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DEPARTMENT OF VETERANS AFFAIRS

Integrated Financial and Acquisition Management System Interface Development Process Needs Improvement

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Executive Summary

VA is modernizing its finance and acquisition systems by implementing the Integrated Financial and Acquisition Management System (iFAMS). The Financial Management Business Transformation Service (FMBTS) is leading and managing implementation in waves. As of June 2023, five waves had "gone live" (been implemented) within VA: two for the National Cemetery Administration, one for the Veterans Benefits Administration, one for 15 VA administrative staff offices, and one for the Consolidated Wave Stack.[1] The Consolidated Wave Stack includes business functions of the independent Office of Inspector General (OIG); VA's Office of Acquisition, Logistics, and Construction; the Office of Construction and Facilities Management Major Construction; and staff offices at VA's Office of Information and Technology.[2] These five waves represent only 3.8 percent of total anticipated iFAMS users. Seven implementation waves remain, including the Veterans Health Administration (VHA). Notably, VHA comprises more than 92 percent of VA's total iFAMS users.[3] The specific timeline for VHA's implementation is not yet determined, although FMBTS anticipates all wave deployments of the system to be completed by 2031.[4] The Financial Management Business Transformation (FMBT) program's life cycle cost estimate as of fiscal year 2024 is approximately $8.6 billion. This estimate includes costs to deploy the system across VA and a sustainment period for the system through fiscal year 2050.[5]

Interfaces facilitate the flow of data between various systems to automatically complete some business processes and are critical to successful iFAMS implementation. Without them, finance and acquisition staff are unable to perform processes essential to their daily responsibilities, such as soliciting contracts or processing invoices. Interfaces are created and tested during the iFAMS software development process.

The VA OIG conducted this audit to assess whether the FMBTS's interface development process aligns with stated goals to enhance iFAMS implementation. The OIG assessed FMBTS's planning, communication, and monitoring of success metrics for the process. Furthermore, this audit focuses on the Consolidated Wave Stack, which was the first time FMBTS deployed both

[1] See appendix A for a full list of the 15 administrative staff offices and other background information.

[2] The OIG did not consider interfaces, user experiences, or testing by OIG employees for this engagement. For further information, see the scope and methodology in appendix B.

[3] FMBTS estimates the number of VHA users to be 115,000 and the total number of iFAMS users once fully implemented to be approximately 125,000, yielding a VHA user base of approximately 92 percent of the total.

[4] According to the Financial Management Business Transformation Roadmap, last revised September 23, 2024, full VA-wide implementation of iFAMS will be concluded by 2031.

[5] FMBTS, Life Cycle Cost Estimate Report, November 25, 2024. This was the most recent cost estimate available as of April 2025. Originally, the FMBT program to implement iFAMS was expected to cost roughly $900 million over 10 years. The life cycle cost as of November 2024 includes an estimated $4.3 billion for development, $878 million for implementation, and $3.4 billion for sustainment operations.

finance and acquisition functions of iFAMS at the same time.[6] For more on this report's scope and methodology, see appendix B.

What the Audit Found

After reviewing the Consolidated Wave Stack implementation, the OIG found that interface development could be improved by more fully incorporating "business-essential" requirements into the development process and testing how iFAMS will be employed by users.[7] Within the Consolidated Wave Stack, the audit team examined two key development steps and identified weaknesses within each step. The OIG also found that scenarios used for validation sessions did not reflect actual business processes in sufficient detail for users to identify gaps for some interfaces. In subsequent user acceptance testing, not all end-to-end processes were included for users. As a result, FMBTS did not have reasonable assurance the system functioned properly to meet users' needs for some interfaces. Specifically, the Electronic Contract Management System, SAM.gov, and the Invoice Payment Processing System interfaces were not included.[8] In addition, the team determined that issues with the testing environment also impeded users' ability to assess functionality. In short, the team concluded that the development process during the audit period did not provide opportunities for users to confirm their needs would be met. Consequently, VA acquisition staff experienced significant limitations using iFAMS that resulted in manual work-arounds.

Overall, the OIG determined the system implementation timeline limited the ability to fully test user requirements. If usability testing for key interfaces had been completed before going live, FMBTS may have discovered many of the critical interface challenges users experienced after deployment. Such lapses can lead to delayed user adoption, hinder change management, decrease productivity and efficiency, and increase the risk of not meeting articulated goals, among other unintended consequences. By better identifying and incorporating all business-essential processes within the development cycle, FMBTS can ensure iFAMS meets user needs at go-live moving forward.

[6] For more information on the nine essential business process areas of iFAMS, which include finance and acquisition functions, see table A.1 in appendix A.

[7] "Business-essential" requirements represent tasks users must perform routinely to carry out the duties and responsibilities of their position.

[8] SAM.gov is the official website for the System for Award Management, which is "used by government and program personnel as part of their market research efforts to identify potential providers of specific goods and services." SAM.gov allows vendors to register their business with the federal government.

What the OIG Recommended

The OIG made four recommendations to the deputy assistant secretary for FMBTS.[9] These recommendations include identifying and incorporating all business-essential processes within the development cycle. The OIG also recommended enhancing the test plan to incorporate user-testing requirements for functional and nonfunctional business-essential processes related to interfaces, developing a process to confirm that affected administrative offices are aware of needed changes to test environments and have executed the modifications before interface testing, and establishing a method to evaluate whether test deficiencies warrant changes to the deployment schedule to ensure they are properly addressed before going live with another wave and then implement those changes. To effect organizational change in a timely manner, the OIG recommends that FMBTS take these actions during the next implementation wave.

VA Management Comments and OIG Response

The acting deputy assistant secretary for FMBTS concurred with all findings and recommendations in the report. The OIG found the acting deputy assistant secretary for FMBTS provided action plans that are responsive to the intent of the recommendations. See appendix C for the memorandum from the acting deputy assistant secretary for FMBTS and the VA management comments in full. In response to the OIG audit, the acting deputy assistant secretary noted in his comments that proactive steps have already been taken to make operational improvements for incorporation into additional transformation waves. The OIG will continue to monitor VA's progress and will close the recommendations when FMBTS has provided sufficient evidence that the corrective actions have been adequately implemented.

LARRY M. REINKEMEYER
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[9] FMBTS is the body that administers the program to implement iFAMS and is led by the deputy assistant secretary. The recommendations addressed to the deputy assistant secretary are directed to anyone in an acting status or performing the delegable duties of the position.

Contents

Abbreviations

CoreFLS	Core Financial and Logistics System
eCMS	Electronic Contract Management System
FLITE	Financial and Logistics Integrated Technology Enterprise
FMBT	Financial Management Business Transformation program
FMBTS	Financial Management Business Transformation Service
GAO	Government Accountability Office
iFAMS	Integrated Financial and Acquisition Management System
IPPS	Invoice Payment and Processing System
NCA	National Cemetery Administration
OIG	Office of Inspector General
OM+	Office of Management Plus
VBA	Veterans Benefits Administration
VHA	Veterans Health Administration

Introduction

According to VA's Financial Management Business Transformation Service (FMBTS), the legacy financial system VA uses is over 30 years old, and VA has acknowledged it is no longer compliant with prevailing regulations.[10] In addition, the most recent independent audits of VA's financial statements for fiscal years 2022 and 2023 noted significant deficiencies and material weaknesses in internal controls in the legacy system. These weaknesses could potentially lead to a material misstatement in VA's financial statements.[11]

The Integrated Financial and Acquisition Management System (iFAMS) is VA's third effort to replace its legacy financial management system since 1998. The intent of iFAMS is to improve, modernize, and standardize VA's finance and acquisition systems, thereby unifying all finance and acquisition activities into one system and supporting the mission delivery of each VA administration: the Veterans Health Administration (VHA), Veterans Benefits Administration (VBA), and National Cemetery Administration (NCA). VA finance activities include budgeting, general accounting, payroll, and travel payments. VA acquisition activities include bidding, contracting, general procurement, and payments for purchased items and construction activities.

FMBTS is the administrative body leading and managing iFAMS implementation. FMBTS is ultimately responsible for system delivery (in coordination with its contractors) and ensuring user needs are met, including monitoring iFAMS development and deployment. FMBTS implements iFAMS products in waves. As of June 2023, five waves had "gone live" (been implemented) within VA: two for NCA, one for VBA, one for 15 administrative staff offices, and one for the Consolidated Wave Stack.[12] The Consolidated Wave Stack encompasses business functions of the independent Office of Inspector General (OIG); VA's Office of Acquisition, Logistics, and Construction; the Office of Construction and Facilities Management Major Construction; and VA's staff offices at the Office of Information and Technology. These five waves represent only 3.8 percent of total anticipated iFAMS users. Another seven waves have not yet been implemented, including VHA. VHA personnel will make up more than 92 percent of VA's total estimated iFAMS users, but the specific timeline for the implementation

[10] FMBTS has stated that VA is no longer in compliance with Office of Management and Budget (OMB) circulars A-123, Appendix A, "Internal Control over Financial Reporting" and A-127, "Financial Management Systems." In addition, it cannot meet new and emerging federal accounting regulations, such as the Digital Accountability and Transparency Act of 2014 (DATA Act), Pub. L. No. 113-101, 128 Stat. 1147; accommodate new Office of Management and Budget, Treasury, and Federal Accounting Standards Advisory Board requirements; and fully meet reporting requirements under the Federal Financial Management Improvement Act of 1996, Pub. L. No. 104-208, 110 Stat. 3009. Financial Management Business Transformation, *FMBT Frequently Asked Questions*, September 2023 (not publicly accessible).

[11] VA OIG, *Audit of VA's Financial Statements for Fiscal Years 2023 and 2022*, Report No. 23-00940-18, December 12, 2023.

[12] See appendix A for a full list of the 15 administrative staff offices and other background information.

of the system at VHA is not yet determined.[13] Still, FMBTS anticipates all wave deployments of the system will be completed by 2031. The Financial Management Business Transformation (FMBT) program's life cycle cost estimate as of fiscal year 2024 is approximately $8.6 billion. This estimate includes costs to deploy the system across VA and a sustainment period for the system through fiscal year 2050.[14]

Interfaces facilitate the flow of data between various systems to automatically complete some business processes and are critical to successful iFAMS implementation. Without them, finance and acquisition staff are unable to perform processes essential to their daily responsibilities, such as soliciting contracts or processing invoices. Creating and testing interfaces is part of the iFAMS software development process.

The VA OIG conducted this audit to determine whether the FMBTS interface development process aligns with stated goals to enhance iFAMS implementation. The OIG assessed FMBTS's planning, communication, and monitoring of success metrics for the process. In addition, this audit focuses on the Consolidated Wave Stack, which was the first time FMBTS deployed both finance and acquisition functions of iFAMS at the same time.[15] For more on this report's scope and methodology, see appendix B.

FMBTS Program Goals

As part of FMBTS oversight of iFAMS development, the service established five overall program goals for the Consolidated Wave Stack implementation. Table 1 lists these goals and how interfaces can achieve each of these goals (table text is quoted from the Consolidated Wave Stack Charter).

[13] FMBTS estimates the number of VHA users to be 115,000 and the total number of iFAMS users once fully implemented to be approximately 125,000, yielding a VHA user base of approximately 92 percent of the total. According to the Financial Management Business Transformation Roadmap, last revised September 23, 2024, iFAMS wave deployments will be completed by 2031.

[14] FMBTS, Life Cycle Cost Estimate Report, November 25, 2024. This was the most recent cost estimate available as of April 2025. Originally, the FMBT program to implement iFAMS was expected to cost roughly $900 million over 10 years. The life cycle cost as of November 2024 includes an estimated $4.3 billion for development, $878 million for implementation, and $3.4 billion for sustainment operations.

[15] For more information on the nine essential business process areas of iFAMS, which include finance and acquisition functions, see table A.1 in appendix A.

Table 1. FMBTS Program Goals and Achievement

FMBTS goals	How interfaces can help achieve these goals
Implement a modern system	Implement a modern, secure financial management and acquisition system hosted in the VA Azure cloud.
Standardize processes	Standardize and automate business processes and transactions to promote operational efficiency and scalability.
Strengthen compliance	Enhance VA's ability to meet federal regulations, strengthen financial process and internal controls, and mitigate long-standing audit deficiencies.
Provide timely, consistent, and robust information	Enhance planning, analysis, and decision-making capabilities by improving data integrity, reporting capabilities, and business intelligence.
Focus on mission execution	Redirect resources toward mission-critical work from financial, acquisition, and administrative work to better serve those who serve veterans.

Source: FMBT Consolidated Wave Stack Project Charter, Version 1.5, March 3, 2022.

Note: These five goals align with the Department of Veterans Affairs Fiscal Years 2022–28 Strategic Plan—specifically, "Objective 4.3: Easy Access and Secure Systems."

The audit team assessed all five goals for this audit, but this report focuses on the two FMBTS goals that specifically relate to the development and implementation of interfaces: implement a modern system and focus on mission execution. The remaining three goals apply to standardization, internal controls, and reporting.

iFAMS Business-Essential Processes

In 2017, FMBTS—in coordination with finance and acquisition subject matter experts—completed a reengineering effort to identify the essential business processes conducted by VA. This effort identified nine business process areas that help VA meet its goals and objectives in compliance with financial management laws and directives.[16] These process areas have "business-essential" requirements that represent tasks users must perform routinely to carry out the duties and responsibilities of their position. For example, business-essential requirements for acquisition staff include soliciting contracts, sending and receiving solicitation evaluations, and sending procurement documentation to external users for legal review. To determine whether VA is meeting the two FMBTS goals of implementing a modern system and focusing on mission execution, the audit team focused on activities related to two business-essential process areas:

[16] FMBTS, *Business Process Reengineering Approach Statement*, ver. 5.3, August 21, 2017. See table A.1 in appendix A for details on the nine essential business process areas.

1. Soliciting contracts from vendors (a request to procure), including the initial steps in the contracting process such as sending solicitations; receiving bids; and awarding, developing, approving, and submitting contracts to the system.
2. Paying vendors for completed contract work (procure to pay), such as receiving and tracking invoices from the vendor for payment.

iFAMS Interfaces

As used in this report, an interface is a connection between devices, applications, or networks that allows systems to communicate. In iFAMS, interfaces allow for the structured exchange of data between computer applications and are required for accurately exchanging data between and within the new iFAMS and its legacy VA systems, some of which may remain in use even after the new system goes live nationwide.[17]

For iFAMS interfaces to function as intended, information needs to flow from one application to another to automatically complete all required processes. For example, SAM.gov interfaces—or communicates—with iFAMS.[18] Vendors submit their information on the SAM.gov website. From there, the information flows into another system, which submits the vendor's information into iFAMS. Once in iFAMS, vendor details can be approved and processed by a VA administrator.[19]

Without properly functioning interfaces, staff may need to create manual work-arounds to complete tasks that are not automated as intended. For instance, some interfaces will automatically create tables or reports. However, if this functionality is missing, an employee must create them manually. Manual work-arounds can increase workloads and the risk of errors and sometimes require additional staff.

iFAMS Interface Development Process

FMBTS uses an agile process to develop iFAMS, including its interfaces. VA recognizes the agile approach is critical to system development. Furthermore, the FMBTS Scaled Agile Framework adopts both the Government Accountability Office's (GAO) *Agile Assessment Guide* and VA's Agile Center of Excellence methodology as detailed in VA's DevOps Framework. The

[17] VA's accounting and acquisition activities rely on many systems, referred to as legacy systems, that will either be kept or phased out after iFAMS implementation.

[18] SAM.gov is the official website for the System for Award Management, which is "used by government and program personnel as part of their market research efforts to identify potential providers of specific goods and services." SAM.gov allows vendors to register their business with the federal government.

[19] FMBTS, VA Integrated Financial Management Business Transformation SAM Interface Control Document, ver. 1.0, October 29, 2018 (not publicly accessible).

agile process is well-known for its iterative approach in which software functionality, quality, and user satisfaction are continuously evaluated throughout development.[20]

Interface development for iFAMS is divided into *new* and *sustainment* interfaces. New interfaces, or new functionalities for existing interfaces, are developed when product owners require iFAMS to start interacting with a system not previously engaged.[21] Sustainment interfaces were previously implemented interfaces but require additional development. Although contractors are used for iFAMS interface development, FMBTS is ultimately responsible. For the Consolidated Wave Stack deployment, two new interfaces were developed and 12 sustainment interfaces were updated or modified from July 2021 to June 2023.

The development of iFAMS involves a series of configurations. System-level finance and acquisition configurations represent the foundation of iFAMS. Enterprise configurations incorporate standard business processes and reference data for use throughout VA, while administration-specific configurations use the foundational and enterprise configurations to identify unique workflows and business processes for each administration. This third and final configuration is specific to each administration and involves FMBTS working closely with contract software development companies to deliver the last layer of customization to VA.

To begin these configurations and the interface development process, system requirements must be gathered through validation sessions and transformed into user stories. User stories are the foundation of any system development, serving as the primary method for users to express their needs. They are brief descriptions of a small piece of business-essential functionality, such as the steps required to complete financial or acquisition tasks, written from a user's perspective. They allow FMBTS to scope work in the context of those it will affect most. User stories can be summarized as "who the work is for, what they need, and why they need it."[22]

Interface Validation Sessions and Requirements Gathering

In the initial stages of interface development, FMBTS staff first identify which offices and personnel (subject matter experts) will be responsible for gathering requirements and, as will be discussed later, testing. Subject matter experts provide user requirements and confirm iFAMS functionality. This is done during validation sessions—which allow assigned individuals to confirm enterprise and administration requirements are met and that the related functions work

[20] GAO, *Agile Assessment Guide, Best Practices for Agile Adoption and Implementation*, GAO-20-590G, September 2020. For more information on the agile development process, see appendix A.

[21] A product owner is a member of the FMBTS development team responsible for defining stories (system requirements) and prioritizing the backlog (a list of requirements that still need to be developed). Product owners also represent users and are responsible for conveying the users' needs in the development process. An information system owner, in contrast, has organizational responsibility for the procurement, development, integration, modification, operation, maintenance, and disposal of information systems and coordinates with FMBTS to ensure the system successfully integrates with iFAMS.

[22] FMBTS, FMBT User Stories 101, accessed December 11, 2023 (not publicly accessible).

and to compile requirements not yet achieved (system or process gaps). That information is used to guide additional work and for subsequent testing. Typically, a validation session is conducted remotely, using videoconferencing applications. During a session, users are presented with briefing materials explaining system functionality and demonstrations of the system. Users also have the opportunity to provide feedback on what has been presented. These sessions are critical for user acceptance. Requirements confirmed through validation sessions are then added to interface development tasks, which will be tested before the "go-live" date.[23]

More specifically, product owners are responsible for defining and prioritizing user stories.[24] User stories help determine which interfaces are needed for a particular wave.[25] For example, a subject matter expert might convey to the interface development team during a validation session that a travel form needs to be visible only to the staff approving the travel request. The development team would take this information, or business-essential requirement, and turn it into a user story. Developers review user stories and prioritize those that must be completed before related tasks can be properly executed. For instance, to create a filter for the travel documents in the example above, developers first need to establish how the filter will function, then the filter can be created and applied to the system. Any additional requirements identified in validation sessions are gathered, processed into user stories, and then prioritized in a backlog as a task list of items still to be developed.

GAO's *Agile Assessment Guide* supports the idea of having a process to gather and address suggestions from users so they can communicate concerns or ideas about additional functionality or modifications to developers.[26] GAO clarifies that validation of a user story is performed either as part of a demonstration or as part of a review at the end of each iteration, allowing users to observe the functionality and weigh in on whether it meets the intended purpose. According to GAO: Without quality controls, the risk of missing crucial components in user stories is high—increasing the likelihood of software being developed that does not meet users' needs. As the following section details, interface testing is needed to determine whether user needs are in fact met.

[23] The day an administrative office turns on iFAMS for personnel to use is referred to as the "go-live" date. This go-live definition was refined by FMBTS to include the business processes enabled via iFAMS for the Consolidated Wave Stack.

[24] In the development process, users are represented by product owners, subject matter experts, and additional personnel brought in for testing purposes.

[25] FMBT Scaled Agile Framework, ver. 4.1, March 2023. This includes activities required for planning a wave, such as gathering requirements, defining roles and responsibilities, determining the schedule, and other related activities.

[26] GAO, *Agile Assessment Guide, Best Practices for Agile Adoption and Implementation*.

Interface Testing

Testing occurs throughout interface planning and development and serves as confirmation that the identified requirements are correctly addressed. VA's Agile Center of Excellence states functional and nonfunctional testing should occur as early in the development process as possible. Functional testing focuses on assessing a system's ability to meet business requirements.[27] Beyond testing business requirements, GAO best practices suggest holistic testing—also known as usability tests or nonfunctional testing—which addresses the user experience.[28]

The results of all tests are then communicated to stakeholders for further discussion and should provide sufficient detail for stakeholders to provide adequate feedback. Tests should also confirm whether the communication between two different software systems, or interfaces, is completely and accurately performed and ensures system users do not encounter problems. Ultimately, testing that does not fully validate user requirements and the user experience can lead to unnecessary investments of time and money to further develop the software after release (that is, following the go-live date).[29] Weaknesses in the testing process can also lead to delayed user adoption, hinder change management, decrease productivity and efficiency, and increase the risk of not meeting articulated goals, among other concerns. Interface testing occurs at various points in the process and comes in the following forms:

- **User acceptance testing,** a type of functional testing, assesses discrete interface scenarios FMBTS has distinguished based on risk assessments. This testing allows users to assess functionality through hands-on interaction with the system and gives users opportunities to detect defects in interfaces. It is performed before go-live and tests end-to-end functionality (in other words, beginning-to-end business process testing) across the related systems and interfaces.[30]
- **Demonstrations,** a type of functional testing, can be used in various settings during agile development—including validation sessions—and may be used in place of scenarios, when users interact directly with the system during testing. FMBTS will also sometimes use live walk-throughs to show system capabilities. Users then acknowledge attending the demonstration and provide feedback.

[27] VA Agile Center of Excellence, *Release Best Practices, Functional and Non-Functional Tests Executed and Passed Successfully in All Test Environments*, accessed October 3, 2024.

[28] GAO, *Agile Assessment Guide, Best Practices for Agile Adoption and Implementation*.

[29] GAO, *Agile Assessment Guide, Best Practices for Agile Adoption and Implementation*.

[30] FMBT, Consolidated Wave Stack Test Plan, July 22, 2022. In this type of testing, information is followed through all systems involved, not just iFAMS. Beginning-to-end testing increases the likelihood of discovering problems that can be addressed before the go-live date and ensures data are flowing appropriately among all systems involved in a particular business process.

- **Usability testing,** a form of nonfunctional testing, confirms the quality of the user's experience when interacting with the interface. Usability testing is characterized by effectiveness, efficiency, and the overall satisfaction of the interface user. Unlike other forms of testing, usability testing is performed with a wide audience of users, including those who would not normally be involved in the interface development process. Usability testing can occur throughout the interface development process and serves to verify whether user stories meet the original intent of requirements.

iFAMS Interface Development Responsibility

As stated earlier, FMBTS is responsible for the planning, execution, and implementation of iFAMS interfaces. Service personnel work with the interface vendors to ensure successful execution of the interface development process. Contractors are responsible for developing new interfaces, as well as addressing challenges within existing interfaces developed for previous waves. Contractors also must guarantee interfaces comply with applicable DATA Act regulations and other governing laws, guidance associated with the USASpending.gov initiative, and additional transparency initiatives.[31] Because FMBTS oversees the entire agile interface development process, the successes, failings, or shortcomings rest with the service.

[31] Under VA's Functional Organization Manual Volume 7, FMBTS must comply with OMB Circular A-123, OMB M-16-17, Public Law (Pub. L.) 97-255, Pub. L. 109-282, and Pub. L. 113-101. The USASpending.gov initiative is intended to inform the American public about what the federal government spends each year and how it spends the money.

Results and Recommendations

Finding: FMBTS Could Improve Interface Development by Better Incorporating Business-Essential Requirements into Its Process

The OIG identified problems with the interface development process that could have been addressed or mitigated earlier had the system requirements better integrated the needs of users. Furthermore, during Consolidated Wave Stack development, validation sessions did not include every step required to complete specific tasks and, therefore, did not provide an accurate assessment of whether iFAMS could meet business needs.[32] As a result, users could not fully understand the functions and limitations of iFAMS until after going live.

Additionally, not all interfaces essential to business functions were included in Consolidated Wave Stack user acceptance testing. Three interfaces used by VA acquisition staff were unavailable for testing for three systems due to errors in the testing environment: the Electronic Contract Management System (eCMS), SAM.gov, and the Invoice Payment Processing System (IPPS). These three systems allow acquisition staff to award, manage, and provide payment to vendors and are "mission essential"—in other words, staff cannot perform acquisition functions without them. Because the interfaces for these systems were not tested, VA acquisition staff experienced significant interface limitations when beginning implementation of iFAMS, resulting in manual work-arounds.

GAO guidance states that system testing should include both the technical aspects of a system and its usability. GAO best practices also indicate that agile development should prioritize frequent coordination and communication with users, iteratively delivering solutions to ensure the product meets their specifications. These efforts should be balanced with the goal of delivering a product on time.

The agile process that FMBTS followed for the Consolidated Wave Stack intentionally repeats development steps to capture user needs and deliver the best possible product. If a concern is not caught or addressed at one step, it can be later. However, the iterative process works only when opportunities for improvement are detected and acted upon at each step. Within the Consolidated Wave Stack, the audit team examined several key development steps and identified weaknesses within each. These weaknesses occurred in part because users lacked opportunities to confirm that sustainment interfaces met their requirements during validation sessions.

[32] According to FMBTS senior leaders, the Consolidated Wave Stack was the most recent deployment during the scope of this audit and the first time FMBTS deployed both finance and acquisition functions of iFAMS simultaneously.

The finding is based on the following determinations:

- Scenarios used for validation sessions did not reflect actual business processes in sufficient detail for users to identify gaps.
- FMBTS missed opportunities to confirm the system functioned properly during user acceptance testing.
- The system implementation timeline limited the ability to fully test user requirements.

What the OIG Did

The audit team judgmentally selected three existing iFAMS interfaces for further analysis based on interviews with users and based on the interfaces' importance to accomplishing business-critical processes: eCMS, SAM.gov, and IPPS. The interfaces for these three systems had been deployed during previous waves and users need them to complete finance and acquisition tasks. Next, the team compared the iFAMS development process documentation to recognized best practices. The team also reviewed the results of VA's monitoring tools and testing, as well as documented user feedback during validation sessions, and assessed planned work against what was completed.

The team interviewed more than 40 individuals involved in the Consolidated Wave Stack, including VA employees from FMBTS (such as project managers and testing leads) and contractors. The team also reviewed FMBTS documentation and compared it to testimonial evidence and applicable criteria. Although the OIG was included in the Consolidated Wave Stack, the team did not consider evidence provided by OIG finance and acquisition staff in order to preserve its independence.

Finally, the team reviewed FMBTS and GAO criteria, including VA's Financial Management Business Transformation Scaled Agile framework, GAO's *Agile Assessment Guide,* VA's Agile Center of Excellence, VA's DevOps Framework, and the applicable federal contracts. See appendix B for additional information regarding the audit's scope and methodology.

Scenarios Used for Validation Sessions Did Not Reflect Actual Business Processes in Sufficient Detail for Users to Identify Gaps

The audit team found validation sessions did not include the level of detail necessary for users to confirm all business-essential requirements were present and would meet their needs before the go-live date. During the planning phase, Office of Construction and Facilities Management acquisition users (identified as subject matter experts) were introduced to iFAMS through validation sessions. These sessions (primarily virtual, contractor-driven demonstrations) gave users an opportunity to see the steps included in tasks that could be performed within iFAMS. During these sessions, users expressed concern to FMBTS staff that some presented scenarios

did not represent real-world business processes. In each case, FMBTS reminded users end-to-end testing would occur later during user acceptance testing.[33] However, as discussed later in this report (see "FMBTS Missed Opportunities to Confirm the System Functioned Properly During User Acceptance Testing"), end-to-end testing did not occur as anticipated. Furthermore, the errors users experienced once the system was implemented suggest concerns discussed during validation sessions were not fully addressed during user acceptance testing.

Because validation session scenarios lacked critical detail, Consolidated Wave Stack users were unable to use the sessions to identify capability gaps or see how iFAMS would interact with other interfaces. For example, during an Office of Construction and Facilities Management acquisition validation session in March 2022, a user asked whether an acquisition solicitation could be uploaded to SAM.gov during a demonstration.[34] Developers stated that the demonstrations were not integrated with interfaces, so they could not present that step. When asked about more hands-on training, where users could perform tasks like accepting purchase requests, developers assured users this functionality was planned and would be available later. Because it was not demonstrated, users could not confirm this functionality met their needs.

The OIG's first recommendation is to identify and incorporate all business-essential processes and related interfaces, as defined by product owners, during validation sessions, user acceptance testing, or equivalent procedures to accurately present system capability.

In feedback from three separate validation sessions, which were held in January, February, and March 2023, users stated they would like these sessions to be more thorough and better reflect their real-life business scenarios. FMBTS responded to this feedback by concluding that scenarios should be changed to more closely mirror actual processes users would encounter after going live. For example, a user stated that steps vital to creating a purchase order were skipped, such as managing security and access, adding attachments, and final review. In response to these concerns, the developer sent a reminder to participants in the validation session that "end-to-end testing" for this process would happen during user acceptance testing. However, this approach is inconsistent with previous decisions, as FMBTS determined in December 2022 that user validation sessions would include the end-to-end scenarios and the subsequent user acceptance testing would focus only on new functionality. This decision was not communicated to users during the February 2023 validation sessions and conflicted with what FMBTS had said about addressing those more detailed verification needs in user testing. When asked about this conflict, FMBTS leaders emphasized interface functions do not require validation more than once, but

[33] According to the FMBT Program's Consolidated Wave Stack Memorandum of Understanding End User Validation Process, dated November 9, 2022, validation sessions "provide the opportunity for CWS wave organizations to verify both the Enterprise and new functionalities, from an end-to-end perspective, support the organizations' in-scope business needs."

[34] Solicitation means any request to submit offers or quotations to the Government. FAR 2.101 Definitions (January 17, 2025).

that response does not address the contradictions of the FMBTS statements on end-to-end testing.

The issue with the Consolidated Wave Stack is not the first time the OIG has reported on concerns related to meeting user requirements. For example, during the NCA wave implemented in November 2020, NCA leaders emphasized and prioritized their requirements several times to FMBTS. An OIG report found that not formally acknowledging whether requests for features have been added to development led to a lack of common understanding. Without this acknowledgment, NCA risked critical functionality not being ready for go-live.[35]

The Consolidated Wave Stack validation sessions illustrate—as the NCA wave also showed—that without a complete and accurate demonstration of iFAMS with full interface integration, FMBTS risks not achieving its goals. Limited validation sessions make capturing requirements and testing the system against those requirements much more difficult and prone to error. FMBTS leaders acknowledged to the audit team that validation sessions in iFAMS implementation thus far have not met the needs of users. FMBTS leaders also said their staff have created a new process to replace validation sessions, subsequent to the Consolidated Wave Stack implementation, called User Integrated System Testing. After the OIG's fieldwork and interviews were completed, according to FMBTS leaders, User Integrated System Testing was initiated on July 15, 2024, for the VBA Loan Guaranty Service with the intent to enhance validation sessions to better meet users' needs.

FMBTS Missed Opportunities to Confirm the System Functioned Properly During User Acceptance Testing

FMBTS staff verified all three interfaces essential to contract solicitation, management, and vendor payment (SAM.gov, eCMS, and IPPS) were not included in user acceptance testing. Also, issues with the FMBTS testing environment contributed to insufficient user acceptance testing (including changes to test data and servers and inadequate resources that made it difficult for users to properly assess full interface capabilities). As a result, this testing could not confirm the system functioned properly to meet users' needs for these three interfaces.

The FMBTS Consolidated Wave Stack Implementation Plan states that it tests both the end-to-end functionality and usability of iFAMS during user acceptance testing. However, this plan further states that user acceptance testing will include only *new* interfaces or functionalities that have not previously been tested or demonstrated to users. The audit team also determined FMBTS did not perform beginning-to-end process testing during the Consolidated Wave Stack's user acceptance testing, contrary to the VA and GAO guidance noted earlier.

[35] VA OIG, *Improvements Needed in Integrated Financial and Acquisition Management System Deployment to Help Ensure Program Objectives Can Be Met*, Report No. 21-01997-69, March 28, 2023.

Some Business-Essential Interfaces and Functions Were Not Included in Testing

The audit team confirmed the IPPS, eCMS, and SAM.gov interfaces and their associated business-essential processes were not tested during user acceptance testing for the Consolidated Wave Stack implementation because FMBTS prioritized testing to include only new interfaces and functionalities. For example, after a comparative review of the testing plan and summation reports, the OIG determined Office of Construction and Facilities Management acquisition staff—who are users of the IPPS, eCMS, and SAM.gov interfaces—did not test partial payments as a beginning-to-end business process during user acceptance testing. Partial payments are funds held back by the Office of Construction and Facilities Management to ensure the work of a contractor is completed before the office pays the contractor in full. These payments are essential to this office.

However, FMBTS testing stopped at the point a payment is recorded and did not go the necessary step further (to the end of the process) to see whether the payment was disbursed. Thus, at go-live, the system processed construction contract partial payments as full payments to the vendor, which is not how VA has managed partial payments historically. Acquisition staff were unable to use the iFAMS IPPS interface to make partial payments on construction projects. Instead, acquisition staff submitted a service desk ticket each time an invoice was rejected to force these partial payments from iFAMS through IPPS to the vendors. This process contributed to invoices not being consistently paid on time. Construction and Facilities Management staff reported on two separate occasions that two vendors servicing two separate contracts received $1.2 million more than was due for work completed at the time the payment was made because of this issue.[36] Construction and Facilities Management staff were able to recover the overpayments from the vendors.

These partial payments, which are necessary for VA to meet its contractual obligations (that is, mission essential), were not functional after the Consolidated Wave Stack go-live date because the IPPS interface was not tested during user acceptance testing. The IPPS interface was updated during development and should have been tested under the Consolidated Wave Stack Master Test Plan for Interfaces. Partial payments were identified in a user story in August 2022 during Consolidated Wave Stack planning. The Consolidated Wave Stack went live in June 2023. According to emails, a meeting was held in July 2023 over concerns about partial payments functionality. In September 2023, a work-around was approved to adjust IPPS so iFAMS would have the correct partial payment amount. The adjustment to IPPS was implemented in October 2023. In sum, because requirements were not validated and tested before going live,

[36] The Consolidated Wave Stack went live on June 12, 2023. Construction and Facilities Management acquisition staff submitted a ticket for IPPS to the iFAMS service desk on August 14, 2023. The overpayments amounted to $472,225.27 on July 30, 2023, and $679,467.82 on August 14, 2023, for two contracts.

staff were unaware of this limitation until after the system deployed and corrective actions were not implemented until four months after deployment.

Further, staff were forced to create manual work-arounds during the intervening four months. As noted previously, standard operating procedures provided by FMBTS direct users to submit a help desk ticket to the Enterprise Acquisition Support Service Desk when problems are encountered. In some instances, the process of submitting a ticket was the work-around. These temporary fixes do not address the underlying cause of the error. FMBTS relies on this ticketing system to triage these gaps after go-live, with no timeline on when a permanent solution will be delivered. Additionally, manual work-arounds typically take longer than automatic processes to complete and are more prone to error. As such, once iFAMS is deployed VA-wide, manual work-arounds may no longer be sustainable to meet the needs of an organization as large as VHA.

The program office classified IPPS, eCMS, and SAM.gov as low risk because they had been previously deployed and did not meet the program's level of risk or priority assignment to require additional testing for the Consolidated Wave Stack. However, all three interfaces involve critical functions—contract solicitation, management, and vendor payment. Additionally, the assumption that IPPS and eCMS generally would work for the Office of Construction and Facilities Management was not appropriate because these interfaces did not work when previously deployed.[37] While the audit team acknowledges it is acceptable to not retest interfaces or functionalities that have previously passed testing, according to the VA Agile Center for Excellence, nonfunctional testing should assess elements critical to the user experience. This means that interfaces or functionalities integrated into a *new* process that are critical to the user experience should be included in testing, regardless of previous testing results. Finally, the team determined some interfaces should have required specific changes during development. For example, Office of Construction and Facilities Management staff discovered a file-size limitation of 10 MB in iFAMS after going live, which resulted in errors attaching construction files. Nonfunctional testing focused on the user experience would have revealed earlier that the file-size limitation in iFAMS would need to be addressed to meet user requirements. This error required FMBTS to make changes to the SAM.gov interface after going live.[38] For these reasons,

[37] VA OIG, *Improvements Needed in Integrated Financial and Acquisition Management System Deployment to Help Ensure Program Objectives Can Be Met*. The same errors did not necessarily persist but because previous implementation was challenging, further testing should have been conducted to ensure that performance issues were not again experienced.

[38] The go-live date for the Consolidated Wave Stack was June 12, 2023. Construction and Facilities Management acquisition staff first attempted to use iFAMS for new contracts requiring large file sizes and received errors, submitting a ticket to the iFAMS service desk on February 27, 2024, for the issue that acquisition staff were unable to upload attachments more than 10 MB. FMBTS closed this ticket on March 26, 2024, with a resolution that the maximum file size limit was set to 10 MB originally in iFAMS and has been increased to 25 MB.

the OIG determined these interfaces should have been included in testing and FMBTS did not achieve the goals of implementing a modern system and focusing on mission execution.

Recommendation 2 is to enhance the test plan to incorporate a more robust, risk-based testing process that incorporates user-testing requirements for functional and nonfunctional business-essential processes related to interfaces.

The FMBTS Testing Environment Contributed to Insufficient Interface Testing

Testing of eCMS and IPPS systems and the associated interfaces was requested by Office of Construction and Facilities Management acquisition staff. However, eCMS and IPPS were unavailable in the testing environment. According to the Consolidated Wave Stack Master Test Plan, user acceptance testing is meant to validate updates not tested in the validation sessions. Despite this plan, the information system owner for IPPS indicated sufficient resources do not exist for the IPPS development team to create an environment solely for the purpose of testing.

Changes to the testing environment can also affect which systems or interfaces may be included during user acceptance testing. For example, according to the information system owner for eCMS, changes in the test data or servers used for the testing environment require information system owners to make adjustments to ensure their system can successfully connect to the testing environment. If these system owners are not provided sufficient time to respond to changes in data or servers, they cannot participate or support testing events such as user acceptance testing. FMBTS was unable to confirm system owners were provided sufficient time to adjust to changes in the testing environment before user acceptance testing for the Consolidated Wave Stack. Further, FMBTS leaders acknowledged action can be taken to improve communication with system owners to ensure sustainment interfaces are incorporated in user acceptance testing.

These problems in the testing environment resulted in errors in essential business processes after June 2023. For example, at least four service desk tickets were submitted by users because they were unsure why integrated purchase requests were either stuck in "Retry" status or could not be finalized in iFAMS.[39] Because eCMS was not included in user acceptance testing, the integrated purchase requests process was not tested. These errors resulted in significant delays in the acquisition process. FMBTS had to run daily reports to identify and manually resolve all "Retry" integrated purchase requests, including those not connected to a specific service desk ticket.

Additionally, IPPS was not tested during Consolidated Wave Stack development and requirements were moved to the backlog to be addressed after going live.[40] Specifically,

[39] An integrated purchase request is used to initiate requests to procure goods or services that require contract actions.

[40] Any additional requirements identified in the validation session would be gathered, processed into user stories, and then prioritized in a backlog (that is, a task list for later development).

Construction and Facilities Management acquisition staff discovered in April 2023, before the go-live date, that they were unable to process construction invoice amounts through the system because iFAMS does not transmit payment information accurately to and from IPPS. Users noticed that funds associated with a contract would not post accurately, showing $0 available in IPPS despite iFAMS showing sufficient funds. This error resulted in invoices being rejected. While the invoices were eventually paid, it took VA acquisition staff additional time and steps to ensure payments were processed. Historically, vendors had been paid within 15 days after invoice approval. After the Consolidated Wave Stack go-live date, several vendor payments were scheduled 21 to 28 days after invoice approval. Moving this essential requirement to the backlog again resulted in time-consuming, manual work-arounds.

This problem was finally resolved in June 2024—a year after going live—as part of the baseline enterprise upgrade made after users were allowed to evaluate the functionality of the fix.[41] As a result, iFAMS users waited over a year for a basic acquisition activity to work properly. If FMBTS had tested interfaces sufficiently before going live, rejected invoices could have occurred less frequently or not at all.

It is important to note Office of Construction and Facilities Management staff reported the organization executes approximately 1,000 contract-related actions per year. In contrast, VHA executed about 57,000 procurement actions on one program in the month of June 2024 alone. Once iFAMS is deployed VA-wide, there is greater potential for manual work-arounds to impact users as a result of limited system functionality. Furthermore, manual work-arounds that may have been sufficient in the past are unlikely to easily scale up to meet the needs of an organization as large as VHA. In response to these and other issues, FMBTS has incorporated specific business scenarios throughout testing.

Recommendation 3 is to develop a process to confirm with affected administrative offices whether they are aware of needed changes to test environments and that they have sufficiently executed them before interface test events.

Similar Testing Environment Challenges Have Been Identified in Previous Waves

The audit team found challenges with the testing environment were not unique to the Consolidated Wave Stack. FMBTS first identified issues with its user acceptance testing in 2020 during a wave with VBA. Some interfaces, which included eCMS and IPPS, could not connect to the testing environment. Instead of resolving the error with the testing environment, the testing

[41] Construction and Facilities Management acquisition staff submitted a complaint of a defect to the iFAMS service desk regarding an error that was identified during testing on April 24, 2023. It indicated that funds associated with a contract would not post accurately and showed $0 available in IPPS despite iFAMS showing sufficient funds. FMBTS documented it in the defect log and categorized "this error as a Momentum Baseline issue and stated that to resolve the defect, modifications must be made to the baseline system code."

team adapted the test scripts and passed some test cases without working interfaces. In 2021, FMBTS again recognized similar challenges during one of the NCA waves.

During interviews with the audit team, the program's deputy assistant secretary recognized deficiencies in testing during the Consolidated Wave Stack and stated the program office was working toward increasing transparency in the process. Specifically, she cited improving user engagement during planning and development. Furthermore, FMBTS plans to add beginning-to-end business process testing during future wave implementations so that FMBTS can increase customer engagement in the requirements-gathering process, resulting in a product that better meets the business needs of users.

The User Acceptance Testing Metric for System Success Was Unreliable Because Key Interfaces with Deficiencies Were Untested

User acceptance testing represents the last major opportunity to provide feedback for system users on iFAMS before going live. As described by FMBTS, a user acceptance testing pass rate is based on test scripts, which are steps in the full end-to-end process. Applicable test scripts are bundled into one test package to be validated during a full end-to-end test. Users testing the system must complete all scripts that are assigned to them and record their test results (pass/fail) after each test script. A pass indicates that the process worked as intended. If a tester classified a script as a fail, additional information is required to explain the failure to assist with resolution.

FMBTS develops the test scripts and test package. According to the interface master test plan, user acceptance testing is designed to test only those scenarios that had bug fixes, requirement changes, or other updates that did not get tested in the validation sessions. User acceptance testing is not intended to be a retesting of all functionalities. If FMBTS tests or demonstrates a functionality during validation sessions, then it is not tested at user acceptance testing.

FMBTS considers user acceptance testing a success if it achieves a minimum of a 90 percent pass rate for each VA testing department. The combined user acceptance testing pass rate for the Consolidated Wave Stack was 95 percent. This score suggests that developers exceeded the FMBTS success metric benchmark. However, this pass rate applies only to *tested* steps. Because not all interfaces or steps in business-essential processes were tested, this metric does not accurately reflect functionality tested by users before going live.

For example, the integrated purchase requests process for the Office of Information and Technology included a series of tests to confirm system functionality. This test package consisted of five steps but did not include some enterprise interfaces and therefore did not provide a continuous, end-to-end test. Rather, these steps assessed only whether a user could accomplish discrete tasks within the process and not the real-world process reflecting separation of duties. Specific to this example, scripts did not include the additional award approval in

eCMS. An end-to-end test would include not only the creation of a purchase request but also the routing of this request to the appropriate approval authority. It would also ensure the tasks could be completed and the approving officials would receive and process the requests under their authority.

The System Implementation Timeline Limited the Ability to Fully Test User Requirements

GAO and VA guidance states that the goal of any software development process should focus on providing value to the users—if the program requires more time to finish, then the schedule should be extended. The audit team determined FMBTS had a greater focus on the technical functionality and quick deployment of the system rather than meeting users' requirements.

FMBTS confirmed during interviews with the team that it did not wait until environments were fully functional to conduct user acceptance testing because that would have delayed the implementation timeline. For example, rather than adjusting the go-live date to allow for testing of all essential interfaces, FMBTS provided a walk-through of IPPS as an alternative to the Office of Construction and Facilities Management acquisition staff's specific request to test the interface. The walk-through was a live demonstration of how data flow through IPPS, eCMS, and iFAMS from an integrated purchase request to the creation of an invoice. The walk-through did not include tasks related to the SAM.gov interface. As a result, users were not required to validate this functionality. However, users were assured that interfaces would work after the go-live date.

FMBTS staff indicated there is a limited amount of time for testing before go-live. The audit team acknowledges there may not be time for all testing, and there must be a balance between meeting the implementation timeline and the time needed for testing. Nevertheless, usability testing would have allowed FMBTS to verify that business-essential requirements—that is, necessary acquisition functions—were present and functioned as intended when going live. If requirements that are critical to an organization's routine operations are not included in system demonstrations or provided for usability testing, FMBTS cannot ensure the new system will provide the necessary features to support efficiency or organizational policies and processes. In short, FMBTS cannot make certain that the user is the focus of development.[42] In these instances, reassessing the balance of prioritizing the timeline over user testing may be appropriate.

Recommendation 4 is to develop a method to evaluate whether test deficiencies necessitate changes to the deployment schedule to ensure they are properly addressed before wave go-live and implement these changes.

[42] "The IT Product/Service Manager is responsible for building and maintaining products/services that are compliant with both industry and VA standards and deliver maximum value to our customers," as cited by VA's *Veteran-Focused Integration Process Guide*, ver. 4.0, March 2021.

Conclusion

Interface development is critical to ensuring that iFAMS fully meets the needs of users. During the Consolidated Wave Stack implementation, validation sessions lacked essential details and FMBTS missed opportunities to better confirm the system functioned properly during user acceptance testing. Such lapses can lead to delayed user adoption, hinder change management, decrease productivity and efficiency, and increase the risk of not meeting articulated goals, among other concerns. For future waves, FMBTS should comprehensively test essential functions for both real-world application and technical assessment. Effective testing gives users more confidence in the system's ability to meet their needs at go-live. The lessons learned from this and prior waves include that unidentified or uncorrected functionality issues before deployment can decrease productivity and efficiency and increase the risk for errors. By improving the interface development process, and more fully testing how iFAMS will be employed by users, FMBTS can improve future iFAMS implementation.

Recommendations 1–4

The OIG recommended the deputy assistant secretary for the Financial Management Business Transformation Service conduct the following actions for the next scheduled iFAMS implementation wave:[43]

1. Incorporate all business-essential processes and related interfaces, as defined by product owners, during validation sessions, user acceptance testing, or equivalent procedures to accurately present system capability.
2. Enhance the test plan to incorporate a more robust, risk-based testing process that incorporates user-testing requirements for functional and nonfunctional business-essential processes related to interfaces.
3. Develop a process to confirm with affected administrative offices whether they are aware of needed changes to test environments and that they have sufficiently executed them before interface test events.
4. Develop a method to evaluate whether test deficiencies necessitate changes to the deployment schedule to ensure deficiencies are properly addressed before wave go-live and implement these changes.

VA Management Comments

The acting deputy assistant secretary for FMBTS concurred with all four recommendations. In response to recommendations 1 and 3, the acting deputy assistant secretary stated FMBTS will,

[43] The recommendations addressed to the deputy assistant secretary are directed to anyone in an acting status or performing the delegable duties of the position.

where possible, ensure business-essential processes and interfaces will be incorporated into user acceptance testing, or the inputs and outputs of these processes and interfaces will be simulated when interfacing partners are unable to perform end-to-end testing. For recommendation 2, the acting deputy assistant secretary will ensure testing scenarios meet business needs for business-essential processes. For recommendation 4, supporting documentation will be provided to the OIG on the method developed to evaluate whether test deficiencies warrant changes to the schedule and are properly addressed before a wave's go-live. The acting deputy assistant secretary indicated the corrective actions are targeted to be completed by July 11, 2025.

Additionally, the acting deputy assistant secretary stated the program has made operational improvements since the audit's focus on the Consolidated Wave Stack deployment, which have been incorporated into the next implementation waves. The full text of the response from the acting deputy assistant secretary is included in appendix C.

OIG Response

The corrective action plans are responsive to the intent of the recommendations. The OIG will monitor implementation of the planned actions and will close recommendations when FMBTS provides sufficient evidence demonstrating progress in addressing the intent of the recommendations and the issues identified.

In response to the acting deputy assistant secretary's additional comments, the OIG acknowledges the scope of the engagement focused on the Consolidated Wave Stack go-live. The OIG also acknowledges FMBTS follows an agile process for system implementation, which highlights the importance of continuous operational improvements.

Appendix A: Background

Financial Management Business Transformation Service (FMBTS) identified nine essential business processes conducted by VA. Table A.1 summarizes these processes.

Table A.1. Nine Essential Business Process Areas

Process area	Process description
Budget formulation to execution	Processes associated with the budget formulation life cycle, development, and approval of the SF-132, budget distribution, budget execution, funds control, and associated reporting
Request to procure	Processes associated with the procurement of goods or services through a procurement action, including development of a requisition package, announcements, solicitations, contract award, contract management and modifications, contract closeout, and associated reporting
Procure to pay	Processes associated with nonprocurement purchasing, construction, travel, credit card processes, receipt and acceptance, invoicing and invoice approvals, and payment disbursement and associated reporting
Reimbursable agreements	Processes associated with producing agreements with other government entities, entering agreements, ordering and automated billing, contract management, Intragovernmental Payment and Collection transactions, and associated reporting
Bill to collect	Processes associated with establishing receivables, recording collections, performing debt management, and associated reporting
Record to report	Processes associated with external reporting, account reconciliation and reclassifications, recording vouchers, accruals, recording payroll, and performing general ledger maintenance
Acquire to dispose	Processes associated with recording and managing fixed assets, depreciation, processing accruals, through asset disposal, and associated reporting
Grants management	Processes associated with grants accounting including obligations, payments, accounting maintenance, and associated reporting
Business intelligence reporting	Processes associated with managerial reporting related to financial data maintained in Integrated Financial and Acquisition Management System (iFAMS) through querying.

Source: Adapted from FMBTS, Financial Management Business Process Reengineering Approach Statement, Version 5.3, August 21, 2017.

Prior Modernization Efforts

There were two other attempts to modernize VA's accounting and acquisition efforts before the Integrated Financial and Acquisition Management System (iFAMS) deployment. The first was Core Financial and Logistics System (CoreFLS), which began in 1998 and was developed until July 2004. Development was halted when pilot tests of the system showed it did not fully support

the department's operation and contained significant project management weaknesses. The second attempt was Financial and Logistics Integrated Technology Enterprise (FLITE), which was developed from 2005 through July 2010. Its development was stopped by Office of Management and Budget guidance that directed all Chief Financial Officer Act Agencies to immediately halt issuance of new procurement or financial system projects.

In response to these two prior attempts, VA established the Financial Management Business Transformation (FMBT) program in April 2016 to manage the next modernization effort, which was iFAMS. Figure A.1 illustrates the timeline of these modernization efforts, including when iFAMS was implemented at the National Cemetery Administration (NCA), the Veterans Benefits Administration (VBA), and the Office of Management Plus (OM+), referring to the implementation for the staff offices wave.

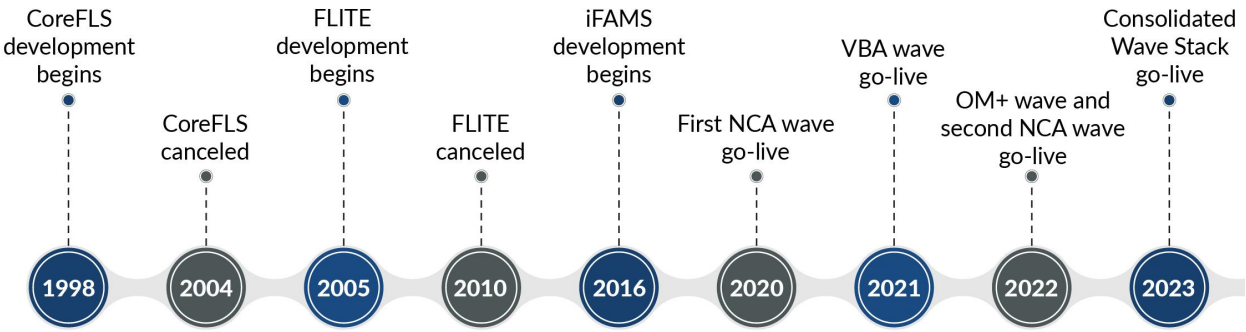

Figure A.1. *Timeline of events related to the modernization of VA's accounting and acquisition systems. Source: iFAMS timeline information derived from FMBTS Consolidated Wave Stack Wave Kickoff Slides, December 15, 2021; CoreFLS and FLITE information taken from Government Accountability Office (GAO),* Systems Modernization, Cybersecurity, and IT Management Issues Need to Be Addressed*, GAO-21105304, July 1, 2021.*

Agile Development Process

The agile development process follows a cycle of continuous improvement so that problems and concerns are discovered more quickly. Figure A.2 illustrates this approach.

Figure A.2. *The agile development process.*
Source: Adapted from GAO, Agile Assessment Guide, Best Practices for Adoption and Implementation*, GAO-24-105506, November 2023.*

The agile process incorporates the following key elements:

- **Continuous quality controls** are necessary for agile development to be successful. Continuous iterations should be employed, lessons should be learned during each iteration, and process improvements should be applied through adequate quality controls.
- **Planning** activities are a part of developing the requirements gathered from user stories. Effectively managing the requirements includes assigning responsibility for identifying the requirements and tracking their status. Doing so helps to ensure each requirement traces back to the business need and forward to its design and testing. When done well, requirements-management practices provide a mechanism to help ensure the system meets the users' needs. In agile development, planning activities happen throughout the life cycle of product development and do not mark a defined point in time.
- **Communication** is not a discrete stage but is a continuous feature of the agile development process. Without it, both functional and nonfunctional system requirements may not be accurately captured in the planning phase. When product owners, users, and developers fail to communicate which program features should be prioritized, the risk of developing noncritical software in place of critical

software increases and user satisfaction with the completed product decreases.[44] FMBTS uses a scaled agile framework, key expectations of which are quality communication and partnership between agile teams and stakeholders.

- **Monitoring** provides the oversight needed for legislators, organization officials, and the public to assess whether government programs are achieving their goals and taking advantage of opportunities for improvement.
- **Testing** occurs throughout the planning and development phases of the agile process and serves as a validation of requirements. The results of testing are then communicated to stakeholders for further discussion and validation. One type of testing not written into the procedures for FMBTS but included as a GAO best practice for agile development is usability testing. Unlike user acceptance testing, usability testing is performed throughout the agile process, revealing potential system issues not previously understood by product owners and allowing time for further development before go-live.

FMBTS Responsibilities

FMBTS is aligned under VA's Office of Management.[45] During this multiyear effort to migrate VA to iFAMS, FMBTS—under the leadership of the deputy assistant secretary for FMBTS—is responsible for

- providing program planning and execution for the implementation of a modern core accounting system;
- managing VA finance and acquisition program management and business process reengineering;
- ensuring compliance with the Digital Accountability and Transparency Act (DATA Act), the USASpending.gov initiative, and other transparency initiatives by submitting data to the Office of Management and Budget as required; and
- providing executive oversight of the VA Financial Services Center.

The Financial Management Business Transformation (FMBT) program strives to continuously improve the development process by learning fast, adapting quickly, and improving its ability to

[44] Government Accountability Office, *Agile Assessment Guide, Best Practices for Agile Adoption and Implementation*, GAO-20-590G, September 2020.

[45] In addition, FMBTS manages VA's implementation of the Digital Accountability and Transparency Act of 2014 (DATA Act), Public Law (Pub. L.) No. 113-101, 128 Stat. 1147; OMB Circular A-123; OMB M-16-17, Pub. L. No. 97-255; and Pub. L. No. 109-282 as well as reports the required financial data to the USASpending.gov initiative.

deploy "demonstrable, valuable working software."[46] The audit team evaluated iFAMS implementation by assessing whether FMBTS aligned its planning, communicating, and monitoring activities to this goal.

The associate deputy assistant secretary for FMBTS Operations leads the Program Management Office and is responsible for the planning and implementation of the iFAMS financial management and acquisition functionality for VA and the customer experience functions of iFAMS implementation within VA. The associate deputy assistant secretary also

- provides oversight of all program management functions in support of the iFAMS solution for FMBTS;
- provides administrative, human resources, and life cycle cost estimate oversight for FMBTS;
- leads the Customer Experience Office responsible for customer-facing program activities for migrating to the iFAMS solution; and
- provides executive leadership for all VBA implementations of iFAMS.

The associate deputy assistant secretary for FMBTS Systems leads the data management and business testing responsibilities for the planning and implementation of the iFAMS financial management and acquisition functionality within VA and provides the following:

- Oversight of all data conversion functions for iFAMS implementation
- Oversight of Accounting Systems Standards and accounting classification structure
- Oversight of user acceptance testing for iFAMS implementation
- Executive leadership for all Veterans Health Administration (VHA) and acquisitions implementations of iFAMS

OM+ Staff Offices

The OM+ wave included staff offices from the following 15 administrations:[47]

1. Office of the Revolving Fund
2. Office of Enterprise Asset Management
3. Board of Veterans' Appeals
4. Office of Inspector General

[46] FMBTS, *FMBT Scaled Agile Framework,* ver. 4.1, March 2023.

[47] Office of Management Plus (OM+) refers to the implementation for the staff offices wave.

5. Office of Electronic Health Records Modernization
6. Human Resources and Administration/Operations, Security, and Preparedness
7. Office of Accountability and Whistleblower Protection
8. Office of Acquisition, Logistics, and Construction
9. Office of Congressional and Legislative Affairs
10. Office of Enterprise Integration
11. Office of General Counsel
12. Office of Management
13. Office of Public and Intergovernmental Affairs
14. Office of the Secretary
15. Veterans Experience Office

Consolidated Wave Stack Interfaces

The Consolidated Wave Stack included two new interfaces (interfaces that had no prior development) and 12 sustainment interfaces (interfaces previously implemented but requiring additional development to support Consolidated Wave Stack implementation). New interfaces are

1. Data Centralization Business Intelligence (Data Estate), and
2. Construction and Facilities Management Dashboard.

Sustainment interfaces are

1. Charge Card (CBA Charges),
2. Invoice Payment and Processing System (IPPS),
3. ConcurGov,
4. Financial Services Center Data Depot,
5. Payroll (HR-PAS),
6. Financial Reporting Data Warehouse,
7. Managerial Cost Accounting Program-Decision Support System,
8. Management Information Exchange,
9. General Journal,
10. Veterans Health Administration Support Service Center,

11. Electronic Contract Management System (eCMS), and
12. iMOVE.

Appendix B: Scope and Methodology

Scope

The audit team conducted its work from December 2023 through January 2025. The audit scope includes VA activities to develop and manage interfaces required for implementation of the Consolidated Wave Stack, which was the most recent Integrated Financial and Acquisition Management System (iFAMS) wave when the VA Office of Inspector General (OIG) initiated this audit. The Consolidated Wave Stack was developed in July 2021 and went live in June 2023. This wave encompassed both finance and acquisition services for the first time since iFAMS was first deployed to VA in November 2020. The interfaces analyzed for this engagement in the Consolidated Wave Stack include the Electronic Contract Management System (eCMS), the Invoice Payment and Processing System (IPPS), and SAM.gov. The audit team assessed the process the Financial Management Business Transformation Service (FMBTS) used for identifying systems that are required to interface with iFAMS and the development and implementation for those interfaces. Of note, the OIG did not consider interfaces, user experiences, or testing by OIG employees for this engagement.

Methodology

The audit team reviewed applicable laws, regulations, policies, procedures, and best practices related to systems development and implementation. The team also obtained and reviewed iFAMS documentation, including

- detailed system deployment schedules;
- all planning documentation, including slide decks and meeting minutes;
- detailed testing documentation and methodologies; and
- business process reengineering documentation.

Relevant VA officials involved in the development and management of the program's schedule were interviewed by the team, including those from FMBTS, product owners, and contractors to determine roles, responsibilities, and oversight of iFAMS interface development and implementation.

The team also obtained and evaluated user stories for in-scope interfaces, determining the cause of any issues found with the quality, timeliness, or reliability of interface development. The team linked interface development and implementation delays to additional costs, when possible. Documentation reviewed included meeting minutes, documents from wave planning and development, the risk register, trouble tickets, lessons-learned log, decision log, and additional material provided by interviewees. FMBTS's planning, communication, and monitoring of the

interface development process was reviewed by the team, using requirements defined in the FMBTS Scaled Agile Framework, interface control documentation, and other related materials. The OIG compared these to actual processes executed by FMBTS agile teams. The OIG audit team identified discrepancies, determined causes of implementation delays, and reviewed documented manual work-arounds by users due to inadequate interfaces. This was accomplished by evaluating FMBTS planning processes and determining whether all needs, both functional and nonfunctional, were identified before starting development work. The audit team also determined whether needs were communicated to development personnel in a timely manner so that the requirements were included before user testing.

The audit team reviewed documentation for two new interfaces and 12 existing interfaces that were included in the integrated testing plan for the Consolidated Wave Stack. Based on this review, the team judgmentally selected three interfaces: eCMS, IPPS, and SAM.gov. The team analyzed the planning, development, testing, and implementation of these interfaces and identified any issues considered material to the success of the implementation. Any issue that resulted in an interface not performing its intended function or resulted in manual work-arounds by users to accomplish central job functions was subjected to a root cause analysis.

Finally, the team assessed whether FMBTS monitored interface development through success metrics, adjusting the integrated schedule for implementation to reflect difficulties uncovered through monitoring. The FMBTS Scaled Agile Framework and the Responsible, Accountable, Consulted, and Informed Matrix were used to determine the time during development that particular steps should occur and who was responsible for their completion.

Internal Controls

The audit team assessed FMBTS internal controls significant to the audit objective. This included an assessment of the five internal control components: (1) control environment, (2) risk assessment, (3) control activities, (4) information and communication, and (5) monitoring.[48] In addition, the team audited the principles of internal controls associated with the objective, noting three components and six principles as significant to the objective.[49] The team identified internal control weaknesses during this audit and proposed recommendations to address the following:

- Component: Control Environment
    - Principle 3: Establish structure, responsibility, and authority

[48] Government Accountability Office, *Standards for Internal Control in the Federal Government*, GAO-14-704G, September 2014.

[49] Since the audit was limited to the internal control components and underlying principles identified, it may not have disclosed all internal control deficiencies that may have existed at the time of this audit.

- Component: Control Activities
    - Principle 10: Design control activities
    - Principle 11: Design (control) activities for the information system
- Component: Information and Communication
    - Principle 13: Use quality information
    - Principle 14: Communicate internally
    - Principle 15: Communicate externally

Data Reliability

The audit team requested and received a list of every interface requiring development during the Consolidated Wave Stack. They requested and received confirmation from FMBTS leaders that the list of interfaces was comprehensive. The team then made a judgmental selection of three interfaces based on monitoring documentation from FMBTS and interviews with users. Signed memoranda and ServiceNow tickets were used to verify the selection of the three interfaces. The data used were determined to be reliable for the purposes of this audit.

Government Standards

The OIG conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that the OIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on audit objectives. The OIG believes the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objectives.

Appendix C: VA Management Comments, Acting Deputy Assistant Secretary for Financial Management Business Transformation Service

Department of Veterans Affairs Memorandum

Date: March 11, 2025

From: Acting Deputy Assistant Secretary for Financial Management Business Transformation Service (046)

Subj: Draft Report, Integrated Financial and Acquisition Management System Interface Development Process Needs Improvement (Project Number 2024-00645-AE-0025)

To: Assistant Inspector General for Audits and Evaluations (52)

1. Thank you for the opportunity to review the Office of Inspector General (OIG) draft report on the subject audit. OIG assigned four recommendations to the Deputy Assistant Secretary for Financial Management Business Transformation Service (FMBTS). FMBTS concurs with all findings and recommendations in the report. Management comments, and implementation plans for these recommendations are attached.

The OIG removed point of contact information prior to publication.

(Original signed by)

Jonathan Lambert

Attachment

FINANCIAL MANAGEMENT BUSINESS TRANSFORMATION SERVICE (FMBTS)

Action Plan

OIG Draft Report: Integrated Financial and Acquisitions Management System (iFAMS) Interface Development Process Needs Improvement

Project # 2024-00645-AE-0025

Recommendation 1. Incorporate all business-essential processes and related interfaces, as defined by product owners, during validation sessions, user acceptance testing, or equivalent procedures to accurately present system capability.

FMBTS Response: Concur. Where possible, the Financial Management Business Transformation (FMBT) program will incorporate business essential processes and interfaces during User Acceptance Testing (UAT) to accurately present system capability to testers. In cases where interfacing partners are unable to perform end-to-end testing, FMBT will simulate the ingestion of interface data to ensure system capabilities. FMBT will provide supporting documents and request closure within 60 days after wave go-live on 5/12/2025.

Status: In Progress Target Completion Date: 7/11/2025

Recommendation 2. Enhance the test plan to incorporate a more robust, risk-based testing process that incorporates user testing requirements for functional and nonfunctional business-essential processes related to interfaces.

FMBTS Response: Concur. FMBT has made significant improvements to the test plan and will continue to obtain customer sign-off of test scripts to ensure agreed upon scenarios meet business needs for business-essential processes. FMBT will provide supporting documents and request closure within 60 days after wave go-live on 5/12/2025.

Status: In Progress Target Completion Date:7/11/2025

Recommendation 3. Develop a process to confirm with affected administrative offices whether they are aware of changes needed to test environments and that they have executed them as necessary before interface test events.

FMBTS Response: Concur. FMBT will continue to carry out testing improvements made since the Consolidated Wave Stack (CWS) by working with interfacing partners to conduct end-to-end testing where interfacing partners environments support such testing. In cases where they are unable to support, FMBT will simulate data to support end-to-end testing of that interface. FMBT will provide supporting documents and request closure within 60 days after wave go-live on 5/12/2025.

Status: In Progress Target Completion Date: 7/11/2025

Recommendation 4. Develop a method to evaluate whether test deficiencies necessitate changes to the deployment schedule to ensure deficiencies are properly addressed before wave go-live and implement these changes.

FMBTS Response: Concur. FMBT will provide supporting documents and request closure within 60 days after wave go-live on 5/12/2025.

Status: In Progress Target Completion Date: 7/11/2025

Additional Management Comments: The VA OIG's audit of the iFAMS interface development process focused the CWS. The FMBT program has proactively made many operational improvements since that time, which have been incorporated into the iFAMS implementations for the VBA LGY Service and Veterans Health Administration Station 134: Office of Finance and Healthcare Transformation waves.

For accessibility, the original format of this appendix has been modified to comply with Section 508 of the Rehabilitation Act of 1973, as amended.

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