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Innovation in Acquisition: Case Study of Marine Corps Manpower Information Technology Systems Modernization (MITSM) Portfolio

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Innovation in Acquisition: Case Study of Marine Corps Manpower Information Technology Systems Modernization (MITSM) Portfolio

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Abstract

The Program Executive Office for Manpower, Logistics and Business Solutions' (PEO MLB) Marine Corps Manpower Information Technology Systems Modernization (MITSM) portfolio uses an innovative acquisition approach incorporating agile, user-centered design, existing enterprise services, and Other Transaction Authorities (OTA) to develop complex technology prototypes that mature to become programs of record to support warfighters at the speed of relevance. MITSM's complex prototypes achieve Minimum Viable Product (MVP) and transition to Minimum Viable Capability Release (MVCR) within 2 years. MITSM's innovative approach, titled the Prototype to Program (P2P) Process, involves accelerating requirements development, reducing procurement time, allocating resources based on learning, increasing customer satisfaction, and paralleling Information Technology (IT) transformation planning. Using the Software Acquisition Pathway, MITSM's P2P Process incorporates design thinking and agile user-centered design and uses the flexibility of OTA prototype agreements and existing enterprise services to accelerate the delivery of software prototypes to achieve large-scale enterprise results.

Keywords: Innovation, User-Centered Design, Agile, Other Transaction Authority, Software Acquisition

Introduction

The Program Executive Office for Manpower, Logistics and Business Solutions' (PEO MLB) Marine Corps Manpower Information Technology Systems Modernization (MITSM) Portfolio was established by the assistant secretary of the Navy for research, development, and acquisition (ASN[RD&A]) in February 2023 to operationalize Talent Management 2030-the Commandant of the Marine Corps' (CMC) vision to modernize the Marine Corps' manpower Information Technology (IT) systems. Talent Management 2030 enables a transparent, commander-focused collaborative system and aligns the individual abilities, skills, and aspirations of our Marines to our warfighting needs by digitally modernizing our Human Resource Development Process (HRDP) systems and IT environments. To meet the timeline of Talent Management 2030, MITSM had to bridge the "valley of death" by implementing industryacknowledged best practices in IT acquisition to ensure that successful results would be demonstrated within the first 2 years of standing up the MITSM Portfolio. MITSM accomplished this by using faster acquisition processes like the Software Acquisition Pathway (SWP) and Other Transaction Agreements (OTA). The MITSM Prototype to Program (P2P) Process combines these acquisition processes with innovative development methods that take ideas to programs in a short amount of time.

Historically, software programs that follow the Defense Business System (DBS) Business Capability Acquisition Cycle (BCAC) process fail to deliver capability to warfighters at the speed of relevance. The BCAC process is not aligned to modern software development methodologies because it requires lengthy requirements analysis and documentation up front.



Additionally, the BCAC process includes burdensome administrative bureaucracy due to the multiple phases and decision points required before new capabilities can be developed and deployed.

Figure 1 shows that the DBS pathway requires a program to complete three phases, Capability Need, Solution Analysis, and Functional Requirements and Acquisition Planning, before a contract is awarded to initiate program execution. In comparison, Figure 1 also illustrates the streamlined SWP with just two phases, a Planning Phase and an Execution Phase, removing the DBS pathway's multiple phases and barriers leading to program execution. The MITSM P2P Process uses SWP, replacing the initial three DBS pathway phases with Design Thinking Workshops that incorporate warfighter feedback to rapidly identify their pain points and prioritize their use cases to produce OTA Prototype Agreements.



Figure 1. Adaptive Acquisition Framework

At MITSM, SWP provides a more agile and efficient approach to acquiring software systems. MITSM's P2P Process (Figure 2) mimics SWP's Planning and Execution phases to emphasize flexibility, allowing for faster and more iterative delivery of software products. Using the SWP Planning Phase to prototype is a tool for bridging the "valley of death." The "valley of death" is a common occurrence in new system acquisitions because historically it can take 3 years from requirements generation to contract award and the program receiving their first official budget in the Program Objective Memorandum (POM). For the first 3 years, the program can be in a state of documentation paralysis with no forward movement or demonstratable success. The MITSM P2P Process eliminates the "valley of death" by showing immediate business value.



Figure 2. TFRS 2.0 MITSM's Prototype to Program (P2P) Process



Phase 1: Define is when we detail the project scope, including goals, requirements, and success criteria. During this phase, we conduct the up-front Design Thinking Workshops and complete the OTA Request for Proposal (RFP) Process, which takes approximately 9 months. At the Authority to Proceed Decision (ATP) Point 1, MITSM chooses if it wants to proceed to the SWP Planning Phase by awarding an OTA to complete a prototype.

From MITSM's inception, CMC and Headquarters Marine Corps Manpower & Reserve Affairs (HQMC M&RA) leadership directed MITSM to use time to market (i.e., field capability to Marines to support the commandant's vision for talent management through digital modernization of the Human Resource Development Process [HRDP] systems and IT environments) as our principal measure of effectiveness (MOE) in developing IT requirements and delivering new applications and IT capabilities. To this end, we concluded that applying User-Centered Design (UCD) principles across our efforts would be critical to our success. MITSM determined that to achieve the time to market MOE, we must accelerate the front end of the acquisition process. Initiating prototyping efforts using UCD efforts like Design Thinking Workshops allowed us to accelerate requirements gathering to reach the OTA prototype agreement award faster.

Phase 2: Develop reflects the 12–15 months required to build a complex prototype. A simple prototype only proves that a Commercial Off-The-Shelf (COTS) product works in the contractor's environment. The MITSM P2P Process requires complex prototypes to ensure it mitigates the high-risk areas of data migration and system interfaces in a Department of Defense (DoD) environment. This occurs in the SWP Planning Phase to reduce the schedule risk of delivering Minimum Viable Capability Release (MVCR) within 12 months of entering the SWP Execution Phase. ATP Decision Point 2 requires the prototype to:

- 1) Successfully meet its success criteria, which demonstrates the Minimum Viable Product (MVP) provides business value.
- 2) Reach Risk Management Framework Step 4 (Interim Authority to Test [IATT]).
- Demonstrate enterprise viability and scalability during a User Acceptance Test (UAT) event.

<u>Phase 3: Deliver</u> transitions the prototype from an OTA agreement to an Other Transaction Production (OTP) agreement in about 4 months. The prototype becomes a program and enters the SWP Execution Phase. At this point, the program completes the Risk Management Framework (RMF) process, receives an ATO, and deploys the MVCR.

The MITSM P2P Process is also aligned to the new *Directing Modern Software Acquisition to Maximize Lethality* memorandum issued by Secretary of Defense Pete Hegseth on March 6, 2025. The memo directs "all DoD Components to adopt the Software Acquisition Pathway (SWP) as the preferred pathway for all software development components of business and weapon system programs in the Department."

HQMC M&RA stated about the MITSM P2P Process:

[It] makes small investments to validate capability before scaling to production. Time has shown that big-bang delivery of enterprise resource planning software often leads to cost and schedule overruns and, at worst, failed delivery of capability. MITSM's mantra of no big-bang deliveries helps ensure that the Marine Corps maximizes the impact of information technology expenditures across its Future Years Defense Plan. This approach involves choosing narrowly scoped business processes and then making a small capital investment to develop and deliver a prototype capability that can be validated and tested. This capability is then scaled for enterprise use and incrementally



expanded to continue delivering value and eventually incorporate the entire business process. Once complete, the legacy system is sunset, and the portfolio moves on to the next modernization effort. Making small investments, competing prototypes, and ensuring rigorous testing and validation push industry to produce consistent quality results on time and within budget. This process also ensures that the Marine Corps executes incremental development and delivery, helping to avoid the pitfalls of the bigbang approach, which often leads to IT modernization failures due to changing requirements and scope creep. This iterative, feedback driven approach ensures systems can meet evolving needs while minimizing the risk of obsolescence before deployment. (Peterson, 2024)

The purpose of this paper is to discuss how MITSM implemented the MITSM P2P Process described by HQMC M&RA in the above paragraph and demonstrate how these changes in acquisition approach and engagement with the defense industry appreciably accelerate capability delivery and better meet user needs and objectives over traditional practices. This paper will explore this hypothesis by answering the following research questions:

- 1) Do opportunities exist for collaboration between defense, industry, and academia that will create an environment to rapidly develop, test, and transition ideas and solutions into practical applications?
- 2) Innovation by nature starts small, and current innovation efforts are happening in pockets across the DoD on a small scale. How can we build on this momentum to achieve more large-scale results? Is it possible to scale these efforts up across the DoD? Or is there another way to promulgate innovation while preserving the efficiency and creativity of small teams?
- 3) How do we collaborate with our industry partners, small and large, throughout the processes of development, testing, production, and sustainment to generate innovative technology and solutions? What does this collaboration look like from different roles in the acquisition community, such as contracting officers, program managers, senior leaders, engineers, and others?
- 4) How can changes to the RFP process (e.g., length restrictions, demonstration requirements, contract structure) ensure that awarded contracts are mission-oriented and outcome-driven to drive competition and innovation opportunities, maximize utility of the product or system to the end user, and mitigate risk to the DoD?

Background

The Marine Corps' HRDP is a cornerstone of force readiness, but outdated systems, fragmented data, and inefficient workflows have long hindered its ability to effectively manage personnel. Rigid legacy infrastructure, manual processes, and disconnected databases have led to delays in decision-making, inefficiencies in manpower allocation, and limitations in talent management. To maintain operational effectiveness, the Marine Corps must transition to a modern, integrated, and data-driven HRDP ecosystem capable of supporting the evolving needs of the force. This is aligned with Force Design 2030, which calls for modernization efforts to ensure the Marine Corps remains effective in contemporary and future warfare scenarios

Recognizing these challenges, MITSM and HQMC M&RA have partnered to modernize HRDP through a comprehensive digital transformation initiative. This effort focuses on consolidating disparate legacy systems, automating personnel workflows, and enabling datadriven decision-making. The solution is not just about upgrading technology but fundamentally restructuring how HRDP data is processed and utilized to create a more agile, efficient, and responsive manpower management framework.



Acquisition Research Program department of Defense Management Naval Postgraduate School This paper examines MITSM's first two efforts that used the MITSM P2P Process to transform the HRDP. The first effort is the Total Force Retention System (TFRS) 2.0, which uses an OTA agreement. The second is Models Modernization's first initiative, USMC Staffing Goal (SGM), which uses existing enterprise services within the DoD Chief Digital and Artificial Intelligence Office (CDAO) Advana Platform.

TFRS 2.0

TFRS 2.0 transforms today's manual paper-based Reenlistment Extension Lateral Move (RELM) submission by providing the capability to automate, expedite, and digitize the reenlistment process. As part of the OTA prototype agreement, the following success criteria were established to demonstrate success of the prototype:

- Reducing the time of RELM submission to final execution
- Decreasing errors in reenlistment processing
- Fully digitizing the process, eliminating manual paper routing
- Minimizing data sources that career planners must manually access outside the system to perform their job

"TFRS 2.0 took advantage of Software as a Service (SaaS) systems and cloudnative tooling to streamline delivery and reduce customization. Leveraging the Salesforce enterprise license model allows us to build as many modules as we need. Salesforce and our other COTS tools (Okta, DocuSign) are SaaS managed. This means the government does not have to manage the infrastructure and platform layer and can focus on configurations based on our specific workflow needs. It also means that by using SaaS products, the government does not have to invest significant manpower, compute, and resources to maintain the systems, as required with fully customized solutions. Lastly, all our COTS tools maintain provisional authorities to operate (ATO) at the Defense Information Systems Agency (DISA) level, meaning the ATO process is significantly compressed compared with developing a full ATO from scratch" (H. Hunt,¹ personal communication, March 2, 2025).

This paper will explain how the MITSM P2P Process was used to award the TFRS 2.0 OTA complex prototype in 9 months, achieve MVP in 15 months, and transition to an OTP Agreement to complete delivery of MVCR in 4 months.

Models Modernization SGM

The Models Modernization SGM application allows analysts at HQMC M&RA to manage and run algorithmic models to determine which billets should plan to have Marines issued orders to them in the coming new assignment season and which monitors should be responsible for filling those billets from within their monitored populations.

The legacy Models Modernization SGM application was built in Fortran. The transformed version of the Models Modernization SGM is a

"modern, cloud-based application that is a centralized and scalable solution for manpower modeling. Instead of relying on siloed databases, manual processes,

¹ Hannah Hunt serves as a distinguished technical fellow at MetroStar Systems in the Defense Business Unit, where she supports technical delivery across MetroStar's defense customers. Hunt previously served as the chief product and innovation officer at the Army Software Factory and as chief of staff for the U.S. Air Force's Software Factory Kessel Run. At the Army Software Factory, Hunt led the development and delivery of a cohesive suite of products "by soldiers, for soldiers" and evangelized agile acquisitions and Development, Security and Operations (DevSecOps) in the Army.



and laborious iterations of process, the modernized Models Modernization SGM integrates data sources across the HRDP environment, streamlining access to data for M&RA analysts. This transition eliminates inefficiencies caused by redundant data entry, manual record-keeping, and disconnected manpower functions, ensuring that leaders have accurate, real-time insights into manpower requirements, planning, and forecasting" (J. Castillo,² personal communication, March 2, 2025).

This paper will explain how the MITSM P2P Process accelerated speed to market, enabling the Models Modernization SGM application to reach MVP within 6 months by leveraging existing enterprise services provided by the CDAO Advana platform. The C3 AI software application was already accredited for the CDAO Advana platform with the data sources needed for the application and access to contract vehicles to quickly add task orders needed to configure the models using the C3 AI Platform.

As part of the MITSM P2P Process, establishing a defined innovation success criteria is critical for prototype MVPs. "The minimum viable solution is the smallest solution release that successfully achieves its desired outcome" (Patton & Economy, 2014, p. 34). Both TFRS 2.0 and the Models Modernization SGM demonstrated they achieved their respective innovation success criteria business value outcome. By modernizing antiquated manual processes, the TFRS 2.0 RELM package processing time is completed 2–3 months faster, creating a 75% efficiency, and now provides a better customer experience to the reenlisting Marine. For Models Modernization SGM, M&RA analysts state the timeline required to develop, review, and publish the Models Modernization SGM takes days now compared to the previous months, creating an 85% efficiency.

Discussion

The MITSM P2P process involves the following key features:

Accelerating Requirements Development

The MITSM P2P Process reduces the time and cost of procurement by focusing on software's rapid delivery and continuous improvement.

"The integrated SWP functionality encourages smaller, more manageable contracts, which provide the ability to adjust throughout the development process. For MITSM, adopting SWP concepts into the P2P Process significantly enhanced the speed and effectiveness of modernizing and optimizing applications, better enabling them to meet evolving mission requirements while keeping pace with technological advancements" (H. Hunt, personal communication, March 2, 2025).

The following phases outline the MITSM P2P Process used at initiation of a prototype to accelerate requirements development to rapidly execute OTA prototype agreements.

Phase 1: Define. A Design Thinking Workshop is a facilitation process for answering crucial questions with customers in a stepwise and iterative fashion. MITSM uses design thinking principles and techniques from Sprint, LUMA Institute, *Think Wrong*, and Naval X's Center for Adaptive Warfare (CAW). Following Jake Knapp's *Sprint*, the workshop typically lasts 5 days and includes a range of activities, including problem definition, conceptual design,

² **Jake Castillo** is a senior director of strategic solutions for C3 AI, where he is responsible for business development and total lifecycle client support, with a focus on digital transformation for the DoD. He leverages experiences from 20 years of Marine Corps service combined with a deep understanding of industry-leading digital transformation methodologies to solve modernization challenges across the DoD.



prototype development, and user testing. To meet the unique needs of Lean Start-Up Model, MITSM has tailored the schedule to 2–3 days.

Time	Day 1 Agenda: Empathy and Current Process	Time	Day 2 Agenda: Future State
15m	Welcome & Opening Remarks	15m	Welcome Back, Recap Day 1,
25m	Introductions and Icebreakers	60m	Exercise #6: Industry Demonstration- Provide Audience with potential ideas for tomorrow's To-Be Process Mapping.
60m	Exercise #1: Modernization Inputs Framework to Agree on Problem Statement, North Star, and Goals	60m	Exercise #7: How Might We Statements
15m	Break	15m	Break
45m	Exercise #2: Stakeholder Mapping / Empathy Mapping / Dot Voting to determine persona point of view for Journey Mapping	60m	Exercise #8: To- Be Process- If you were King or Queen for the Day how should it work!
15m	Break	15m	Break
60m	Exercise #3: Create As-Is Journey Map	30m	Exercise #9: Success Criteria- Identify on the ToBe Chart where business value will be gained from the improvement in the process
60m	LUNCH	60	LUNCH
30m	Exercise #4: Pain Points- To identify if opportunities for improvement in the To-Be Process	60	Exercise #10: Product Backlog- Write the Epic Ability Statements based on ToBe Process
30m	Exercise #5: Problem Tree Analysis	15	Break
15m	Break	60	Exercise #11: PICK Chart- to identify nearterm and long term actions and innovations.
15m	Daily Wrap Up, Facilitated Open Discussion	15	Workshop Wrap-Up and Next Steps

Figure 3. Sample Design Thinking Workshop Agenda

Figure 3 is a sample of a Design Thinking Workshop agenda MITSM used to develop the artifacts used for the TFRS 2.0 OTA RFP. Definitions of the workshop exercises are provided in Enclosure 1.

Design Thinking Workshop Day 2 is when the user community representatives from HQMC M&RA and Career Planner Subject Matter Experts developed the TFRS As-Is (Enclosure 2) and TFRS 2.0 To-Be (Enclosure 3) Process Charts. The steps in the To-Be Process have corresponding How Might We (HMW) Statements. Phrasing of HMW Statements provide for "opportunities and challenges, rather than getting bogged down by problems or, almost worse, jumping to solutions to soon" (Knapp, 2016, p. 74). Both artifacts are provided in the OTA RFP so that industry can understand the current user pain points and the To-Be Process with their corresponding HMW Statements which represents the use case to be developed as the MVP and the start of the Agile Sprint Product Backlog.

As Jeff Patton (2014) says in *User Story Mapping*, "One of the tough realities about software development is that there's always more to build than we have time and money for. So the goal should never be to build it all. The goal is to minimize the amount we build" (p. 9). The To-Be Process is the agreed-to MVP.

<u>Phase 2: Develop.</u> MITSM P2P Process follows a UCD agile methodology approach. Incorporating UCD into the software delivery process

"ensures that the needs and preferences of end users are central to the development process. UCD focuses on iterative testing and feedback from users, leading to the creation of systems that are more intuitive and effective. For MITSM, this approach helps ensure that the software not only meets functional requirements, but is also user-friendly, enhancing user adoption and operational efficiency. By engaging with end users throughout the development process, the Marine Corps can avoid costly missteps, reduce training requirements, and



improve overall user satisfaction" (H. Hunt, personal communication, March 2, 2025).

For TFRS 2.0, the HQMC M&RA Product Owner defined our priorities of work though the UCD agile process. Based on user involvement, Metrostar, the prime contractor for TFRS 2.0, configured the features and functions that had the greatest value and contribution to the Marine Corps' manpower mission first. The Marine subject matter experts (SME) that participated in the agile sprint development were empowered to recommend trade-off decisions between capabilities and time to the Product Owner, so we were able to keep the prototype on track and meet the optimized versions of capability and schedule concurrently.

For Models Modernization SGM, C3 AI was responsible for all aspects of digital transformation, modernization, and artificial intelligence (AI)/machine learning (ML), while MITSM facilitated stakeholder engagement, requirement definition, and system alignment with DoD infrastructure. This collaboration allowed for real-time testing and iterative improvements, ensuring the new HRDP platform met M&RA requirements. Leveraging 6-month agile sprints, the team cyclically defined a scope of work, iteratively designed, configured, and deployed user-centric workflows. Once each sprint is complete, the team analyzes the results, identifies what remains to be completed, and restarts the cycle. This collaborative effort requires a great deal of time from HQMC M&RA SMEs during each sprint but results in a product that is highly tuned and tailored to meet the specific demands of the user. MITSM and C3 AI accelerated deployment timelines, improved data-driven personnel management, and laid the groundwork for broader digital transformation within the Marine Corps.

"We're making sure we build the right thing right, as opposed to building the wrong thing right. By putting our end users, mission owners and product owners at the center of our agile teams, we optimized our ability to make sure we built the correct application or capability that best met the end users' desires and fulfilled mission value objectives."

– Colonel Robert Bailey³

Reducing Procurement Time

"Non-traditional contract mechanisms, such as OTAs, play a crucial role in enabling the Marine Corps to work with a broader range of industry partners. OTAs provide flexibility that is often lacking in traditional contracts, making it easier to collaborate with innovative firms, including startups, small businesses, and nontraditional defense contractors not commonly contracted within the DoD. These agreements facilitate quicker procurement processes, direct collaboration with vendors, and allow for more tailored solutions, reducing bureaucracy and the associated delays often seen in standard contracting procedures. For Marine Corps manpower systems, OTAs enable experimentation with emerging technologies and processes and the incorporation of novel solutions that would otherwise be constrained by rigid contractual frameworks. Based on the successful completion of the TFRS 2.0 initial prototype OTA, we were able to move forward with a production OTA that expands upon the work in the prototype and focuses

³ **Col. Robert Bailey** served as the portfolio director for PEO MLB's MITSM, where he oversaw the development and implementation of new IT systems and processes related to manpower management within the Marine Corps. Previously, Col. Bailey served as the deputy program executive officer and director of the Command Strategy and Business at PEO Digital and Enterprise Services and was commanding officer of Marine Corps Tactical Systems Support Activity.



on the entire 'hire-to-retire' lifecycle for Marines" (H. Hunt, personal communication, March 2, 2025).

MITSM uses the Information Warfare Research Project (IWRP) Consortium for OTAs. The benefit of using an established consortium is to take advantage of a pool of vetted nontraditional companies, which streamlines execution and RFP evaluation, simplifying documentation. Figure 4 illustrates the OTA RFP timeline TFRS 2.0 followed from industry day to contract award. This timeline is aggressive and requires commitment from the government evaluation team. It was critical that the government evaluation team included representatives from the HQMC M&RA Product Owner to ensure buy-in from the very beginning. In addition, the OTA RFP process provides an ability to conduct market research through the white paper and industry demonstrations.



Figure 4. OTA RFP Schedule

Industry engagement throughout the TFRS 2.0 OTA RFP process was essential for the government evaluation team to learn and understand the latest technological advancements and innovative solutions and how to leverage them to improve Marine Corps manpower systems. Collaboration with industry leaders during the one-on-one meetings and white paper evaluations enabled MITSM to tap into a wider range of expertise to update the RFP package, ultimately leading to better, more cost-effective outcomes.

"Regular engagement with industry also allows for the incorporation of best practices in software development and delivery, ensuring that the solutions implemented are scalable, sustainable, and adaptable to changing requirements. Through ongoing dialogue with industry partners, the Marine Corps can stay ahead of the curve in integrating cutting-edge technologies into its manpower systems" (H. Hunt, personal communication, March 2, 2025).

To accelerate implementation in Models Modernization SGM, MITSM used existing enterprise services provided by the CDAO Advana platform to access C3 AI technology, which enabled rapid prototyping, iterative development, and direct engagement with end users. CDAO's existing contract vehicles allowed the HRDP modernization effort to move forward without the delays typical of traditional acquisition processes. This ensured capabilities could be developed, tested, and refined in stride with HQMC M&RA requirements.

Both the TFRS 2.0 OTA with Metrostar and the Models Modernization SGM with C3 AI use milestone deliveries with a Firm Fixed Price (FFP) modular contracting approach. By establishing the MVP/MVCR use cases up front in the OTA/OTP award and enterprise service task order, the Statements of Work (SOW) establish clear milestone deliveries via the agile



sprint cadence. This helps ensure the government understands the total cost required to achieve the business value being delivered with the MVP/MVCR. This modular contracting using FFP controls cost overruns because using agile, we understand the industry partner's sprint velocity and have the flexibility to shift priorities to achieve our outcomes.

Allocating Resources Based on Learning

Based on IT industry best practices, the MITSM P2P Process follows a Lean Startup model by learning fast regardless of whether the prototype MVP meets the innovation success criteria. "Lean thinking defines value as providing benefit to the customer; anything else is waste" (Ries, 2011, p. 56). The result of these prototypes allows MITSM and HQMC M&RA to quickly explore innovative technology options and learn whether the MVP solution has enterprise viability, scalability, demonstrated business value, and if it will achieve user acceptance before making long-term investment decisions.

Figure 5 summarizes the TFRS 2.0 business value metrics used to determine if the prototype would transition to MITSM P2P Process Phase 3 and enter the SWP execution phase to become a program. During Day 2 of the Design Thinking Workshop, users defined measurable success criteria for the To-Be Process Use Case. The MITSM Program determined the baseline metric values by developing a retention process improvement survey to measure the As-Is Process (Enclosure 2). The survey (Enclosure 4) was built using the Department of the Navy (DoN) Voice of the Customer Tool, and the survey link was advertised on social media and Marine Online. The survey responses from over 1,500 Marines resulted in the baseline metric column. Finally, "the value hypothesis tests whether a product or service really delivers value to customers once they are using it" (Ries, 2011, p. 70). Using the value hypothesis that the prototype will deliver something better than they have today in the baseline metric, during the TFRS 2.0 MVP prototype UAT, Marine testers were given the survey again and asked to evaluate if the MVP once deployed would deliver the business value defined in the success criteria. "Through this UCD process, we were able to define business value and articulate return on investment in relatable terms" (Col. R. Bailey, personal communication, March 2, 2025).

Success criteria	TFRS Baseline Metric (Surveyed based on experience)	TFRS 2.0 Metrics (Surveyed at User Acceptance Test)
Reduce process time of Reenlistment Extension Lateral Move (RELM) submission to final execution	On average, Career Planners (CPs) and Marines say RELM packages take 2-3 months to complete.	99% of Marines responded: TFRS 2.0 will reduce RELM Process Time.
Decrease errors in reenlistment process	25% of CPs say they often encounter performance issues in TFRS.	93% of Marines responded: TFRS 2.0 will decrease errors in reenlistment process.
Fully digital process that eliminates manual paper routing	93% of CPs don't have a fully digital process to submit RELM packages.	98% of Marines responded: TFRS 2.0 will eliminate manual paper routing of the reenlistment package.
Increase productivity by minimizing external system data sources used by the Career Planner to prepare the reenlistment package	On average, CP spends 1 hour to prepare each reenlistment package.	97% of Marines responded: TFRS 2.0 will eliminate the need to access external data sources.
Ease of use (i.e., System Usability Score)	SUS score was not tested for TFRS 1.0.	SUS score = 70%
Increase in customer satisfaction from sprint demos to final UAT	64% of CPs say TFRS allows them to easily perform and complete tasks.	100% of Marines responded with a Customer Value Metric of Relative Perception: Able to achieve more with TFRS 2.0.

Figure 5. Business Value Metrics



Increasing Customer Satisfaction

The MITSM P2P Process employs a UCD and agile methodology involving warfighters in the acquisition process. Ahead of each development sprint, warfighter feedback is gathered and incorporated into the software configuration plans. This reduces agile recidivism metrics and increases customer satisfaction in each sprint. Additionally, implementing UCD supports integrating Organizational Change Management (OCM) throughout the system development process ensures much-needed support in the introduction of a new capability to successfully gain initial user acceptance and buy-in.

"While this process is time and labor-intensive for SMEs, it maximizes user input throughout the development lifecycle, aligns with modern software development best practices, and ensures that critical design decisions are made by the end user, enhancing software viability and usability upon delivery" (Peterson, 2024).

Figure 6 below shows an example of the customer satisfaction metric collected at each agile sprint. This metric is qualitative feedback that captures the Marine end users experience while testing the breadth of the newly developed TFRS 2.0 functionality during each agile sprint. All participant roles are captured so the development team can determine if there are any results with significant variations that could be associated with the user's role. These findings assist the MITSM team and HQMC M&RA Product Owner in making data-driven decisions about product enhancements and identifying areas of the application that warrant a training focus, where enhancements are reserved for follow-on releases. The MITSM team can also review user sentiment due to the team's continuous user involvement throughout the development of the MVP and MVCR.



Figure 6. User Engagement Metric

Paralleling IT Transformation Planning

In conjunction with learning from the prototyping efforts, MITSM performed transformation planning to inform future state architecture. When analysis and prototyping take place concurrently, the team can make real time adjustments based on findings, which encourages innovation and adaptability. The high-level outcome of transformation planning is that MITSM has a clear and documented approach to application prioritization, rationalization, and modernization. The IT Transformation Plan was accomplished with support from our SMEs at Massachusetts Institute of Technology Research and Engineering (MITRE) and industry insights from Metrostar and C3 AI.

First, Metrostar conducted UCD-driven business process analyses to identify pain points across the HRDP value chain to inform the future state environment. Second, Metrostar and government stakeholders



Acquisition Research Program department of Defense Management Naval Postgraduate School "assessed 16 legacy systems, data flows, and interfaces and developed an application rationalization framework to help define the future state architecture. Rationalization helps prioritize investments in systems that align with strategic goals, while phasing out or consolidating outdated or ineffective solutions. This process is crucial for maximizing the value of the Marine Corps' software portfolio. Leveraging a governance framework that defines clear metrics to measure business, user, and mission value allows MITSM to make data-driven investment and divestment decisions across their portfolio of products. It provides an opportunity to invest in more emerging technologies and deprecate legacy systems by tracking progress across key metrics every quarter" (H. Hunt, personal communication, March 2, 2025).

For Models Modernization SGM, C3 AI assessed over 40 models used across HQMC M&RA to power the HRDP. C3 AI held several SME workshops to understand the models. A scoring rubric was developed to assess models across various dimensions and themes that represented criticality to the business, technology readiness, and urgency to modernize. The assessment lays out modernization priorities by considering final aggregated-model scores qualitative factors, and funding/budget constraints, and provides a recommendation for how and when these models should be prioritized.

Research Questions

To capture the viewpoints of the commercial firms who supported these MITSM efforts, the author posed four research questions to key contractor personnel. The questions and the responses from industry representatives who directly supported the MITSM efforts are discussed below.

1) Do opportunities exist for collaboration between defense, industry, and academia that will create an environment to rapidly develop, test, and transition ideas and solutions into practical applications?

"From an industry perspective, the traditional defense acquisition process presents significant challenges to rapid technological advancement. Rigid procurement structures, prolonged development timelines, and limited engagement with non-traditional vendors create barriers that prevent cutting-edge commercial solutions from reaching operational environments in a timely manner. Fostering a collaborative ecosystem between defense, industry, and academia is essential for addressing this challenge.

A core element of this collaborative approach is the use of OTA agreements and existing enterprise services, which enable faster prototyping, iterative development, and continuous engagement with warfighters. Unlike traditional defense contracts, OTAs provide a streamlined path for non-traditional vendors, startups, and research institutions to contribute to mission-critical projects without being hindered by excessive bureaucracy. MITSM leveraged OTAs to rapidly develop and test manpower applications for the HRDP. Industry's view is clear: reducing procurement friction through OTAs creates an environment where commercial solutions can be quickly adapted and deployed for defense applications.

Looking ahead, expanding these collaborative frameworks will be essential for ensuring that defense organizations can keep pace with technological advancements and maintain strategic superiority in an increasingly digital battlefield" (J. Castillo, personal communication, March 2, 2025).



2) Innovation by nature starts small, and current innovation efforts are happening in pockets across the DoD on a small scale. How can we build on this momentum to achieve more large-scale results? Is it possible to scale these efforts up across the DoD? Or is there another way to promulgate innovation while preserving the efficiency and creativity of small teams?

"The defense sector faces growing challenges in adopting innovative digital solutions due to bureaucratic acquisition processes, siloed research efforts, and slow technology transitions. Traditional procurement models often fail to bridge the gap between cutting-edge industry solutions, academic research, and operational defense needs, limiting the ability to rapidly integrate new capabilities into mission-critical environments. From an industry perspective, a more agile and collaborative ecosystem is necessary — one that fosters real-time innovation, rapid prototyping, and seamless technology adoption.

One of the key mechanisms for fostering this collaboration is the use of OTA agreements, which provide a faster and more adaptive contracting vehicle for engaging non-traditional defense partners, startups, and research institutions. Unlike traditional defense acquisition methods, OTAs enable iterative testing, industry-academic partnerships, and direct user engagement throughout the development process. Together, MITSM, HQMC M&RA, Metrostar, and C3 AI demonstrate how OTA-driven partnerships can streamline the deployment of advanced digital solutions, ensuring that modern, data-driven technologies reach military end users more efficiently.

Additionally, joint research and development efforts must evolve beyond academic studies and prototype demonstrations to focus on real-world implementation at scale. Industry sees value in collaborative test environments that integrate academic research, commercial best practices, and defense operational needs into a single, unified development pipeline" (J. Castillo, personal communication, March 2, 2025).

3) How do we collaborate with our industry partners, small and large, throughout the processes of development, testing, production, and sustainment to generate innovative technology and solutions? What does this collaboration look like from different roles in the acquisition community, such as contracting officers, program managers, senior leaders, engineers, and others?

"Collaboration with industry partners, both small and large, is essential for accelerating the development, testing, production, and sustainment of innovative technology solutions that meet evolving defense needs. Effective collaboration requires an agile and adaptive approach that fosters continuous engagement between government stakeholders, commercial innovators, and operational users. This iterative development process ensures that new technologies are not only cutting-edge but also mission-ready and scalable for large-scale deployment.

During testing and evaluation, close coordination between program managers, engineers, users, and industry developers allows for real-world validation of capabilities, ensuring interoperability with existing defense infrastructure. Production efforts benefit from a well-defined transition strategy, where contracting officers and logistics teams collaborate with industry to streamline software development, integration, and deployment. Sustainment is equally critical, as longterm partnerships with industry enable continuous upgrades, cybersecurity



enhancements, and feature enhancements to keep systems operationally effective" (J. Castillo, personal communication, March 2, 2025).

4) How can changes to the RFP process (e.g., length restrictions, demonstration requirements, contract structure) ensure that awarded contracts are mission-oriented and outcome-driven to drive competition and innovation opportunities, maximize utility of the product or system to the end user, and mitigate risk to the DoD?

The MITSM software acquisition pathway serves as a prime example of how the RFP process can be improved to be more mission-oriented, outcome-driven, and innovation-focused. Unlike the traditional BCAC, which often includes lengthy timelines, rigid documentation requirements, and bureaucratic hurdles, MITSM's P2P Process streamlines acquisition by focusing on rapid prototyping, iterative development, and early end user engagement. By reducing RFP length restrictions, incorporating clear demonstration requirements, and adopting more flexible contract structures, the acquisition process can better ensure that awarded contracts align with operational needs, foster competition, and accelerate technology deployment.

A key improvement in MITSM's P2P Process is the emphasis on modular contracting and phased capability rollouts, allowing vendors to prove feasibility through real-world testing before full-scale implementation. This minimizes the risk of failed procurements and ensures that solutions deliver measurable value to the DoD.

For example:

- For TFRS 2.0, the OTA agreement includes agile contracting mechanisms using monthly milestone deliveries following the sprint schedules. In addition, the MITSM OTA approach encourages participation from non-traditional defense vendors and commercial technology leaders, broadening the competitive landscape and injecting cutting-edge innovations into defense systems.
- For the Models Modernization SGM, MITSM task orders require inspection of the delivery of the product at the midpoint and end of each six-month phase. This allows stakeholders to ensure that all deliverables satisfy requirements while enabling maximum flexibility to incorporate the latest innovations by industry.

The RFP process should be modified to mirror these improvements by prioritizing outcomes over rigid compliance measures, fostering collaborative development environments, and adopting a continuous feedback loop between government stakeholders and industry partners. By learning from the MITSM P2P Process, the DoD can reduce acquisition bottlenecks, maximize the utility of emerging technologies, and drive mission success through a more adaptive and efficient procurement process.

Conclusion

This paper illustrates how MITSM's P2P Process successfully implements industry best practices to rapidly transition technology by ensuring organizations promulgate user-centered design, agile software development, and innovative acquisition processes such as OTA agreements and existing enterprise services.

"With our users at the center of our development efforts, we generated advocacy from junior enlisted Marines all the way up to senior officers. Our users fought for and advocated for the resources we needed as a software development team to help them be successful in their missions. Similarly, within the Marine Corps the senior enlisted ranks are extremely influential. We gained their trust throughout the agile development process and in return, they advocated for new capabilities both



from a resource prioritization perspective and by lending much-needed support in the OCM continuum of introducing new capability and successfully gaining initial acceptance and buy-in" (Col. R. Bailey, personal communication, March 2, 2025).

The modernization of HRDP represents a critical step forward in the Marine Corps' broader digital transformation efforts. By eliminating outdated processes, improving data integration, and enhancing decision-making through modern digital tools, this initiative sets the foundation for a more agile and effective HRDP ecosystem. The collaboration between MITSM and the user community represented by HQMC M&RA, along with support of our industry partners, demonstrates the power of innovative partnerships and rapid digital modernization in ensuring that the Marine Corps remains ready and adaptive in a rapidly evolving operational landscape in support of Force Design 2030.

Disclaimer: The views represented in this case study are those of the author and do not reflect the official policy positions of the Navy, the Marine Corps, the Department of Defense, or the federal government. The commercial firms and products discussed herein were procured in accordance with applicable government procurement regulations, through authorized government personnel; references to those firms and products should not be construed as an implied or explicit endorsement. The contributions of the author and any cited contributors to this case study were provided in a personal capacity without compensation of any kind.

Exercise Name	Description/Purpose
Modernization Inputs Framework	Canvas Chart used to collect feedback on Problem Statement, Stakeholders, North Star, Goals, Barriers, etc. as inputs to modernization planning.
Stakeholder Mapping	Stakeholder Mapping is a method to quickly generate a list of people involved in a process or activity. This exercise can help lead into Empathy and Journey Mapping.
Empathy Mapping	An empathy map is a collaborative visualization used to articulate what we know about a particular type of user (Say, Think, Do, Feel).
Anchors and Rockets	This exercise gives everyone a blank canvas to think outside the box on the obstacles and opportunities to their challenges in order to innovate on solutions.
Affinity Clustering	Grouping similar stickies into common themes and labeling those clusters. This provides a method of drawing insights out of otherwise disparate information.
Gallery Walk	 Can be used during different parts of the workshop: 1) To review work completed prior to the workshop to obtain buy-in and refinement from the attendees. 2) To review work completed during the workshop and then lead into Dot Voting to prioritize work in the follow-on exercises.
Journey Maps	As-Is journey maps and To-Be journey maps are used to visualize the process that a person goes through in order to accomplish a goal.
Pain Points	To brainstorm the pain points within the journey map and from the user's point of view what they would want to change to make their experience better.
Dot Voting	A quick poll of the workshop attendees to reveal preferences, opinions, and/or priorities.
Problem Tree Analysis	It provides a structured way for your team to reveal concerns, discern causes from symptoms, and potentially frame problem statements in a new and better way.
How Might We Statements	Encourages a more exploratory and innovative approach to problem-solving.

Enclosure 1. Design Thinking Workshop Exercise Descriptions



PICK Chart	Aids in categorizing ideas based on two critical dimensions: the ease (or difficulty) of implementation and the potential impact each idea holds. It is a way to identify near-term and long-term actions and innovations.
Over the Shoulder/ Day In The Life	SMEs using the current IT system provide a demonstration and explain out loud the steps they take, pointing out things they like and things they don't like.
Industry Demonstrations	Schedule industry partner demonstrations that will help the workshop attendees to brainstorm and ideate on what the future state could look like.





Enclosure 2. TFRS 2.0 As-Is Process



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Enclosure 3. TFRS 2.0 To-Be Process



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Enclosure 4. TFRS 2.0 Baseline Survey

TFRS 2.0 Reenlistment Baseline Survey

Persona 1	Persona 2	Persona 3
I am a Unit Career Planner. I am a MSC Career Planner. I am a Career Planner SNCOIC. I am a HQMC Career Planner.	I am a Marine involved in the routing/recommendation process for Marine Corps' reenlistments.	I am a Marine that has gone through the reenlistment process and/or is currently going through the reenlistment process.
Q1. On average, how many Reenlistment, Extension, or Lateral Move (RELM) packages do you process in a fiscal year?	Q1. How much time did it take for your (RELM) package to process from submission to decision made by Manpower Management Enlisted Assignments?	Q1. What motivates you the most to reenlist when deciding to reenlist?
Q2. On average, how long does it take you to prepare a single NAVMC 11537 in support of RELM request? • Less than 15 minutes • 1 - 4 hours • 10 - 30 minutes • Other • 31 - 60 minutes • Other • Q3. On average, how long does it take from the time the Marine receives the package to when it is returned to the Career Planner for submission into TFRS? • Less than 1 week • 2 weeks - 1 month • Less than 2 weeks • Other	1 week - 1 month 1 month - 2 months 2 months - 3 months 2 months - 3 months 2 months - 3 months 2 4 How much time on average do Reenlistment Extension Lateral Move (RELM) packages take to process within your command from start to submission? Less than 1 week More than 1 month 1 -2 weeks 2 weeks - 1 month	Drag and drop the options below with the highest option being the most important, and the lowest option being the least important to you. Retention Bonuses Duty Station of Choice Special Duty Assignment Lateral Move to another MOS Sense of Duty Q1a. Please explain if there are other motivators not already
Q4. On average, how long does it take from the time the Group / Regiment Career Planner receives the package to the time they forward the package to Manpower Management Enlisted Assignments 1 (MMEA-1)?	Q3. On average, how many pages do you have to print off for each RELM package for Marines within your command? None 16 - 20 pages 6 - 10 pages Other 11 - 15 pages	mentioned in the comment box. Q2. How much time did it take for your Reenlistment, Extension, or Lateral Move (RELM) package to process from start to submission?
Less than 1 day Less than 1 day day - 2 days Jady - 2 days Goto average, how long does it take from submission to decision made by MMEA-1? Less than 1 week Less than 1 week Goto average	Q4. On average, how many pages do you have to scan for each RELM package for Marines within your command? • None • 16 - 20 pages • 6 - 10 pages • Other • 11 - 15 pages	Less than 1 week 1-2 week 2 weeks - 1 month More than 1 month Other
1 month - 2 months Q6. On average, how many pages do you have to print for each RELM package? None 11 - 20 pages Other pages	Q5. How often do RELM packages on Marines within your command get lost and have to restart the routing process? • Never (0% of the time) • Often (31% - 50%) • Rarely (1% - 10%) • Always (51% - 100%)	Q3. Did your RELM package get lost while processing and had to be restarted? • Yes • No
Other Other Q7. How often do you have visibility of RELM requests during the routing process? Never (0% of the time) Often (51% - 75%) Never (0% of the time) Often (51% - 75%) Always (76% - 100%) Sometimes (26% - 50%) Always (76% - 100%)	 Sometimes (11% - 30%) Q6. How much do you agree with the following statement? "I always have visibility of RELM request within my command during the routing process." Strongly disagree Agree 	Q4. How much do you agree with the following statement? "I always have/had visibility of my RELM request during the routing process." • Strongly disagree • Disagree • Neither agree nor dicagree
Q8. To complete a RELM package, how much time do you spend manually accessing data sources outside of TFRS? • Less than 1 hour • 6 - 10 hours • 1 - 3 hours • Other • 4 - 5 hours	Volagree Neither agree nor disagree Q7. On average, how much time on average do RELM packages take to process within your command from submission to decision made by Manpower Management	Agree Strongly agree
Q9. How much do you agree with the following statement? • Strongly disagree • Disagree • Neither agree or disagree	Enlisted Assignments (MMEA-1)? 1 week - 1 month 1 month - 2 months Contemportation Other Contemportation Cont	



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References

- Bielenberg, J., Burn, M., Galle, G., & Dickinson, E. E. (2016). *Think wrong: How to conquer the status quo and do work that matters.* Instigator Press.
- Defense Acquisition University Adaptive Acquisition Framework. (2025, March). <u>https://www.dau.edu/aafdid</u>
- DoD. (2025, March 6). Directing modern software acquisition to maximize lethality. <u>https://media.defense.gov/2025/Mar/07/2003662943/-1/-1/1/DIRECTING-MODERN-SOFTWARE-ACQUISITION-TO-MAXIMIZE-LETHALITY.PDF</u>
- DoD. (2020, January 23). Operation of the adaptive acquisition framework, change 1 (June 8, 2022) (DoD Instruction 5000.02). https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500002p.PDF
- Knapp, J. (2016). *Sprint: Solve big problems and test new ideas in just five days*. Simon and Schuster.

Luma Institute. (2025, March). https://www.luma-institute.com/

NavalX Center for Adaptive Warfare. (2025, March). https://navalx.nre.navy.mil/s/caw

- Patton, J., & Economy, P. (2014). User story mapping. O'Reilly Media.
- Peterson, T. (2024). Digital solution in talent management. *Journal of Social Studies, December* 2024, 38–40. <u>www.mca-marines.org/gazette</u>
- Ries, E. (2011). The lean start-up. Crown Business.



















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