies, templates, guidance documents, proposal reviews, compliance checks, and answer any user questions. Additionally, with further refinement, it could

produce contracts to aid APMs with knowledge to make informed decisions when developing a proper acquisition strategy.

2. Collaboration With Ask Sage

After creating our initial framework for our MVP, we realized that while we had a strong vision, we needed more technical expertise to implement our design fully. We reached out to Nicolas Chaillan (email with authors, July 25, 2024), the chief executive officer of Ask Sage, to discuss the feasibility of our prototype and gain insights into tailoring the platform to address the specific pain points of our beneficiaries.

In our meeting with Chaillan (interview with authors, August 8, 2024) we presented PEO IWS's critical interrelated challenges, which included the lack of a centralized knowledge management system, challenges in ensuring compliance with DoD regulations, inadequate feedback mechanisms, complex stakeholder management, and the length of approval processes. These interrelated challenges directly impede the effectiveness of the acquisition strategy development process.

Chaillan (interview with authors, August 8, 2024) and his team validated our concept and provided technical feedback on how Ask Sage could be tailored to resolve these challenges. He facilitated subsequent meetings with Ask Sage's platform training and technical support team, which guided us through configuring the database to meet the needs of PEO IWS.

3. Tailoring Our MVP Prototype

We decided to focus our efforts on PEO IWS 3.0 because of time constraints and this program office has a vast repository of acquisition artifacts that would allow us to test the capabilities of our prototype thoroughly. This decision marked a critical turning point in our project. With the help of Ask Sage's technical expert, we began ingesting over 15 complex artifacts, including acquisition strategies, contracting plans, and other critical documents relevant to the acquisitions in IWS 3.0. This process helped us understand how to refine the Ask Sage database to ensure it could learn and generate tailored outputs based on these inputs.



This technical training taught us to use the platform’s plug-in, tools, and templates. It also allowed us to tailor the database further to address the specific interrelated challenges we had identified earlier. Each input was carefully curated to ensure the platform had a robust knowledge base to generate accurate acquisition documents, thus ensuring compliance and reducing the cognitive load on acquisition professionals.

4. Inclusion of In-a-Box

While our initial MVP proved successful, specific features such as the In-a-Box tool were not fully developed due to time and budget constraints. In-a-Box is designed to streamline the creation of acquisition strategies from scratch, ultimately saving time, ensuring compliance, and reducing human error. Although we could not demonstrate this feature in our initial prototype, we remain confident that with additional data, time, and collaboration with program managers, In-a-Box becomes an invaluable tool in future iterations of our MVP.

5. Completion Of Our Initial Minimum Viable Product

As we completed our MVP development, we recognized that the next critical step would be to present our prototype to beneficiaries and our sponsors within PEO IWS. This presentation provided an opportunity to demonstrate the practical application of our prototype and highlight how our tailored solution addresses the interrelated challenges identified throughout our research. This presentation, detailed in the next section, was pivotal in conducting additional beneficiary discovery to refine and further develop our MVP.

F. PRESENTATION OF INITIAL MVP

On September 10, 2024, we had the privilege of presenting our work with Ask Sage to our sponsor. We aimed in this presentation to demonstrate the AI program’s capabilities, walk the sponsor through the interface, and most importantly, validate that our solution met the needs of PEO IWS. Initially, the presentation was intended solely for our sponsor; however, due to the successful scripted and unscripted demonstrations of



Ask Sage’s capabilities, senior leadership requested that we expand the presentation to the broader organization, eventually showcasing it to over 200 beneficiaries.

During the presentation, we outlined our thesis, the application of the Lean LaunchPad Methodology, and Ask Sage’s AI tool, Ask Sage In-A-Box. We detailed the evolution of our problem statement from the initial draft to its final iteration. We shared that throughout the project, we revised the problem statement three times, with each iteration further narrowing the scope to pinpoint the core issue. Ultimately, after completing interviews with the PMs, our final problem statement encompassed five key challenges faced by APMs as listed earlier in the chapter.

After establishing the background and context of the problem, we introduced Ask Sage, providing an overview of the AI tool, its key features, and its modular solution, “PEO IWS Acquisition In-A-Box.” We described how we conducted a pilot experiment with PEO IWS 3.0, tailoring the AI to manage and systems like the Surface Missile 6 and Over-the-Horizon weapon systems. Additionally, we demonstrated Ask Sage’s plug-in capabilities, which streamline data ingestion and perform specific functions within the acquisition process.

During the demonstration, multiple APMs posed insightful questions and suggested several unplanned live experiments—many beyond our initial expectations due to our limited acquisition experience. These real-time tests confirmed Ask Sage’s efficacy. One standout impromptu interjection occurred when our sponsor prompted Ask Sage to generate the ideal acquisition strategy for the Standard Missile Program using the uploaded dataset. Despite discussing potential risks associated with AI implementation, the audience’s feedback was overwhelmingly positive, with some APMs immediately desiring to obtain accounts and our sponsor inquiring about a rapid implementation plan.

One recurring comment from the APMs was Ask Sage’s potential in other areas of the acquisition process, particularly market research. Although Ask Sage can currently draw from open-source data, its ability to perform advanced web crawling at the level APMs desired exceeded the AI database’s current capabilities. However, this gap opened the door to potential future applications and features that could further enhance PEO IWS’s acquisition processes.



Following the presentation, our focus shifted to determining how best to implement Ask Sage within PEO IWS without disrupting its current mission-critical activities. At that moment, no concrete implementation plan was in place. The primary challenge was identifying where to begin, given that AI had never been utilized within PEO IWS in any capacity. Fortunately, our software engineer provided a potential path forward, although it required further refinement. PEO IWS would need to take specific actions before the program could be rolled out, such as identifying a small group of APMs to participate in a pilot program and selecting a leader to oversee the effort.

Additional concerns included bridging the knowledge gap between our software engineer and the APMs, although with the number of APMs available to assist, this was not a high-priority issue. Other challenges included developing appropriate training and “smart packs” to distribute the necessary knowledge across the organization. Another key consideration was the establishment of metrics to capture valuable information as Ask Sage is deployed in different capacities. These metrics are essential for developing policies and procedures and further refining the AI system itself.

Our presentation of Ask Sage highlighted its ability to address APM interrelated challenges and its practicality and reliability as a solution. Though still experimental, Ask Sage effectively minimizes unproductive tasks by acting as a central repository accessible to various PEOs while providing specific data tailored to each program. It can also pinpoint critical gaps in acquisition strategies that may be overlooked. Despite being in its early stages, Ask Sage shows great potential as a tool PEO IWS aims to utilize for enhanced acquisition processes.

G. FINAL MVP: IMPLEMENTATION PLAN AND COST OVERVIEW

Our prototype was well-received, and PEO IWS believed it would be an excellent solution to their challenges. Given the time constraints and our student roles, and the beneficiary discovery conducted after our initial MVP, we determined that the best final version would be a detailed cost analysis and implementation plan. This MVP would enable PEO IWS to pilot the prototype within its organization effectively. The cost analysis would highlight the financial requirements, while the implementation plan would



provide a step-by-step guide for seamless integration. These deliverables would empower PEO IWS to move forward with the MVP independently and ensure its success.

1. Cost of Enterprise-Level Accounts

For the first 12 months of the pilot, 24 enterprise-level accounts are required. This includes 24 champion accounts (two champions for each of the 12 program offices). The Ask Sage subscription pricing for each user is \$90 per month per user, which provides the team with a total of 2,000,000 inference tokens and 2,000,000 training tokens. Tokens are a form of currency that pays for queries completed in the database. For the initial 12-month pilot period, the total cost for 24 users be $\$90/\text{month}/\text{user} \times 24 \text{ users} \times 12 \text{ months} = \$25,920$.

This covers the first 12 months of enterprise-level access, ensuring full capabilities for both administrative and champion users.

Following the pilot, PEO IWS evaluates the tool's full scalability and determines the additional costs and users needed for organization-wide deployment. The price for full-scale implementation be determined based on the number of additional users required. The cost is to be determined after the pilot phase.

2. Implementation Plan Overview

The proposed implementation plan includes a two-phase approach.

- (1) Phase 1: Training and Onboarding (Months 1–6) A champion works with the 12 program offices, each identifying and selecting two users (24 users total) to participate in the pilot. These users receive comprehensive training on the Ask Sage platform, including:
 - Database Training: Users learn how to effectively manage and utilize the database.
 - Feature Training: Users receive a detailed overview of all of the features available on the platform.
 - Prompt Engineering: Users learn how to create effective prompts for automation tasks such as document generation, content summarization, and real-time data extraction



- **Data Input Training:** Users learn how to use the data input tab, representing their tailored database, which allows them to organize and structure their data effectively for Ask Sage.
- **Additional Training Points:** Users receive essential training that covers additional aspects of platform usage to ensure a comprehensive understanding of the tool's functionality and how it can be applied across various acquisition tasks.
- **Data Input and Dataset Creation:** Users will be trained in inputting their data into the system and creating relevant datasets tailored for their specific needs. This ensures that each program office can fully leverage the Ask Sage platform for automating document generation, data extraction, and more.

(2) **Phase 2 (Months 7–12): Incorporation of In-a-Box**

- **Training and Usage of Acquisition in a Box:** The focus during this phase shifts to maximizing the capabilities of the Ask Sage Acquisition in a Box platform. Users learn how to leverage the Ask Sage chat box (introduced in Phase 1) alongside their tailored datasets to create essential acquisition documents.
- **Document Creation:** The key outcomes of this phase include the automated creation of acquisition packages, SOPs, templates, RFPs, and other acquisition-related documents using the platform.
- **Advanced Capabilities:** Expansion of capabilities to integrate databases for real-time data queries. The advanced cohort will take on further responsibilities for policy development, ongoing training, and assisting other users within their respective PEO offices.

Key deliverables include comprehensive training on the Ask Sage Platform across all 12 PEOs. Each office will have fully tailored and implemented datasets customized to their specific needs, empowering users to leverage the platform's full capabilities. By the pilot's conclusion, users will be proficient in all aspects of the tool, including prompt engineering, data input, and advanced automation functions. Additionally, the real-world application of the platform will be fully demonstrated through the creation and use of tailored datasets, enabling the efficient generation of acquisition packages, SOPs, RFPs, and other critical acquisition documents. This pilot ensures that every user understands the platform and can seamlessly integrate it into their daily operations, delivering measurable improvements to acquisition processes.



3. Scalability of Pilot

The initial cohort of 24 PMs, two from each of the 12 PEOs, be trained to use the platform during the pilot. After the pilot, the platform's scalability depends on how many additional PMs or acquisition professionals PEO IWS would like to have access to Ask Sage.

Currently, the membership is set at the highest enterprise level, providing maximum features and token availability. If additional users are required at a lower subscription rate or with a lower token allocation per month, Ask Sage representatives can discuss these options.

The primary goal of this pilot is to enable these main users to effectively train additional users in the future, allowing for smooth scalability and knowledge transfer across the organization.

4. Long-Term Objectives

We believe that the proposed pilot program gives PEO IWS all the necessary tools and resources to adopt and implement the Ask Sage platform effectively within the organization. The long-term goal is to fully integrate Ask Sage within PEO IWS, positioning it as a central knowledge management and decision-making tool. This role helps alleviate the cognitive load on APMs and support broader organizational objectives like enhancing productivity and improving decision-making processes.

To move forward with this initiative, PEO IWS should take the following steps to facilitate the successful implementation of the Ask Sage pilot program:

1. Identification of Users: PEO IWS should confirm the selection of 24 PMs, two from each of the 12 PEOs, who participate in the pilot. These individuals will be trained as the primary users of the Ask Sage platform, to utilize the tool and become proficient enough to train others within their respective offices. They also identify any additional users outside of this pilot who should have Ask Sage accounts.
2. Collect baseline metrics that tie back to the mission impact factors established on the final MMC.
3. Identification of a Champion: PEO IWS identify an individual to oversee and train the 24 PMs.



The training, cost analysis, and implementation plan provide a solid foundation for integration and scalable expansion. By empowering APMs and acquisition professionals, this pilot significantly enhances acquisition processes and decision-making capabilities, positioning Ask Sage as a valuable tool for PEO IWS. In the next chapter, we address the limitations encountered throughout the research process and explore future research opportunities for other student teams.



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V. CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

First, it is important to note that the data collection was limited to our beneficiaries and stakeholders within PEO IWS, which does not encompass the challenges other program offices face within the broader DoD. Therefore, the findings are specific to PEO IWS and are not generalized across all DoD acquisition programs. The research was conducted within a limited time frame and budget, restricting the depth of analysis and the extent of MVP testing.

The Hacking for Defense® course at the Naval Postgraduate School enabled us to address real-world challenges faced by PEO IWS. Using an entrepreneurial methodology like the Lean LaunchPad, we explored key issues in the acquisition strategy development process. Our research led to the creation of an MVP aimed at streamlining acquisition processes. However, it is important to acknowledge that due to time constraints, we cannot fully explore some of the other challenges faced by APMs and DPMs. These unresolved challenges offer future research opportunities for Naval Postgraduate School students to build on our work and refine potential solutions. In this section, we also discuss the limitations that hindered the expansion of our MVP.

A. FUTURE OPPORTUNITIES FOR OUR MVP

As mentioned, our final MVP culminates in an in-depth implementation plan that empowers PEO IWS to run a small-scale pilot program. Due to our limited time as students at the Naval Postgraduate School, we cannot oversee the pilot program ourselves, although we would have liked to. This pilot program would have presented a valuable opportunity to refine the MVP further if given more time.

Our MVP was explicitly tailored for APMs, aligning with the methodologies approach of defining a specific beneficiary. However, it is important to note that further development and testing could be expanded and customized for other beneficiaries, such as contracting officers, system engineers, product managers, and other acquisition professionals. The applications for this tool are broad, and with time, it can be trained and adapted to meet the unique needs of everyone involved in the acquisition process.



Additionally, while the chief of naval operations has outlined guidance for the use of generative AI (Department of Navy Chief Information Officer, 2023), PEO IWS may need to develop its internal policy to govern AI use within the organization. This represents an opportunity for future research teams at the Naval Postgraduate School to explore how AI can be integrated, regulated, and tailored to meet the specific challenges of PEO IWS. Establishing a clear policy for AI governance ensures the responsible and effective use of AI technologies within the acquisition process, paving the way for further innovations.

B. ADDITIONAL CHALLENGES IDENTIFIED

As we progressed through our research, several recurring challenges faced by APMs and DPMs became evident. However, due to this project's limited scope and timeframe, we could not explore these issues in detail. Nevertheless, these challenges represent areas for future research, especially for students interested in addressing deeper-rooted systemic issues within acquisition processes.

1. Contracting and Legal Challenges

One of the most critical challenges raised by PMs (interview with authors, May 12, 2024) is the inefficiency in contracting. While SEA 02 struggles with turnover, decision-making delays, and protracted contracting timelines, PMs also grapple with the sustainability of their contracting strategies, particularly the balance between sole-source and competitive contracts. A common theme across interviews was the slow progression of contracting milestones. One PM noted (interview with authors, May 19, 2024), “Contracting milestones take a long time to achieve due to indecision and a lack of clear priorities.” This indecision frequently surfaces during critical phases of the acquisition process, delaying approvals and resulting in missed deadlines. Without a streamlined decision-making framework within SEA 02 contracting offices, even simple tasks become protracted, significantly extending timelines for crucial program requirements.

Another significant hurdle cited by stakeholders was the high turnover in the contracting and legal departments. The director of business operations at IWS 6.0 (interview with authors, July 20, 2024) stated “High turnover in contracts and legal



departments causes repeated document reviews and delays.” Another APM form IWS 6.0 (interview with authors, June 3, 2024) further emphasized that “Frequent changes in contracting officers lead to inconsistency and repeated rework.” Each new contracting officer often has a different interpretation of requirements, causing duplication of efforts and extending the overall contracting process.

As a result of these combined issues, indecision, turnover, and inconsistencies, the overall contracting timeline is significantly extended. One PM (interview with authors, July 20, 2024) stated “Contracting can take another year or more, making the total time for acquisition planning and contracting 2–3 years.” These delays ripple across broader program timelines, placing additional pressure on program offices to deliver within increasingly constrained schedules and affecting the ability to meet warfighter needs promptly. In addition to these challenges, PMs also face the sustainability of contracting strategies. One recurring concern is the reliance on sole-source contracts. For example, a PM (interview with authors, July 19, 2024) expressed concern over the reliance on Raytheon as the sole source of the RAM missile program: “The reliance on sole-source contracts, particularly with Raytheon for the RAM missile program, was noted. While this minimizes risk and ensures continuity, it limits competitive opportunities that could potentially lower costs”. Future research could get contracting officer viewpoints to see where there are overlaps and discrepancies to identify what solutions may be available to assist with this challenge.

PMs also face the challenge of balancing competition with maintaining government control, particularly over data rights. Introducing competition in acquisition programs is often necessary to reduce reliance on a single contractor, but it requires careful management of technical data rights. One DPM (interview with authors, May 29, 2024) explained, “The complexity of balancing competition versus sole-source acquisitions is highlighted, emphasizing data rights and maintaining government control.” This balancing act often leads to rigid acquisition strategies that fail to adapt to the rapid evolution of technology, especially in software-intensive programs, where flexibility is crucial. Another PM (interview with authors, June 5, 2024) pointed out, “Current strategies often lock programs into rigid plans that do not accommodate the rapid evolution of technology, particularly in software.”



Several stakeholders advocated for embedding contract specialists within the program office to address these challenges. One PM (interview with authors, May 23, 2024) recommended that “Embedding contracts specialists within the program office would improve understanding and collaboration.” Contract personnel working alongside program teams from the early stages of acquisition would facilitate better communication and alignment on priorities, reducing repeated document reviews and expediting decision-making. Disagreements over contract classification further complicate the process. One stakeholder (interview with authors, June 3, 2024) noted, “Initial disagreement on classifying the contract as a service or production affects requirements and monitoring. These disputes often delay the contracting process, as different classifications require varying levels of oversight and resource allocation.

In summary, contracting and legal inefficiencies at both SEA 02 and the PM level represent significant challenges contributing to delayed milestones, extended timelines, and inefficiencies in the acquisition process. At SEA 02, high turnover, inconsistent decision-making, and prolonged contracting milestones are major issues, while PMs must address the complexities of sole-source contracts and balancing competition with maintaining government control. Embedding contract specialists within program offices and addressing frequent disagreements over contract classification offer viable solutions to mitigate these challenges. Future research could explore these recommendations in depth, focusing on strategies to reduce contracting delays, introduce flexibility in acquisition strategies, and improve overall acquisition outcomes for PEO IWS.

2. Policy Development and Bureaucracy

Another recurring issue highlighted during interviews was the disconnect between policy development at higher levels, such as the Pentagon and the Office of the Secretary of Defense and its practical implementation in program offices. The director of business operations at IWS 6.0 (interview with authors, July 20, 2024) pointed out that this gap often leads to inefficiencies and delays as program offices struggle to align new policies with their daily operations. Several interviewees suggested that involving program office personnel in the policy development process would ensure practicality and effectiveness while creating feedback loops for input on policy changes. Without these mechanisms,



program offices are left to react to policies without adequate resources or guidance. An APM (interview with authors, June 5, 2024) also emphasized the need to streamline documentation practices, advocating for more efficient processes focusing on supporting the warfighter while maintaining legal and financial integrity. Excessive control over documents within acquisition processes, referred to as “extreme ownership,” adds unnecessary complexity and delays.

A major bureaucratic issue arises in post-approval stages that involve higher authorities like the Pentagon. One PM (interview with authors, July 19, 2024) expressed frustration over the lengthy approval times, explaining that the multiple levels of review significantly delay progress. This is particularly problematic for ACAT 1 programs, where approval processes can take months. The Planning, Programming, Budgeting, and Execution (PPBE) process also presents challenges. The segmented nature of budget allocations and the rigidity of PPBE make it difficult for programs to remain flexible and adapt to changes. One PM (interview with authors, June 2, 2024) pointed out that these constraints often complicate program management, especially when development failures or shifting priorities require budget realignment. Budget flexibility is a concern, particularly in software development, where PMs prefer “colorless money” to avoid issues with expiring funds. One PM (interview with authors, May 23, 2024) explained that constantly reallocating funds during different stages of software development creates unnecessary administrative burdens, which detracts from other critical responsibilities. Regulatory challenges, such as Congress’s Buy American requirements, further complicate acquisition processes. These regulations often force PMs to adjust procurement strategies, resulting in delays as they reevaluate suppliers and adjust contractual obligations. One PM (interview with authors, June 6, 2024) noted that “these new mandates required significant changes to the acquisition process, adding complexity and causing further delays.”

C. FINAL REMARKS

Our research has provided valuable insights into the complexities of acquisition processes within PEO IWS, identifying systemic inefficiencies and improvement opportunities. Through the use of the Lean LaunchPad methodology, we developed an



MVP that offers a practical solution to streamlining acquisition strategies while highlighting critical areas for future refinement. The challenges faced by APMs and DPMs, particularly in contracting inefficiencies, policy disconnects, and bureaucratic hurdles, underscore the need for more flexible and adaptive acquisition frameworks. Our MVP, while tailored for APMs, has the potential to evolve into a versatile tool that can serve a broader range of acquisition professionals. Furthermore, as emerging technologies like AI become more integrated into defense systems, PEO IWS must develop internal policies to govern their use, paving the way for responsible innovation. The limitations of our research, including time constraints and the scope of data collection, present opportunities for future Naval Postgraduate School students to build upon our work, expanding the application of our findings across the broader DoD. Ultimately, this thesis demonstrates that with the right tools, strategies, and policy reforms, the acquisition process can be transformed to better meet the evolving needs of the warfighter and ensure long-term program sustainability.



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