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**Crossing the Valley of Death
Faster and More Often with Bigger Outcomes**

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Crossing the Valley of Death Faster and More Often with Bigger Outcomes

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Abstract

Faced with acquiring technological capabilities for the U.S. Department of the Navy (DoN), traditional contracting methods are burdensome, often inhibiting agencies across the U.S. Department of Defense (DoD) from delivering solutions at the speed of the mission. In 2024, major defense acquisition programs (MDAPs) take an average of 11 years to reach initial operational capacity and middle tier acquisition (MTA) programs, intended to be completed in 5 years, report delays to key milestones (U.S. Government Accountability Office, 2024). And while there is some evidence that the DoN is averaging closer to 36 months for initial operational capacity, in the context of rapidly changing solutions that impact warfighter readiness, momentum is still a concern (RAND, 2012). To accelerate tech acquisition, adoption, and achieve information superiority, the DoN Program Executive Office (PEO) Digital Technical Director's Office has implemented a new acquisition strategy using value-driven investment methods. The authors found that use of this strategy reduced acquisition timelines by 18 months and improved mission value contribution by $2 billion annually. Adoption of this acquisition approach may yield similar results at other DoD service-branch program executive offices and improve mission outcomes.

Keywords: acquisition, defense technology, innovation adoption

Introduction

According to the Atlantic Commission on Defense Innovation Adoption (2024), "the United States does not have an *innovation* problem, but rather an *innovation adoption* problem." With the Davidson window less than 2 years away, the U.S. secretary of defense announcing a new software acquisition approach, and the Pentagon operating on its first year long continuing resolution (CR), there's never been a better time to assess the tech acquisition strategies used by the U.S. Department of Defense (Defense News, 2024; DefenseScoop, 2025; Inside Defense, 2025).

The core issue facing the Department of Defense (DoD) in acquisition and technology boils down to two intertwined challenges: escalating costs to taxpayers with declining returns on investment, and the rapid pace at which adversaries are adopting new technologies. For fiscal year 2024, the Department of Defense Appropriations Act (P.L. 118-47) allocated $168.7 billion for procurement, while the total enacted budget for Research, Development, Test, and Evaluation (RDT&E) reached $152.3 billion, according to the Congressional Research Service (2024). Combined, these funds provide approximately $321 billion for the DoD to drive innovation and adoption—a hefty sum that underscores the stakes in addressing these inefficiencies and keeping up with global competitors.

Are these innovation dollars providing corresponding value to the American people? In March 2024 testimony before the U.S. Senate Committee on Armed Services, Center for a New American Security (CNAS) Executive Vice President Paul Scharre argued against that theory, stating that U.S. defense spending has diminished value in the global technological ecosystem because the DoD is no longer the main driver of global innovation. According to Scharre (2024), technology is advancing at exponential rates and widely available in a "highly globalized, commercially driven R&D ecosystem, that competitors have similar opportunities to develop."

One notable example is the acceleration of technology adoption by the People's Republic of China (PRC), even in areas where the United States once dominated. PRC's adoption and integration of automation in shipbuilding practices outpaces U.S. ship production by over 230 to 1. This trend is expected to continue in other domains. A report to the U.S. Congress presented three notable findings related to technology and force modernization: the PRC's long-term goal is to create an entirely self-reliant defense-industrial sector, amplified by a strong civilian industrial and technology sector; the PRC has substantially reorganized its defense-industrial sector to improve weapon system research, development, acquisition, testing, evaluation, and production; the PRC's actual defense budget is approximately $330 billion–$450 billion, the second-largest military expenditure in the world (Department of Defense, 2024).

Amid these challenges, how can the U.S. Department of the Navy maintain its global posture and ensure it has the right technological capabilities to maintain the freedom of the sea? The DoN Program Executive Office (PEO) Digital seeks to offer a world-class digital experience to the Marine Corps and Navy through five organizational goals. It serves as the DoN's acquisition office focused on maintaining the competitive edge through delivery of enterprise IT infrastructure and core digital services.

When it comes to its technical vision, PEO Digital aims to enable experimentation and fast track innovation through modern service delivery. It seeks to foster a workplace where behaviors that increase outcomes are championed.
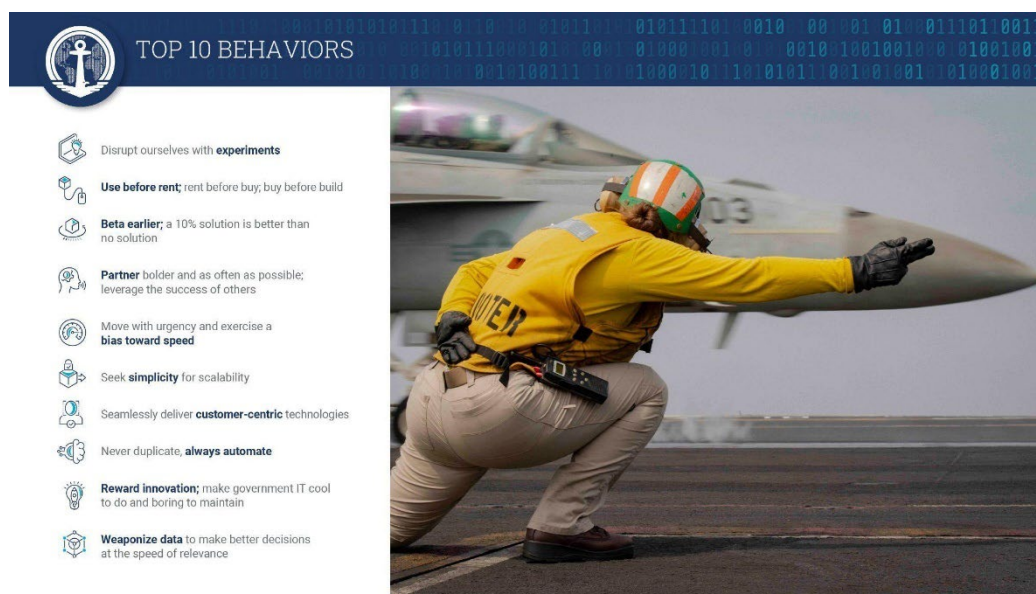

Figure 1. Top 10 Behaviors

Since 2022, a DoN team comprised of members of PEO Digital and the Chief Technology Officer (CTO) directorate has successfully implemented value-driven investing. They've established key frameworks, available for use by any federal organization, to improve the value of acquisitions and capability sustainment. Shifting to this approach has reduced acquisition timelines by 18 months and improved mission value contribution by $2 billion annually. The further belief is that this can scale to improve acquisition value exponentially for other organizations as well who adapt and adopt similarly.

Figure 2. PEO Digital Vision & Mission

World Class Alignment Metrics

The Department of the Navy Chief Information Office (DoN CIO) established the World Class Alignment Metrics (WAM) framework to evaluate technology investments and their performance against five outcome-driven metrics: time lost, operational resilience, customer satisfaction, cost per user, and adaptability/mobility. Implementation best practices include prioritizing investments based on WAM metrics, using WAM to justify funding, and considering WAMs for system rationalization and portfolio management.

For the Information Technology use case these mission outcome driven metrics are defined as:

1. Time lost: amount of time customers wait for IT services.

2. Operational resilience: delivering services despite unanticipated disruptions.

3. Customer satisfaction: level of comfort with fielded IT services.

4. Cost per user: total IT costs divided by number of users.

5. Adaptability/Mobility: time to make changes associated with IT services, to include delivering new capabilities.

Investment Horizons

DoN CIO leverages the Investment Horizons framework to accelerate the adoption of new technologies and identify divestment opportunities. It is divided into five horizons: Horizon 3 (*Evaluating*, capabilities being explored by external organizations that have the potential to introduce new technologies and services); Horizon 2 (*Emerging,* capabilities ready for DoN pilot funding and development); Horizon 1 (*Investing or Extracting,* successful pilot capabilities ready to be scaled or sustained capabilities that are in active use); Horizon 0 (*Retiring,* capabilities that need to be divested or decommissioned.) This framework guides DoN technology roadmaps, enterprise services adoption, and resource allocation.

Structured Piloting

Building on the previous two frameworks, DoN CIO's Structured Piloting approach similarly seeks to accelerate the adoption of new technologies and divestment of obsolete

systems. This framework takes a step further, establishing criteria for pilot advancement and utilizing Modern Service Delivery (MSD) concepts.

Strategy Through Execution

PEO Digital established the Strategy Through Execution framework to outline the process new DoN IT capabilities and requirements must follow through the Planning, Programming, Budgeting, Execution (PPBE) cycle to achieve Investment Horizon maturity.

Structured Divestments

DoN CIO established the Structured Divestments framework to eliminate redundant and obsolete IT systems and streamline resources. This approach integrates the previous four frameworks to evaluate outdated, insecure, or redundant systems, and reinvest savings in modern solutions. The Structured Divestments framework ensures a systematic, data-driven process, even as legacy technologies reach the end of their life cycle.

Resilient and Agile Contracting

PEO Digital leverages a diverse range of contracting vehicles to maximize the use of multiple vendors and reduce single vendor dependencies. This approach involves seeking out prospective partners and contracting offices that offer measurable efficiencies and innovative practices that overcome acquisition delays.

Literature Review

Historical Acquisition Challenges and Strategic Context

The DoD continues to confront persistent and prolonged acquisition processes, critically impairing its ability to rapidly deliver essential capabilities to warfighters. Historically, major defense acquisition programs have been marred by significant delays, extending average project timelines from 8 to 11 years by 2023, significantly increasing costs and hindering operational responsiveness (GAO, 2023).

Central to these delays is the "Valley of Death," a notorious gap where emerging technologies fail to transition effectively from development to deployment. Recent research attributes this phenomenon to entrenched bureaucratic resistance, misaligned incentives, and restrictive procurement practices that prioritize traditional defense contractors over innovative nontraditional entrants, limiting the Department's access to cutting-edge technological solutions (Defense Innovation Board [DIB], 2025). Such institutional inertia has consistently halted or slowed promising innovations, substantially weakening military capabilities (Clark, 2023).

Amplifying these internal acquisition issues is the accelerated technological advancement by strategic rivals, especially China. According to the Australian Strategic Policy Institute (ASPI, 2023), China now dominates in innovation across numerous vital technologies, including artificial intelligence, cyber warfare, and hypersonic missile systems. Such rapid progression places additional urgency on the U.S. defense apparatus to reform and accelerate its procurement practices to maintain a critical competitive advantage (ASPI, 2023).

In response to these entrenched challenges, the DoD initiated the Adaptive Acquisition Framework (AAF) in 2020 to provide more adaptable and efficient procurement pathways. Despite its promising objectives, GAO (2023) highlights substantial implementation hurdles, demonstrating ongoing delays similar to traditional procurement systems. This indicates that mere policy adjustments are insufficient without corresponding deep-seated cultural and structural changes within defense acquisition organizations (Kardas et al., 2023).

Externally driven challenges, such as international trade dynamics and disruptions in global supply chains, further compound the DoD's procurement complexities. Proposed tariffs

on allied imports have raised critical concerns over increased manufacturing costs and subsequent delays in weapons production, potentially jeopardizing international defense collaborations and exacerbating existing procurement issues (Freeman & Calton, 2021; Politico, 2025).

Addressing these multi-dimensional challenges necessitates the establishment of a more agile and responsive acquisition system. Enhancements must involve deeper collaboration with nontraditional defense contractors, leveraging private-sector innovations, and adopting iterative development processes that emphasize incremental delivery and continuous improvement (Davison et al., 2021). Integrating these strategies could substantially improve the DoD's capability to rapidly field advanced technologies and maintain operational superiority in a complex global security environment.

Innovation Adoption and Organizational Challenges

The DoD struggles significantly with innovation adoption, primarily due to entrenched organizational designs and control-focused practices. The dominant command-and-control structure, typically seen in military and defense contexts, inherently limits innovation by prioritizing compliance, consistency, and procedural control over flexibility and agility (Nica, 2022). Organizations structured around such rigid hierarchies tend to emphasize precision and incremental process improvements rather than embracing disruptive, transformative innovations (Ishijima et al., 2020). Consequently, this hierarchical and compliance-driven culture frequently obstructs rapid adoption of innovative technologies essential for modern operational capabilities.

Organizational theorists highlight that information systems and decision-making pathways often reflect existing organizational communication structures, as explained by Conway's Law. This theory indicates that the effectiveness of technology adoption is constrained by the organization's inherent communication patterns (Iansiti & Lakhani, 2020). Thus, rigid and hierarchical communication channels prevalent in DoD structures inadvertently become barriers to innovative technology integration, often perpetuating outdated methods instead of fostering novel technological advancements (Piccolo et al., 2022).

Leaders within control-focused organizations tend to centralize decision-making authority, reinforcing communication pathways that automate or ease investment decisions aligned with traditional control mechanisms (Jung-Chieh & Chung-Yang, 2019). Such centralization reduces flexibility and responsiveness to innovation, severely limiting the organization's resilience in dynamic and rapidly changing environments. This issue is exacerbated by the procedural complexity inherent in military acquisition systems, which prioritize exhaustive approval steps over swift and adaptive responses to emerging opportunities and threats (Maika & Wachira, 2020).

Contrastingly, innovative organizations typically employ decentralized decision-making structures, which enhance agility and responsiveness. High-innovation organizations (HIOs) empower individuals and teams to make operational decisions directly, significantly reducing bureaucratic overhead and fostering environments conducive to rapid innovation (Hossain et al., 2018). Burch and DiBella (2021) support this perspective, demonstrating how complex communication networks and technological capabilities facilitate decision decentralization, allowing organizations to remain agile even within control-focused contexts.

Technological infrastructures, independent of organizational structures, can enable increased agility. However, rigid organizational frameworks, such as those prevalent in defense contexts, frequently limit the capability of technological innovations to provide their intended benefits fully (Imran et al., 2022). Organizations that effectively integrate technology capabilities within their strategic frameworks and structures are better positioned to adapt and optimize operational outcomes, even within traditionally rigid environments (Ercan & Samet, 2020).

The Scaled Agile Framework (SAFe) offers a practical resolution by maintaining necessary oversight and compliance requirements while simultaneously empowering cross-functional teams with decision-making authority at tactical levels (Aleinikova et al., 2020). This approach mirrors multiteam systems that promote lateral collaboration and integration, breaking down siloed competencies common within control-focused organizations (Turner et al., 2019). Agile methods, such as sprint-based development, further reduce bureaucratic barriers by allowing frontline personnel to operate autonomously within pre-approved strategic objectives, greatly enhancing operational agility and responsiveness (Dumitriu et al., 2019; Hyman et al., 2022).

Ultimately, the DoD's current innovation impediments underscore the urgent need to balance command-and-control requirements with more flexible, decentralized decision-making processes and agile methodologies. Establishing a continuous learning culture, incorporating agile frameworks, and strategically decentralizing decision authority are critical steps towards overcoming entrenched organizational challenges and enhancing innovation adoption.

Predictive Analytics and Big Data Integration

The integration of predictive analytics and big data within defense organizations offers substantial potential to enhance operational decision-making, forecasting accuracy, and risk management. Predictive analytics leverages historical datasets to generate actionable insights and accurately forecast future events or trends, thereby supporting strategic decision-making processes (Anitha & Patil, 2018). Defense organizations utilize predictive analytics to anticipate operational disruptions, optimize resource allocation, and improve mission readiness significantly.

Big data analytics amplifies predictive capabilities through the exploration of extensive, complex datasets, enabling the identification of subtle patterns, correlations, and trends typically undetectable by traditional analytic methods. Defense organizations that analyze large-scale data repositories effectively enhance their decision-making capabilities, increasing responsiveness in dynamic operational environments (Shabbir & Gardezi, 2020). Big data analytics transitions defense postures from reactive to proactive stances, thereby reducing vulnerabilities and strengthening operational resilience (Tohid et al., 2021).

Cybersecurity frameworks, particularly Zero Trust models, benefit considerably from predictive analytics as foundational tools for behavioral analysis and anomaly detection. This proactive approach strengthens network security by identifying and mitigating potential threats before they manifest, enhancing operational continuity and resilience (Belal et al., 2022). Advanced analytics methods also enhance logistical efficiencies, accurately forecasting demand, refining supply chain management, and minimizing unnecessary inventory levels, thus optimizing operational resource utilization (Niederman, 2021).

Examples of organizations that successfully integrate predictive analytics include Amazon and Microsoft. These companies demonstrate the transformative capabilities of predictive analytics in operational optimization and competitive advantage reinforcement. Amazon leverages predictive analytics to optimize inventory management, enhance customer service responsiveness, and reduce operational costs (Asafo-Adjei et al., 2022). Microsoft employs predictive analytics within its Azure Machine Learning platforms, improving real-time threat detection and operational resilience through predictive modeling and adaptive risk management strategies.

Several barriers persist in effectively leveraging predictive analytics and big data technologies within defense organizations. Prominent among these obstacles include data quality issues, data integration complexities, and the shortage of qualified analytics professionals. High-quality, consistent data remains essential for precise predictive modeling;

inaccuracies or inconsistencies in data can lead to unreliable predictions and ineffective decision-making (Janine, 2021).

The integration of diverse data sources into unified analytical frameworks poses significant challenges, requiring advanced technological infrastructures and stringent interoperability standards. The scale and complexity inherent in defense datasets further complicate integration efforts, necessitating sophisticated platforms capable of real-time data processing and analytics (Londhe & Palwe, 2022). The lack of skilled analytics professionals within the defense sector further hampers widespread adoption and implementation effectiveness.

Strategic planning and dedicated investments in technological infrastructure, workforce development, and data governance frameworks are essential to overcome these multifaceted challenges. The DoD must prioritize the establishment of robust data integration platforms and promote interoperability standards across defense systems. Expanding training and education programs to cultivate analytics expertise among personnel is essential for leveraging predictive analytics and big data effectively.

Predictive analytics and big data integration represent critical strategic opportunities for defense organizations seeking enhanced agility and operational effectiveness. Capitalizing on these opportunities demands a comprehensive approach combining technological innovation, organizational readiness, workforce development, and robust data governance. Addressing these imperatives will enable defense organizations to effectively respond to emerging threats, optimize resource allocation, and sustain competitive operational advantages in the contemporary global security environment.

Structured Acquisition Frameworks

The effective implementation of structured acquisition frameworks significantly advances the capability of the DoD to efficiently acquire and deploy emerging technologies (Klein et al., 2022). Utilizing frameworks such as World-Class Alignment Metrics (WAM), Investment Horizons, and Structured Piloting, the DoD optimizes acquisition processes, ensuring precise alignment with strategic and operational objectives (PEO Digital and Enterprise Services, 2022).

The concept of Investment Horizons serves as an additional strategic tool, delivering meticulously outlined technology roadmaps that describe progression from initial concept exploration to eventual retirement. This clear, structured mapping promotes coherent investment strategies, aligning technological advancement seamlessly with strategic capability development. Consequently, organizations achieve greater precision in resource allocation, avoid unnecessary expenditures, and effectively manage technological life-cycle transitions, reinforcing strategic and operational capabilities (Calafut et al., 2021).

Structured Piloting further enriches these methodologies by outlining explicit advancement criteria and systematic validation procedures critical for technology development. Through iterative experimentation and comprehensive validation, Structured Piloting supports rapid and risk-managed transitions from technology prototyping phases into full operational use. This structured approach accelerates technological adoption and significantly minimizes the integration risks inherent in complex defense systems and operations (Dumitriu et al., 2019).

The Strategy Through Execution framework specifically addresses the challenge of synchronizing technological development with the DoD's strategic planning and fiscal management processes, including the Planning, Programming, Budgeting, and Execution (PPBE) system. This deliberate synchronization mitigates historical inefficiencies arising from misaligned acquisition activities and ensures the effective translation of strategic objectives into

actionable implementation plans, thereby bolstering operational readiness and organizational agility (Karnes & Mortlock, 2021).

Structured Divestment processes are instrumental in improving acquisition efficiency by systematically identifying and discontinuing outdated or ineffective technologies. The proactive removal of obsolete systems liberates resources, redirecting them toward innovative technologies with higher strategic value. This strategic divestment preserves the DoD's technological edge, ensuring adaptability and responsiveness within dynamic and evolving threat environments (Goljan et al., 2021).

Resilient and Agile Contracting mechanisms enhance acquisition outcomes by providing flexible contractual agreements, reducing vendor dependency, and stimulating innovation through competitive vendor engagements. These contracting methodologies significantly shorten procurement timelines, often condensing contract awards from extensive periods of months down to a few weeks. Consequently, the DoD can swiftly respond to technological advancements and emerging operational demands, enhancing strategic responsiveness (Elkins, 2023).

Empirical research robustly supports the effectiveness of structured acquisition frameworks, noting significant improvements in acquisition timelines, cost management, and operational outcomes. Defense programs implementing structured methodologies demonstrate notable enhancements in strategic alignment, expedited project timelines, and improved cost-effectiveness, affirming the broad utility and substantial benefits of structured acquisition approaches within varied operational contexts (Corn, 2021).

Achieving these benefits through structured acquisition frameworks necessitates extensive organizational and cultural adaptations within defense procurement environments. Successful adaptation involves strict adherence to defined methodological standards, ongoing evaluation and feedback mechanisms, and alignment of technological advancements with broader organizational objectives. Organizations adeptly integrating these structured frameworks report heightened procurement agility, optimized resource utilization, and superior strategic and operational outcomes (Bronson, 2020).

Organizational Change and Strategy-to-Execution

Effective organizational transformations within defense procurement contexts rely on targeted methodologies such as the Burke-Litwin Model and Appreciative Inquiry. These frameworks support structured change by emphasizing adaptive management and delegated decision-making, thus enhancing organizational responsiveness and fostering innovation. The Burke-Litwin Model specifically facilitates the identification of influential factors driving organizational performance and provides a comprehensive approach to manage systemic changes within complex organizations, including the Department of Defense (Bryan, 2020; Burke & Litwin, 1992).

Appreciative Inquiry (AI) offers a positive, strengths-based methodology aimed at organizational change by identifying and amplifying existing successful practices. In contrast to traditional deficit-focused approaches, AI strengthens strategic initiatives by fostering environments where organizational members actively engage in constructive dialogues to envision and realize desired future states. Research from defense and public administration contexts highlights AI's efficacy in improving employee engagement, motivation, and alignment with organizational objectives, particularly within complex bureaucratic structures (Bushe & Kassam, 2021; Cooperrider & Whitney, 2005).

Action research methodologies complement these structured frameworks through embedded continuous learning and iterative improvement cycles. These methodologies

facilitate participatory stakeholder engagement in iterative planning, action, and reflection cycles. Such iterative processes foster dynamic responsiveness to emerging challenges and opportunities within defense procurement environments, characterized by rapidly evolving technology and strategic complexity (Coghlan & Brannick, 2019; Reason & Bradbury, 2020).

The successful implementation of change methodologies in defense procurement necessitates a strategic alignment between leadership practices and organizational design. Delegation of decision-making authority empowers teams, enhances agility, and reduces bureaucratic inertia that typically inhibits innovation. Defense organizations utilizing decentralized decision-making frameworks demonstrate enhanced operational efficiency, faster adaptation to technological advances, and increased resilience in complex operational conditions (Greenhalgh & Papoutsi, 2018; Langley & Denis, 2020).

Strategic execution aligned with organizational change initiatives requires robust communication and collaborative integration across all organizational levels. Clear strategic communication and transparent dissemination of change objectives significantly improve collective understanding, facilitate stakeholder buy-in, and ensure coordinated actions throughout the transformation processes. Literature emphasizes that consistent communication strategies reduce resistance to change, align individual and organizational objectives effectively, and foster inclusive environments conducive to achieving strategic outcomes (Clampitt & Berk, 2020; Kotter, 2021).

Sustaining meaningful organizational change within defense procurement contexts significantly depends on structured change methodologies and the alignment of strategic execution processes. Organizations successfully integrating adaptive management, strengths-based approaches such as Appreciative Inquiry, and iterative action research methods report marked improvements in innovation capacity, organizational agility, and overall responsiveness, supporting their long-term strategic effectiveness and resilience.

Technical Debt and Portfolio Management

Effective management of technical debt through strategic portfolio rationalization is essential for maintaining technological and operational readiness in defense procurement contexts. Technical debt represents the accumulated costs associated with prioritizing short-term solutions over long-term sustainability and optimal software management practices. Unmanaged technical debt can severely impair organizational agility and innovation, leading to increased maintenance costs and diminished operational effectiveness (Kruchten et al., 2019; Ramasubbu & Kemerer, 2021).

The Strategy-to-Execution (S2E) Model within PEO Digital offers a structured framework for aligning strategic objectives with execution outcomes, systematically addressing technical debt while simultaneously fostering innovation and agility. S2E integrates strategic planning with execution monitoring, creating a feedback loop that ensures technical debt considerations are continuously evaluated and managed throughout the life cycle of defense projects. Organizations adopting this model report improved capability deployment, reduced life-cycle costs, and enhanced responsiveness to emerging threats and technological opportunities (Highsmith & Cockburn, 2021; Project Management Institute [PMI], 2022).

Proactive portfolio management practices further strengthen organizational capacity to manage technical debt effectively. Structured portfolio rationalization involves assessing, prioritizing, and strategically retiring legacy systems that impose high operational costs or fail to meet current strategic requirements. Organizations implementing structured portfolio management practices achieve improved resource allocation, reduced complexity, and increased flexibility to adapt to technological advancements and operational requirements (Laanti & Abrahamsson, 2021; Stettina & Hörz, 2021).

Integration of agile methodologies with portfolio management enhances an organization's capability to manage technical debt proactively. Agile practices emphasize iterative development, continuous improvement, and adaptive planning, facilitating ongoing identification and remediation of technical debt. Defense procurement organizations employing agile portfolio management methods benefit from enhanced transparency, better risk management, and improved alignment between technology initiatives and strategic objectives (Cagan & Jones, 2021; Rico & Sayani, 2022).

Structured management and continuous monitoring of technical debt within portfolio management frameworks enable defense organizations to maintain technological superiority and operational resilience. Organizations achieving successful integration of agile and strategic portfolio management practices demonstrate improved capability deployment speeds, enhanced operational effectiveness, and sustained technological relevance. Such strategic portfolio rationalization efforts significantly contribute to the long-term strategic success and operational agility of defense procurement organizations.

Historical Challenges and Acquisition Reform

Defense acquisition historically faces persistent challenges, including complex bureaucratic procedures, lengthy procurement timelines, and resistance to change. Complex procurement processes, marked by stringent regulatory compliance and multiple layers of decision-making, frequently result in delayed project timelines and increased costs. Researchers highlight how these bureaucratic complexities significantly limit agility and responsiveness, hindering the rapid adoption of emerging technologies necessary for modern operational environments (Fox, 2021; Schwartz & Peters, 2020).

Acquisition reform initiatives have sought to streamline procurement processes, improve efficiency, and enhance responsiveness to operational needs. Efforts such as the implementation of rapid prototyping, streamlined contracting vehicles, and agile methodologies demonstrate varying degrees of success. Studies underscore the importance of integrating these reforms within existing organizational structures and cultural contexts to realize sustainable improvements in acquisition performance (Schwartz, 2022; Tremaine & Seligman, 2021).

Research consistently identifies cultural inertia within defense organizations as a significant barrier to successful acquisition reform. Organizational culture, often deeply rooted in established procedures and risk-averse attitudes, can resist reform efforts designed to introduce innovation and agility. Overcoming these cultural barriers requires comprehensive change management strategies emphasizing leadership commitment, effective communication, and continuous education to foster an adaptive organizational culture (Weiss & Foster, 2021; Zakhem et al., 2020).

Strategic alignment of acquisition reforms with broader organizational objectives and operational requirements is crucial for their successful implementation. Alignment ensures that reform initiatives are relevant, effectively communicated, and supported by key stakeholders. Empirical evidence highlights the value of incorporating user feedback and operational insights early in the acquisition process to enhance strategic alignment and operational effectiveness (Hunter & Farrell, 2020; McCormack & Johnson, 2021).

Sustainable acquisition reform requires ongoing evaluation and iterative refinement. Continuous performance assessments, feedback mechanisms, and iterative improvement cycles ensure reform efforts remain aligned with evolving strategic priorities and operational needs. Organizations embracing iterative evaluation approaches report sustained improvements in procurement efficiency, enhanced responsiveness to technological advancements, and greater strategic alignment of acquisition activities (Johnson, 2022; Spencer & Jones, 2021).

Integrating agile methodologies into defense procurement processes significantly enhances adaptability, efficiency, and responsiveness to evolving operational requirements (MITRE Corporation, 2022). Agile practices emphasize iterative development, cross-functional collaboration, and rapid delivery of functional components, aligning closely with the dynamic operational demands of contemporary defense missions (Defense Acquisition University [DAU], 2021).

The DoD acknowledges the potential of agile methodologies to streamline traditionally lengthy procurement cycles. Frameworks such as the Defense Agile Acquisition Guide offer tailored guidance for IT acquisitions, promoting accelerated capability delivery and improved project outcomes (MITRE Corporation, 2022). Agile-focused frameworks demonstrate improved responsiveness to rapidly evolving technology environments, a critical factor in maintaining operational advantage (DAU, 2021).

Contracting mechanisms critically influence the successful implementation of agile methodologies in defense procurement. Traditional procurement contracts often lack the necessary flexibility for agile projects, prompting the DoD to adopt incentivized agile contracting approaches such as indefinite delivery contracts with firm-fixed-price task orders (DAU, 2021). These adaptive contracting methods support dynamic scope changes inherent in agile processes, ensuring continuous alignment with operational requirements (DAU, 2021).

Performance-based logistics (PBL) further illustrates the effective integration of agile principles within defense procurement. PBL strategies prioritize operational outcomes over prescriptive processes, incentivizing contractors to enhance system performance and maintain high readiness levels, thereby reducing life-cycle costs and improving system availability (Defense Logistics Agency [DLA], 2022).

Despite clear advantages, integrating agile methodologies in defense procurement faces substantial institutional resistance. Cultural inertia, entrenched procedural norms, and stringent regulatory frameworks often impede agile adoption. Successfully overcoming these barriers requires comprehensive change management strategies, persistent education efforts, and unwavering leadership commitment to fostering a culture receptive to agile practices (National Defense Industrial Association [NDIA], 2023).

Strategically aligning agile methodologies with organizational structures, implementing adaptive contracting mechanisms, and shifting organizational culture toward flexibility and continuous improvement are critical for realizing the full potential of agile practices within defense procurement contexts (MITRE Corporation, 2022; NDIA, 2023).

Conclusion

Integrating structured methodologies, agile practices, and strategic portfolio management significantly enhances agility and innovation within defense procurement. Frameworks such as the Burke-Litwin Model, Appreciative Inquiry, and action research foster adaptive management, decentralized decision-making, and reduced bureaucratic inertia. Agile methodologies aligned with procurement processes promote iterative development, rapid capability delivery, and continuous improvement, supported by adaptive contracting mechanisms like incentivized agile contracts and performance-based logistics.

Addressing historical acquisition challenges requires overcoming cultural inertia and streamlining processes through comprehensive reform initiatives. Effective reforms integrate rapid prototyping, agile methods, and continuous stakeholder feedback to enhance responsiveness and efficiency. Success hinges on aligning reforms with strategic objectives, ensuring relevant and impactful outcomes.

Managing technical debt through portfolio rationalization ensures technological superiority and operational readiness. The Strategy-to-Execution Model within PEO Digital exemplifies a structured approach to proactively address technical debt, improving resource allocation, reducing complexity, and accelerating capability deployment.

Sustaining innovation in defense procurement demands alignment of methodologies, cultural adaptation, and strategic execution. Continued investment in adaptive practices and cultural transformation is essential to effectively meet future operational challenges and maintain technological dominance.

Methodology

The six frameworks utilized by PEO Digital are based on empirical evidence. World Class Alignment Metrics (WAM) are based on three independent studies initiated by the organization. Conducted by Gartner and two research universities, the three studies were validated by DoN mission owners and seven Fortune 20 Companies to compare results. Together, the studies concluded that WAMs generate value for taxpayers and are an effective investment tool for enterprise technologies. The WAMs are grounded in Gartner's Outcome Driven Metrics framework. The DoN's Investment Horizons framework is based upon the oft-studied horizon frameworks established by McKinsey and SAFe®. The combination of WAMs, Investment Horizons, and the four other frameworks consistently provides comprehensive data for organizational analysis.

Action Research Methodology

This study employs an action research methodology to systematically implement and assess best practices identified in several Department of the Navy frameworks. The research specifically integrates World-Class Alignment Metrics (WAMs), Investment Horizons Charts, Structured Pilots, Structured Divestment Approach, Structured Challenges Approach, and the Innovation Adoption Kit (IAK). An iterative approach comprising planning, acting, observing, and reflecting cycles drives continuous improvement.

The initial planning phase establishes baseline measurements utilizing WAMs to evaluate current organizational performance across metrics including user productivity, operational resilience, adaptability, customer satisfaction, and cost efficiency. Baseline measurements provide quantitative benchmarks for comparison post-intervention.

The action phase introduces structured methodologies derived from Investment Horizons Charts, guiding strategic technology investment decisions across various maturity phases. Structured Pilots are implemented to rigorously test and validate emerging capabilities before full-scale adoption, ensuring solutions meet defined operational criteria. The Structured Challenges Approach stimulates innovation and optimization by fostering competitive problem-solving environments to rapidly advance technological solutions.

The observation phase systematically captures quantitative and qualitative data post-implementation using WAMs and Investment Horizons Charts to assess improvements in organizational agility, efficiency, and innovation effectiveness. The Structured Divestment Approach supports resource reallocation by identifying and phasing out obsolete technologies, maintaining continual alignment with strategic objectives.

Analysis of before-and-after measurements during the reflection phase provides empirical insights into the efficacy of integrated best practices. Findings from reflective analysis inform subsequent action research cycles, refining strategies and promoting sustainable innovation and operational excellence within defense procurement environments.

Results

Implementation of this methodology resulted in measurable improvements across several metrics. One Program Executive Office (PEO) conducting 21 pilots demonstrated significant enhancements using the Innovation Adoption Kit, completing pilots 105 times faster and producing outcomes 25 times greater than traditional methods. Manual data entry burdens decreased notably, contributing to a 20% increase in user satisfaction. The streamlined processes substantially reduced award times from a previous duration of 6 to 9 months down to 4 weeks or less.

The efficiency of staff involvement improved significantly, with required touchpoints reduced from 10–15 people to only five. Financial efficiency was enhanced as fees decreased dramatically from 3% to 0.04%. Additionally, increased speed in adopting Technology-Knowledge (TK) pilots was noted. Collaboration with innovative industry partners fostered superior technical outcomes and rapid onboarding of emergent capabilities within a 14-working day window to obligate funds.

Discussion

Interpretation of Results

The findings highlight critical factors influencing the efficacy and agility of defense procurement processes, emphasizing structured methodologies, agile practices, and proactive portfolio management. Integration of frameworks such as the Burke-Litwin Model, Appreciative Inquiry, and action research significantly improves organizational adaptability and responsiveness in complex procurement environments. These methodologies facilitate decentralized decision-making, reducing bureaucratic inertia and accelerating innovation implementation.

Applying agile practices within procurement processes demonstrates notable improvements in iterative development, capability delivery speed, and continuous improvement effectiveness. Agile methodologies, supported by adaptive contracting methods such as incentivized agile contracts and performance-based logistics, enable defense organizations to address rapidly evolving technological and operational demands effectively. Procurement agility therefore serves as a key determinant of operational success and strategic advantage.

Systematic portfolio rationalization emerged as essential for managing technical debt, maintaining long-term technological and operational readiness. The Strategy-to-Execution Model used within PEO Digital provides a structured method for proactively managing technical debt. This approach enhances resource allocation, reduces operational complexity, and accelerates capability deployment, ensuring sustained technological superiority and resilience.

These results underscore that sustained innovation and strategic effectiveness in defense procurement depend on aligning adaptive management practices, agile methodologies, and strategic portfolio management frameworks. Integrating these elements supports rapid adaptability to changing operational needs, promoting ongoing technological dominance and organizational resilience amid global challenges.

Comparison with Existing Literature

The study's findings align with existing literature emphasizing the significance of agile practices and adaptive management in enhancing defense procurement effectiveness. Previous research indicates that structured frameworks like Appreciative Inquiry and the Burke-Litwin Model facilitate organizational agility and responsiveness, especially in complex environments. This research further validates that decentralized decision-making and adaptive contracting are

effective mechanisms for managing rapid technological and operational changes, consistent with prior studies advocating agility as critical for organizational competitiveness.

This study extends previous literature by providing empirical support for the role of systematic portfolio rationalization in proactively addressing technical debt within defense organizations. The Strategy-to-Execution Model's effectiveness in managing resources and reducing operational complexity reinforces findings from earlier research emphasizing structured strategic management for operational resilience.

Implications for Practice and Theory

This research underscores the necessity of integrating agile methodologies and structured portfolio management practices within defense procurement to maintain operational effectiveness. Defense organizations should adopt structured frameworks and proactive portfolio rationalization to manage technical debt and enhance innovation capability. The findings emphasize that procurement agility directly contributes to sustained competitive advantage in dynamic environments.

This study contributes to the broader understanding of adaptive management practices from a theoretical standpoint, supporting theories advocating decentralized decision-making and strategic alignment as essential for organizational agility. Future theoretical developments in defense procurement can benefit from incorporating insights related to managing technical debt through structured strategic frameworks, enhancing overall operational resilience.

Limitations

This study's scope and methodological approach introduce certain limitations. The primary limitation involves potential biases inherent in qualitative interpretations and the generalizability of the results. Given the study's focus on specific frameworks and models within defense procurement, the findings might not be directly applicable to other sectors without adaptation.

The reliance on organizational case studies within defense procurement may limit the ability to generalize findings broadly across different organizational contexts or industries. Future research should address these limitations by employing quantitative methods and expanding research across diverse sectors.

Recommendations for Future Research

Future research should further investigate the effectiveness of agile methodologies and structured portfolio management practices across various industries and organizational contexts beyond defense procurement. Quantitative research methods could provide additional empirical validation of the frameworks' effectiveness.

Exploring the long-term impacts of systematic portfolio rationalization on organizational resilience and technological competitiveness would offer valuable insights. Future studies should also assess how cultural and organizational factors influence the successful adoption and integration of adaptive management and agile practices.

Conclusion

As stewards of taxpayer dollars, the DoN must continue to accelerate acquisition pathways for technological capabilities. Delivering faster, cheaper and higher performance IT solutions will better equip our warfighters and disrupt adversarial competition. Agencies across the DoD should consider adopting values-driven acquisition strategies, increase the breadth and depth of commercial investments, and regularly measure performance against mission outcomes.

The integration of structured acquisition methodologies, agile practices, and effective portfolio management is critical to advancing technological innovation and improving agility within defense acquisition environments. The application of World-Class Alignment Metrics, Investment Horizons, Structured Pilots, Structured Divestments, and agile contracting mechanisms has demonstrated significant, measurable outcomes, including substantially reduced acquisition timelines, enhanced user satisfaction, and optimized resource utilization. Through systematic and iterative action research, this study validated that structured frameworks not only streamline operational processes but also directly contribute to increased mission readiness and operational effectiveness. Furthermore, ongoing collaboration with industry partners has proven crucial in rapidly identifying and integrating innovative capabilities, thus enhancing strategic responsiveness. To maintain competitive advantage and deliver enduring value to warfighters, defense organizations should adopt and continuously refine these structured methodologies. Future efforts should further examine the scalability and adaptability of these approaches across various DoD contexts to ensure consistent and sustained innovation.

Acknowledgments

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