VA Office of Inspector General

OFFICE OF AUDITS AND EVALUATIONS

Department of Veterans Affairs

Follow-up Review of the Veterans Benefits Management System

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ACRONYMS AND ABBREVIATIONS

EVM	Earned Value Management
FY	Fiscal Year
IT	Information Technology
OIG	Office of Inspector General
OI&T	Office of Information and Technology
OMB	Office of Management and Budget
PMO	Program Management Office
PMAS	Project Management Accountability System
SPAWAR	Space and Naval Warfare Systems Command Atlantic
VA	Department of Veterans Affairs
VARO	VA Regional Office
VBA	Veterans Benefits Administration
VBMS	Veterans Benefits Management System

Report Highlights: Follow-up Review of VA's Veterans Benefits Management System

Why We Did This Review

In February 2013, we reported VA could not provide reasonable assurance the Veterans Benefits Management System (VBMS) would meet its goals of increasing claims processing accuracy to 98 percent and eliminating the disability claims backlog by 2015. We conducted this follow-up review to determine how effectively VA is managing cost, performance, and schedule of VBMS development to meet its claims processing accuracy and backlog elimination goals.

What We Found

VA remained partially effective in managing VBMS development to help meet claims processing accuracy and backlog elimination goals. However, since September 2009, total estimated VBMS costs increased significantly from about $579.2 million to approximately $1.3 billion in January 2015. The increases were due to inadequate cost control, unplanned changes in system and business requirements, and inefficient contracting practices. As a result, VA could not ensure an effective return on its investment and total actual VBMS system development costs remained unknown.

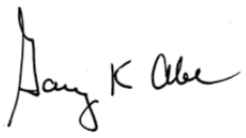
Amid evolving requirements, VBMS did not fully provide the capability to process claims from initial application to benefits delivery. Users lacked training needed to leverage the enhanced functionality provided. System response-time issues resulted from rapid software enhancements while system disruptions were due to inadequate service continuity practices. Until these issues are addressed, VA will continue to lack assurance of meeting its claims processing accuracy and backlog elimination goals by the end of 2015. The Department stayed on schedule in deploying planned VBMS functionality to all VA regional offices in 2013, largely due to the incremental development approach VA chose.

What We Recommended

We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, define and stabilize system and business requirements, address system performance problems, deploy required functionality to process claims end-to-end, and institute metrics needed to identify and ensure progress toward meeting stated goals.

Agency Comments

The VA Executive in Charge for the Office of Information and Technology, in conjunction with VBA, generally agreed with most of our findings and recommendations. The OIG will monitor implementation of the corrective action plans.



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INTRODUCTION

Objective

We conducted this follow-up review to determine how effectively VA managed cost, performance, and schedule in Veterans Benefits Management System (VBMS) development to better position the Department to meet its claims processing accuracy and backlog elimination goals.

VBA Transformation Approach

In 2009, under the leadership of the former VA Secretary, the Veterans Benefits Administration (VBA) initiated efforts to address the claims process backlog by modernizing the way it receives and processes benefits claims. VBA proposed a multi-pronged transformation of over 40 initiatives that entails retraining, reorganizing, and streamlining business processes, and building and implementing technology solutions. Transitioning to a paperless claims process is intended to reduce claims processing time, help minimize rating inconsistencies and errors, and enable a more efficient claims process workflow to reduce cycle-time and address the growing backlog of pending claims. VBA anticipated that its transformation efforts would result in at least a 20 percent increase in productivity in fiscal years 2014 and 2015 while improving quality. However, VBA was unable to demonstrate that claims inventory reductions are directly attributable to VBMS because system metrics were not in place and process improvements have not fully matured.

VBMS

A key part of VBA's transformation approach involves replacing its paper based claims process with an automated process that integrates commercial and government off-the-shelf web-based technology and improved business practices. VBA and the Office of Information Technology (OI&T) are jointly developing VBMS using the Agile software development methodology, which allows subject matter experts to incrementally validate requirements, processes, and functionality. In conjunction with the other transformation initiatives, VBMS is expected to help VBA achieve its goals of increasing claims processing accuracy to 98 percent and eliminating the disability claims backlog by the end of 2015. VBA defines the backlog as claims more than 125 days old in the inventory. In January 2014, the VBMS Program Director resigned his position; however the impact to VA's overall transformation effort is unclear.

Prior Review

In our *"Review of Transition to a Paperless Claims Processing Environment"* (Report No. 11-04376-81, February 4, 2013), we reported that, as of September 2012, VBMS was in the early stages of system development and VBA and OI&T have not fully tested VBMS. Further, scanning and digitization of veterans' claims lacked a detailed plan and an analysis of business requirements. As such, we could not determine whether VBMS had resulted in improved claims processing. We concluded that given the complexity of the automation initiative, VBA will face challenges meeting its claims processing improvement goals by the end of 2015.

Other Information

- Appendix A provides pertinent background information.
- Appendix B provides details on our scope and methodology.
- Appendix C provides potential monetary benefits.
- Appendix D provides details on the Agile development process.
- Appendix E provides VA comments on a draft of this report.
- Appendix F provides OIG general contact information and staff acknowledgements.
- Appendix G identifies report distribution.

RESULTS AND RECOMMENDATIONS

Finding 1 VBMS Costs Increased Significantly

Although VBA and OI&T stayed on schedule in deploying core functionality, total estimated VBMS life-cycle costs increased significantly from about $579.2 million in September 2009 to about $1.3 billion in January 2015; according to the VBMS Program Management Office (PMO). The increases were due to inadequate cost control, unplanned changes in system and business requirements, inefficient contracting practices, and lack of concrete plans to decommission redundant legacy systems. As a result, VA cannot ensure an effective return on its investment and the total actual VBMS system development costs remain unknown.

VBMS Cost Overruns

VBMS system development has experienced significant cost overruns per VA's own estimates reported to the Office of Management and Budget (OMB). In September 2009, VA formulated a total life cycle cost estimate of about $579.2 million for VBMS. By January 2015, VA reported to OMB an estimated increase in VBMS total costs to about $1.3 billion—an increase of over 120 percent. Table 1 reflects the incremental growth in estimated total VBMS costs reported to OMB. These cost estimates included development costs, ongoing VBMS maintenance, and associated personnel costs.

Table 1. VBMS Total Estimated Costs Increase

Estimate Date	Total Estimated Costs
September 2009	$579.2 million
September 2010	$1.1 billion
January 2015	$1.3 billion

Source: VA OIG analysis of VBMS Program Management Office estimated cost data included in Office of Management and Budget Exhibit 300s (costs have been rounded)

Reasons for VBMS Cost Overruns

We identified multiple reasons for VBMS cost overruns, including VBA and OI&T not prioritizing and integrating effective cost controls, unplanned changes in system and business requirements, and inefficient contracting practices. Continued operations and maintenance costs and the lack of clear plans for decommissioning redundant legacy systems impose expenses not considered in the above VBMS PMO estimates.

Cost Controls Not a Priority

Cost control has not been the foremost objective in VBMS development. VA's fiscal year (FY) 2015 Budget Submission states VBMS is central to addressing the Secretary's priorities, including eliminating the claims

backlog, reducing the total claims processing time from inception to award in less than 125 days, and achieving 98 percent accuracy by the end of 2015. Concentrated effort was made to ensure deployment of core VBMS functionality to all 56 VAROs by FY 2013.

Given the high-profile nature and mission-criticality of this project, OI&T and VBA project manager's focus was not on VBMS cost containment, but rather on developing and implementing the system to realize improvements in claims processing operations. Consequently, incremental increases in total estimated VBMS costs have been approved and justified through the budget process, constituting a 122 percent increase over the past five years. In February 2014, VA received an additional $63 million from Congress and subsequently allocated an additional $10 million through budget reprogramming to accelerate delivery of workload and workflow management functionality for VBMS.

Cost Controls Not Integrated in Program Oversight

Integrated cost control has not been a priority with VBMS program oversight. OMB's *Capital Programming Guide,* supplemental guidance to Circular A-11, states that agencies must have a disciplined capital programming process that addresses cost estimating to improve the accuracy of cost, schedule, and performance data provided to management. Further, it states that agencies must manage their portfolios of major acquisitions within 90 percent of the individual investments' cost, schedule, and performance goals.

It is critical that program cost estimates are realistic estimates of final costs and are adjusted through a project's change management process to consider risk. When significant changes occur, VA needs assurance that such changes were necessary and the projected outcomes can justify the increase in development costs. When seeking funds during the budget process, the credibility of the costs will be examined. The OMB and Congress hold VA and other agencies accountable for meeting the schedule and performance goals within the cost estimates. VA is also required to exercise sound financial stewardship of Government funds to the benefit of the veteran and the American taxpayer.

Within VA, the Project Management Accountability System (PMAS) has been the principal means of holding information technology (IT) project managers accountable for meeting cost, schedule, and scope. In 2009, the former Secretary mandated that VA program offices use PMAS to plan and manage all IT development projects that introduce new functionality or enhance existing capabilities within current VA systems. PMAS was designed to reduce risks; institute monitoring, controlling, and reporting discipline; and establish accountability. Milestone reviews are critical checkpoints in the PMAS life cycle for overseeing IT development projects. Milestone reviews are conducted to ensure that work required in each current

state or increment is complete and that the project is ready to enter the next phase.

VBMS was subject to PMAS milestone reviews to determine project progress, resulting in the program continuing to advance in accordance with scheduled milestones. However, PMAS oversight of VBMS development was not sufficient to effectively control VBMS costs. Supporting documentation from PMAS milestone reviews of VBMS development from inception through May 2014 presented mostly milestone date information as VBA and OI&T's focus was on achieving VBMS completion dates to help ensure ongoing funding for the project. Further, there was no evidence that these VBMS PMAS reviews effectively addressed cost growth.

PMAS also does not evaluate information technology projects scope, cost, and schedule in an integrated manner. For example, PMAS cannot help determine whether 50 percent of estimated funds expended equates to 50 percent of performance goals achieved, all within the context of the established schedule. Our recent audit of PMAS concluded that the system is still not fully infused with the discipline and accountability necessary for effective oversight of IT development projects and it does not provide key management controls over project costs.[1]

Within the context of VBMS development using the Agile methodology, PMAS focuses primarily on ensuring achievement of scheduled milestones dates for incremental VBMS software releases and implementation of improved functionality. The high-profile nature of VA's VBMS deployment to all 56 VAROs in 2013 and the mission-criticality of improving claims processing were driving forces for ensuring that VBMS deployments stayed on schedule. However, staying on track with original cost estimates was not a key factor. Additionally, our audit of PMAS concluded that project managers continued to struggle with capturing incremental costs and project teams were not reporting costs related to system enhancements. Noting the shortcomings of PMAS, VBMS PMO staff might have utilized other management tools to ensure successful project cost management.

Earned Value Management (EVM) is a widely accepted industry best practice across the Federal government and the commercial sector to ensure effective project management. It is an integrated management system that coordinates the work scope, schedule, and cost goals of a program, and objectively measures progress toward these goals. EVM is used to quantify and measure program performance, provide an early warning system for deviation from a baseline, mitigate risks associated with cost and schedule overruns, and provide a means to forecast final cost and schedule outcomes.

[1] *"Follow-Up Audit of the Information Technology Project Management Accountability System"* (Report No. 13-03324-85, January 22, 2015)

Because VBMS system development includes multiple complex projects that integrate many systems and frequent software releases, EVM could be a beneficial project management approach to help achieve cost goals and supplement PMAS. In addition, EVM could assist VA in defining the appropriate metrics to determine whether VBMS is helping VA achieve its overall goals and is providing taxpayers with reasonable assurance that this project provides a good return on investment as costs escalate.

Unplanned Requirements Changes

During the course of the VBMS development effort, OI&T faced challenges of managing competing new systems functionality requirements. These changing priorities have repeatedly impacted the scope and direction of the program and increased cost estimates. Some of the unplanned changes are necessitated by external factors outside of OI&T's control. For example, the original goal for VBMS was to support the paperless scanning process and to digitize claims, but business requirements have substantially changed since FY 2012. Specifically, VBA expanded VBMS business functionality requirements to also include development of online disability claims evaluation builders and calculators, development of automated correspondence letters, and enterprise data integration services with existing initiatives such as Veterans Relationship Management and Virtual Lifetime Electronic Records. Development and implementation of these additional capabilities has resulted in estimated cost increases, which increases VA's investment in VBMS.

In 2013, VA anticipated an up to 60 percent increase in the total estimated VBMS life cycle costs subject to availability of funding. However, total actual VBMS costs remain unknown as VBA and OI&T had not performed a budget versus cost analysis to identify specific cost overruns. Because of the manner in which VBMS costs are managed and the program has evolved, VBA and OI&T were not able to provide us a breakdown on the costs of the individual pieces of added functionality. VA's budget submission, including costs for VBMS, does not provide this level of detail.

Inefficient Contracting Practices Driving Higher Costs

Another factor contributing to VBMS cost overruns is VA's inefficient contracting practices with the U.S. Navy's Space and Naval Warfare Systems Command - Atlantic (SPAWAR) to develop and maintain VBMS. OI&T finalized an inter-agency agreement with SPAWAR, with multiple additions and modifications for VBMS development activities since February 2011 through September 2015. One of these services included subcontracting with the Terremark Worldwide, Inc. (Terremark), a subsidiary of Verizon Communications, a data facility used for hosting VBMS servers and data. OI&T justified the use of these agreements, asserting that it did not have the in-house expertise and personnel to develop and maintain an integrated VBMS environment. However, the VBMS PMO could not provide evidence that OI&T performed market analyses on all task orders with SPAWAR to determine whether continued use of the interagency agreements was cost effective and in the best interest of Government. As of

January 2014, the VBMS PMO reported that VA had paid SPAWAR approximately $237 million for ongoing VBMS development, maintenance, and infrastructure costs, including the undisclosed amounts paid to Terremark.

Consequently, VA accepted the risk of an indefinite dependency on SPAWAR that may result in future VBMS project cost overruns. Because OI&T does not directly contract for infrastructure services, such as system hosting services provided by Terremark, it cannot ensure that such costs are effectively controlled and in the best interest of the Government. Contracting directly with infrastructure service providers, such as Terremark, would help eliminate any unnecessary SPAWAR administrative costs associated with OI&T's current indirect contracting practices.

Clear Legacy Decommission Plan Needed

VBA and OI&T have not effectively managed costs to maintain the legacy systems it continues to rely on as VBMS capability evolves. These legacy systems include the Veterans Service Network and the Benefits Delivery Network that are generally needed to process older paper claims not initiated in VBMS. These legacy systems require ongoing operations and maintenance funding apart from increasing VBMS development costs. Specifically, VA's FY 2015 budget request includes $27 million for legacy systems support. VBA and OI&T will continue to incur these redundant maintenance costs each year until it develops a clear plan and target date for completing VBMS and decommissioning these outdated systems. Currently, VA's capital planning document does not reflect the level of effort needed to process all claims through VBMS and decommission legacy systems.

Decommissioning legacy systems would negate the need for ongoing maintenance and provide significant cost savings to offset VBMS development costs. Savings could also be realized by migrating all benefit program operations of these disparate legacy systems into VBMS. Decommissioning outdated legacy systems and eliminating redundant operations are sound business practices. As funding for VBMS is a significant investment, it is critical to utilize the funds wisely. Given VBMS is an estimated $1.3 billion system development effort with expanding functionality, we believe opportunities exist for cost containment with a clear plan and schedule for decommissioning legacy systems. OI&T and VBA jointly stated in their response to this review that VA will consider retiring its legacy applications when the mission needs have changed, when a new system has taken on the capabilities of an old system, when system consolidation will improve Veteran service delivery, or when the system is no longer supported by a vendor.

VBMS Final Cost Unknown

As previously stated, VBMS system development cost estimates have already increased over 120 percent, from the initial planned estimate. Given the changing requirements and competing priorities that have repeatedly changed the scope and direction of the program, VBMS costs continue to

spiral upward and final end-state costs remain unknown. The Institute of Defense Analyses, in their *Assessment of Department of Defense Enterprise Resource Planning Business Systems*, found that "There is a widespread and erroneous assumption that the enabling technology can be used to force business process and organizational change." We assert that technology cannot compensate for unsettled processes nor force organizational change.

Consequently, until VBMS functionality is fully defined, project scope has the potential of continuing to fluctuate, with adverse effects on project development costs. Indirect contracting with vendors could add to overall IT maintenance costs. VA should not take it for granted that continual funding will be invested in VBMS to fully implement future planned functionality, especially to the extent that it remains unable to effectively demonstrate the system is making progress toward meeting the former Secretary's 2015 claims processing goals.

Conclusion

VBA and OI&T must acknowledge there is no "blank check" and begin to exercise cost control, sound financial stewardship, and discipline in VBMS development. VBA and OI&T also must demonstrate that VBMS is a worthwhile investment, providing taxpayers with a good return on investment. Changing business processes, technology initiatives, and external factors have repeatedly altered the scope and direction of the VBMS program, contributing to rising total estimated costs. As VBMS development evolves and functionality is incrementally added, legacy systems continue to coexist with VBMS, resulting in ongoing costs to maintain the outdated systems. It is imperative that VBA stabilize business and functionality requirements to help control future VBMS development cost growth. VBA and OI&T must also take steps to control future IT system investment costs by evaluating the use of interagency agreements and developing a clear plan to decommission legacy systems.

Recommendations

1. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, implement improved cost controls and stabilize Veterans Benefits Management System functionality requirements for the remainder of planned system development to restrict further cost increases.

2. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, perform a formal budget versus cost analysis to identify actual costs expended in support of the Veterans Benefits Management System development effort.

3. We recommended the Executive in Charge for the Office of Information and Technology perform market analyses on all future Space and Naval

Warfare Systems Command Atlantic task orders to determine whether the continued use of the interagency agreements is in the best interest of the Department.

4. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, establish a clear strategy and plan to decommission legacy systems, eliminate redundant systems operations, and reduce system maintenance costs.

Management Comments

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, did not agree with Recommendation 1 and 3 but concurred with our other findings and recommendations. Specifically:

- The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, did not agree with Recommendation 1 and asserts that VBMS scope and cost increases were planned as a direct result of programmatic and business decisions aligned with an agency priority goal to end the backlog through implementation of VBMS capabilities.
- The Executive in Charge for the Office of Information and Technology did not agree with Recommendation 3 and asserts that a market analysis is already a standard practice and has been since FY 2013.
- The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits agreed with Recommendations 2 and 4 and believes that Recommendation 2 should be closed as VA maintains both the planned and actual costs expended in support of VBMS development. Regarding Recommendation 4, they will consider retiring legacy applications when the mission needs have changed, when a new system has taken on the capabilities of an old system, when system consolidation will improve Veteran service delivery, or when the system is no longer supported by a vendor.

OIG Response

We disagree with the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, response to Recommendation 1 that VBMS scope and cost increases were planned as a direct result of programmatic and business decisions aligned with an agency priority goal to end the backlog through implementation of VBMS capabilities. We noted that the VBMS PMO's 2014 Reprioritization Impact Analysis document stated the VBMS' funding level had remained static since project inception despite scope and complexity increases.

Consequently, the analysis document was needed to determine the impact of various scope modifications on VBMS Life Cycle Costs. We also noted that due to unplanned VBMS cost increases, in FY 2014, Congress agreed to a VA request to reprogram an additional $63 million towards VBMS and subsequently allocated an additional $10 million through budget reprogramming to accelerate delivery of certain VBMS functionality. Accordingly, we stand by our statement that VBMS cost increases were in response to and not planned in conjunction with project scope and complexity increases. VA's use of Agile methodology is commended for adding value by allowing for iterative refinement of the VBMS development process. However, the use of Agile does not preclude the need to work towards stabilizing functionality requirements that while iterative, are still constrained by cost and schedule factors.

We disagree with the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, response to Recommendation 3 that current market research activities conducted prior to implementation of each Part B are more than sufficient to determine whether the continued use of the SPAWAR interagency agreements is in VA's best interest. During our review, the VBMS PMO provided only one business case and market analysis dated September 2009 for an interagency agreement and did not provide market analyses for all task orders requested. OI&T states with their management comments to our draft report that market research has been a standard practice since FY 2013. While O&IT provided an example of market research dated March 2013 with their management comments to this draft report, this was not provided during our review.

Accordingly, we are not confident that current market research activities are sufficient to determine whether the continued use of the SPAWAR interagency agreements is in VA's best interest. The Federal Acquisition Regulation, Subpart 17.502, requires that agencies perform a sufficient analysis to determine whether use of an interagency agreement is in the best interest of the Government. The Office of Information and Technology acknowledges in its response that VA will continue to rely on SPAWAR as its VBMS federal integrator until the Department stands up a federal integrator capability in FY 2016. Consequently, we maintain that VA is accepting the risk of an indefinite dependency on SPAWAR that may contribute to future VBMS cost overruns. Because the Office of Information and Technology does not directly contract for infrastructure services it cannot ensure that such costs are effectively controlled and in the best interest of the Government.

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, comments were responsive to Recommendation 2 and partially responsive to Recommendation 4. As their comments were not responsive to all recommendations, we will monitor related corrective actions and close the

recommendations after we receive evidence that sufficient controls have been implemented to address the issues that we identified.

Finding 2 VBMS Has Performance Shortfalls

As system and business requirements evolved and expanded, VBMS did not fully provide the capability to process claims from initial application to benefits delivery. Users also were not adequately trained to effectively leverage the enhanced functionality provided. System response-time issues were related to rapid software enhancements, while system disruptions were due to inadequate service continuity practices. Overall, development of VBMS-specific performance metrics to demonstrate the benefits of the system in comparison to legacy processing was not a priority. Until these issues are addressed, VBA will continue to lack assurance of meeting its 98 percent claims processing accuracy and backlog elimination goals by 2015.

Progress to Full VBMS Capability Hindered by Changing Requirements

As we reported in February 2013, VBMS still is not a fully functioning application and needs further development before it can entirely process claims from initial application through review, rating, award, and to benefits delivery. For example, VBMS PMO senior representatives stated that business requirements have not been fully defined to support automating the disability award calculations and therefore reducing user dependency on legacy processing. Business requirements also need to be defined so VBMS functionality can be developed to support processing of veteran pension claims.

Additional VBMS functionality is necessary to enforce standardized business practices and processing efficiencies across all VAROs, eliminate manual processing methods, and reduce VA's dependency on legacy practices for establishing, developing, and rating claims. VBMS Release 7.1 provided the start of a National Work Queue, a paperless workload management initiative for improving VBA's overall claims processing capacity and assisting with reaching the former Secretary's 2015 claims processing goals. Table 3 provides a record of the major VBMS software releases, with functionality enhancements, deployed to VAROs since January 2011. VBA officials have stated that this release will allow them to prioritize VBA's entire rating inventory in order to distribute workloads in accordance with national resources. Once VBA and OI&T have fully developed VBMS, it can better realize the potential benefits and efficiencies of workflow automation and electronic case management brokering in claims processing.

As business and system requirements changed, they had to be incorporated in VBMS development, which hindered progress toward achieving a fully functioning system. Business process changes concurrent with VBMS development have kept the automation initiative in a perpetual state of flux, where VBMS features and functionality are frequently changed to meet growing expectations. Specifically, VBA has instituted more than 40 Transformation Initiatives, many of which entail retraining, reorganizing,

and streamlining business processes that require corresponding adjustments in VBMS automation requirements. Some of these initiatives include:

- **eBenefits:** A VA website for Veterans, Service Members, and their families to research, find, access, and, in time, manage their benefits and personal information in electronic format in lieu of hardcopy evidence, which slows down claims processing.
- **Disability Benefits Questionnaires:** Streamlined forms that use check boxes and standardized language so that the disability ratings can be input quickly into VBMS to provide expanded automated data population capability and facilitate more consistent and accurate claims decisions.
- **Fully Developed Claims:** A means of offering Veterans and survivors faster decisions from VA on compensation, pension, and survivor benefit claims. Applicants simply submit all relevant records, such as private medical records that are in their possession when making disability claims. This allows VA to process the claims more quickly. As of January 2015, VA estimated that it had approximately 178,000 Fully Developed Claims pending.

During our review, VBA program managers were working to develop in-depth documentation of all business requirements for full development of VBMS processing capability for all types of disability claims. The PMO senior managers stated this ongoing effort is a difficult undertaking because of the many types of claims and their degrees of complexity—from simple claims for disabilities such as hearing loss to complex claims involving multiple body systems, post-traumatic stress disorder, traumatic brain injury, or other complicating factors. Though difficult, documentation of business requirements is an absolute necessity to keep pace with the ever increasing expectation of automated claims processing. Once business processes are clearly defined, they can allow faster development of the VBMS software application with more accurate translations of business rules.

Training Inadequate to Ensure Users Leverage Deployed Capability

VBA and OI&T did not always provide consistent on-the-job training to coincide with each new VBMS release. Some users stated that on-the-job training was typically the only training they received associated with each new software release. Such VBMS system users stated they believed this lack of training hindered them from realizing the benefits of recent VBMS functionality enhancements. For example, some users were not aware of added automation and standardization for generating veteran notifications letters within VBMS as compared to legacy processes. Further, some users did not always understand how to navigate and use the latest eFolder enhancements for user interfaces.

This inconsistent training also created a perception, among some users, that VA's priority was on timely software releases rather than on helping users process claims more efficiently. Because of ongoing VBMS system

performance issues and inadequate user training, some users were often reluctant to use the automated system and sometimes relied on legacy systems to process claims. These issues reflect the difficulties of users trying to maximize the resources available to them and fully utilize the potential benefits of enhanced automation offered with the deployment of new VBMS software.

System Access and Slowness Issues Due to Rapid Software Releases

During our VARO site visits, VBMS system users demonstrated numerous instances of VBMS performance problems. Access issues caused delays in opening and viewing documents needed for disability claims processing, at times resulting in system crashes. We also observed system latency, or slowness. VARO system users demonstrated these lockups and system lags with what they referred to as the "spinning eagle of death," representing the VA Seal which prominently displays as VBMS transitions between screens. Such issues forced users to frequently reboot and relogin to the system, resulting in frustration and potential claims processing delays.

VBMS system users attributed the slow system response-time issues to rapid VBMS software releases that addressed ever changing functionality requirements and shifting VBA priorities, such as accelerated deployment of the system to all 56 VAROs in 2013. These users complained that deploying VBMS this aggressively exacerbated performance issues, stressing the system and making it unreliable. For example, VBA and OI&T deployed VBMS Release 5.0 in July 2013 to provide enhancements and integration, but the release had significant functionality challenges, potentially causing latency issues for system users. Over the next two months, VBA and OI&T deployed six subsequent VBMS 5.0 patches to correct defects and other configuration items. Some of the corrections were for high severity performance defects in the VBMS Core production environment.

VBMS Release 5.1 was deployed in September 2013 to provide enhancements and added automation features. However, 7 days later, VBA and OI&T deployed a VBMS 5.1 patch to improve application performance and resolve several work queue defects in the release according to a VBMS PMO-provided working draft document. Currently, other VBMS system users have reported that system slowness has improved.

Systems Disruptions Due to Inadequate Service Continuity Practices

The National Institute of Standards and Technology, Special Publication 800-34, *Contingency Planning Guide for Federal Information Systems*, provides recommendations and considerations for federal information system contingency planning. However, several significant VBMS service disruptions have occurred at the Terremark data center over the past year, hindering system access and slowing claims processing at the VAROs. Table 2 highlights several major VBMS disruptions at the data center since December 2013.

Table 2. Major VBMS Disruptions Involving Terremark Data Center

Date	Duration
December 3, 2013	6.67 Hours
December 4, 2013	20.6 Hours
December 13, 2013	2 Days, .5 Hour
December 17, 2013	2 Days, 10 Hours
April 28, 2014	2 Days, 6 Hours
June 10, 2014	7 Hours
August 4, 2014	5 Hours
August 22, 2014	4 Days, 3 Hours

Source: VA OIG analysis of OI&T Daily Briefs and Automated Notification Reports detailing VBMS disruptions

The December 4, 2013, disruption occurred during our Atlanta, GA, VARO site visit. This disruption forced users to resort to activities such as online training rather than claims processing, because VBMS was shut down. In the cases where claims information has been fully digitized, the hardcopy files may no longer be readily available for manual claims processing. Reliance on VBMS is paramount to VBA's success in its primary mission. Accordingly, VBA needs a reliable system to support the continuity of its mission.

VBMS service continuity continues to be a challenge because of a lack of demonstrated backup capability. The PMO's implementation of VBMS cloud network architecture does not incorporate a real-time fail over capability or effectively mitigate risks associated with potential single points of failure. More specifically, VBMS is hosted at a single external data service provider facility that also provides external backup hosting services in the event of a significant service disruption. To ensure effective service continuity, ideally the external backup hosting site should immediately become operational when the primary data facility encounters significant disruption. However, OI&T has not required Terremark to implement this capability.

Terremark's primary VBMS cloud is hosted at a site in Culpeper, Virginia. The Terremark disaster recovery site is located in Miami, Florida. In the event of a primary site failure, all VBMS activity would be transferred to the backup site, until the primary site becomes operational once again. According to VA documents, this only occurs if the primary operational functionality cannot be restored within 6 hours. However, during the various

VBMS service disruptions, including those longer than 6 hours, the backup site was never activated to restore VBMS services. Consequently, we are concerned that the backup site may not be fully prepared to restore VBMS services in the event of a significant service disruption. As we observed at the Atlanta, GA, VARO, when users experience a significant VBMS service disruption, system users must resort to other activities such as online training rather than performing the core mission of claims processing.

The lack of service continuity is not the only high-risk issue that we noted in our review. Terremark provides an Infrastructure as a Service, which is a cloud computing model where the vendor hosts computer resources over the Internet. This cloud computing service model is being used for VBMS development, testing, performance, and production environments, as well as hosting the Agile Integrated Development Environment Core Services and Infrastructure. However, OI&T did not require a geographic distribution of hosting services for the purposes of providing improved disaster avoidance or enhanced performance; thus creating a potential single point of failure for the primary hosting facility.

Industry leaders in cloud computing engineering such as CISCO Systems Inc., in their White Paper on *Distributed Virtual Data Center for Enterprise and Service Provider Cloud*, explain that geographic distribution can help provide business continuity without service interruption or performance impact by manually or automatically moving virtual machines to different physical hosts. Distribution can also enhance cloud characteristics such as resource pooling and rapid elasticity. The National Institute of Standards and Technology has defined the essential characteristics of cloud computing as follows:

- **On-demand self-service.** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- **Broad network access.** Capabilities are available over the network and accessed through standard mechanisms that promote use by various client platforms such as mobile phones, tablets, laptops, and workstations.
- **Resource pooling.** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand.
- **Rapid elasticity.** Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand.
- **Measured service.** Cloud systems automatically control and optimize resources for metering allowing clients to pay for what they utilize.

Lack of VBMS Performance Metrics

VBA and OI&T have not placed priority on instituting sufficient performance metrics to demonstrate and monitor the benefits of VBMS claims processing. Specifically, VBA has reported reducing the number of claims over 125 days from approximately 557,000 in September 2012 to approximately 251,000 in January 2015. However, our July 2014 report on VBA's 2-year old claims processing initiative questioned the validity of these statistics.[2] Even if we take the numbers at face value, VBA remains unable to demonstrate that the inventory reductions are directly attributable to VBMS because system and process improvements have not fully matured. Without appropriate performance metrics, VBA and OI&T cannot determine whether VBMS is directly improving the timeliness of claims processing and providing a worthwhile investment for tax payers.

VA Lacks Assurance of Meeting Stated Goals

Rapid application changes to address frequently changing business requirements have adversely impacted achieving VBMS performance goals in the near term. The Office of Information and Technology's network architecture has not effectively mitigated "single points of failure," resulting is several significant VBMS service disruptions over the past year. Furthermore, VBA and OI&T have not developed VBMS-specific performance metrics to determine whether the system is directly helping to eliminate the claims backlog, or providing a worthwhile investment for tax payers. Until these issues are addressed, VA will continue to lack assurance of meeting its 98 percent claims processing accuracy and backlog elimination goals by 2015.

Conclusion

VBMS does not yet provide full capability to process claims from initial claims application through review, rating, award, and to benefits delivery. Evolving business requirements, technology initiatives, and external factors have repeatedly changed the scope and direction of the program, adversely impacting achieving near-term performance goals. Developing and monitoring VBMS performance metrics are essential to demonstrating the value of this large-scale system development effort. To further realize the benefits of VBMS, VBA and OI&T needs to implement electronic claims workflow functionality and workload balancing, as well as increase the number of Fully Developed Claims from veterans. System users have also expressed the need for improved VBMS training and system performance in order to meet automated claims processing goals. Currently, system users lack the confidence that the network infrastructure is reliable enough to support VBMS and this issue remains to be addressed.

[2] "*Review of the Special Initiative To Process Rating Claims Pending Over 2 Years"* (Report No. 13-03699-209, July 14, 2014*)*

Recommendations

5. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, fully develop and implement Veterans Benefits Management System electronic workflow and workload brokering functionality to facilitate more efficient claims processing.

6. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, provide adequate training with each Veterans Benefits Management System release to ensure VA Regional Office users fully benefit from the enhanced functionality provided.

7. We recommended the Executive in Charge for the Office of Information and Technology implement an improved Veterans Benefits Management System network infrastructure to mitigate single points of failure and reduce the network performance issues across the enterprise.

8. We recommended the Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, develop sufficient Veterans Benefits Management System performance metrics to demonstrate the system is improving VA's ability to efficiently process claims as compared to legacy practices.

Management Comments

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, generally agreed with Recommendations 5 through 8. Within its response, they stated that a National Work Queue is planned to be deployed pursuant to business priorities and acknowledges that VBMS end-user training can always be improved. The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, believe that Recommendation 7 should be closed due to network infrastructure improvements implemented over the last 18 months. They also believe that Recommendation 8 should be closed because VBMS is primary among several transformation initiatives and it is difficult to extract the impact of each initiative on combined people, process, and technology models that are being concurrently implemented.

OIG Response

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, comments were responsive to Recommendations 5 and 7. We disagree with their assertion that VA's comprehensive approach to train VBMS end-users is adequate. During multiple site visits and numerous interviews with VBMS users, we noted that VBA and OI&T did not provide consistent training to coincide with each new VBMS release. We also disagree with their statement that Recommendation 8 should be closed because it is difficult to extract the

impact of each initiative on combined people, process, and technology models that are being concurrently implemented. We maintain that VBA and OI&T have not placed priority on instituting sufficient performance metrics to demonstrate the value of this large-scale system development effort. As their comments were not responsive to all recommendations, we will monitor all corrective actions and close the recommendations after we receive evidence that sufficient controls were implemented to address the issues that we identified.

Finding 3 VBMS Stayed on Schedule

VBA stayed on schedule in deploying certain planned VBMS functionality to all VA Regional Offices (VAROs) in 2013, largely due to the incremental Agile software development approach VA chose. We noted one area, however, where VA's application of Agile could be improved to better manage software requirements through the change control process. With the VBMS deployments, VBA and OI&T have expanded automated claims processing functionality, supported improved data exchange, and standardized business practices that VBA reported has helped reduce the claims processing backlog.

VBMS Deployment to All VAROs Completed

VBA completed VBMS deployment to all 56 VAROs in 2013, and is on track to put certain planned VBMS functionality in place by 2015. Each major software release provided enhanced VBMS functionality to an increasing number of system users. Table 3 provides a record of the major software releases, with functionality enhancements, deployed to VAROs since January 2011, as identified in a VBMS PMO working draft document.

Table 3. List of VBMS Major Software Releases

Release	Date	Functionality Highlights
Phase 1	January 2011	Initial Functionality Deployed to First VARO
1.3	May/June 2011	Initial Functionality Deployed to More VAROs
2.0	December 2011	Enhanced Performance and User Interface
3.0	August 2012	Enhanced Claims Establishment and Ratings
3.5	November 2012	Enhanced Electronic Folder (eFolder) Capabilities
4.0	December 2012	Enhanced eFolder Navigation
4.1	January 2013	Integrated With eBenefits
4.2	April 2013	Added Letter Generation Functionality
5.0	July 2013	Enhanced Development Plans
5.1	September 2013	Enhanced Workload Automation
6.0	December 2013	Added Veterans Board of Appeals Functionality
6.1	March 2014	Added Virtual VA Documents Display
7.0	June 2014	Enhanced Ratings Development
7.1	September 2014	Initial National Work Queue
8.0	December 2014	Enhanced National Work Queue

Source: VBMS Program Management Office data as of January 2015

The major VBMS software releases addressed VBA's evolving business requirements and system functionality needs. OI&T continues to deploy major VBMS software releases and minor software updates with increasing frequency. Since August 2012, OI&T's major VBMS software release cycle has improved from about a 6-month interval to a less than 3 month interval. VBMS development is providing system users with greater functionality to process claims. For example, Releases 3.5 and 4.0 provided enhancements to the eFolder based on user feedback, allowing them to better search, filter, and bookmark electronic claims. Further, Release 7.1 in September 2014 provided the start of a National Work Queue, which is a nationwide workload management approach designed to route electronic claims among VAROs for processing. VBA asserts this National Work Queue will result in greater efficiency and more flexible workload management.

Agile Approach Helped Keep VBMS on Schedule

The ability to complete nation-wide VBMS deployment on schedule was largely due to the system development approach VA chose. In efforts to improve its system development initiatives, VA has dedicated significant human and financial resources to adopt the Agile methodology. This methodology involves the process by which requirements are gathered from the customer and incorporated into the product, as well as the matrixed manner in which team members are organized across the project. Appendix D provides a more detailed description of VA's Agile methodology.

We visited key contractor sites, to include Terremark and SPAWAR, where major VBMS development work was performed. While onsite, we observed government and contractor personnel working together to perform systems testing and validate business requirements for upcoming software releases. We also observed meetings and conference calls where key OI&T and personnel worked jointly to identify and resolve emerging VBMS performance issues. We concluded that VA's use of Agile software development principles encouraged greater cooperation between VBA and OI&T towards achieving the shared goals of reducing the claims backlog and increasing claims ratings accuracy.

Area for Improvement in Agile Use

We identified one area where VA's use of the Agile software development methodology could be improved. Specifically, we noted that inefficient manual methods were used to manage software requirements during the software change control process. The VBMS PMO's *VBMS Project Management Plan* identified the Rational Tools Suite as the online application lifecycle management tool for documenting and tracing relationships among business and technical requirements. However, the Plan also required that program management use a manual spreadsheet requirements traceability matrix to track software changes and functionality requirements.

Authors Andrew Kannenberg and Dr. Hossein Saiedian, in the 2009 Journal of Defense Software Engineering article, *Why Software Requirements Traceability Remains a Challenge,* noted that manual processes for software traceability are error-prone. We noted that the use of manual processes can increase the risk that VBMS program management will lack the visibility needed to effectively monitor implementation of planned functionality. Reliance upon both a manual spreadsheet requirements traceability matrix and an online application life-cycle management tool proved to be an inefficient process and yielded inconsistent results. For instance, we tested 50 randomly selected VBMS software user stories[3] and 50 randomly selected VBMS software defects in the Rational Tools Suite and identified several deficiencies. Such deficiencies related to resolution of software defects and management of user stories. Further, these deficiencies are a consequence of VBMS program management's emphasis of the use of manual spreadsheets over the online application lifecycle management tool. Below is a summary of our test results:

- Seventy-six percent of resolved software defects did not document the specific software release that the defect was resolved in.
- More than 50 percent of the completed user stories were not traceable to specific software releases.
- Over 90 percent of resolved software defects and completed user stories did not have the documented approvals needed for software changes.
- More than 90 percent of resolved software defects and over 40 percent of completed user stories were not linked to requirements specifying business needs.

Such linkages and approvals were necessary to provide an audit trail and evidence that business requirements were addressed in the iterative software releases. The manual approach used in this system development effort was also inconsistent with leading industry best practices on traceability. *A Guide to the Business Analyst's Body of Knowledge (Version 2.0),* from the International Institute of Business Analysis in 2009, states that the manual method is typically only used when there are relatively few requirements or when tracing is limited to high-level requirements. Contrary to industry best practices, the VBMS PMO could not provide a rational basis for using manual methods to track software changes.

Further, *Software Requirements: Practical Techniques for Gathering and Managing Requirements Throughout the Product Development Cycle,* revised by author by Karl E. Wiegers in 2013, notes that it is impossible to

[3] *A user story is the lowest level of defined work requirements in a system development sprint.*

perform requirements tracing manually for any but very small applications. It is feasible to use a spreadsheet to maintain traceability data for up to a couple hundred requirements; however larger systems, like VBMS, demand a more robust solution. Effective traceability is important because it helps verify that software application development fulfills all of an organization's functionality requirements.

Improvements Resulting from Deployed VBMS Functionality

The deployments of VBMS functionality accomplished into 2014 have provided system users with improved access to electronic information, some electronic workflow and workload automation capability, and more standardized business practices for processing paperless disability claims.

Moving forward, recently deployed VBMS Release 8.0 and subsequent versions are expected to deliver additional system functionality and more complex automated capability, while reducing dependency on legacy systems for establishing, developing, and rating claims. Since FY 2012, VBA expanded VBMS business functionality requirements to also include development of online disability claims evaluation builders and calculators, development of automated correspondence letters, and enterprise data integration services with existing initiatives such as Veterans Relationship Management and Virtual Lifetime Electronic Records. Fully automated processing is expected to result in a more standardized and efficient claims processing solution.

According to VBA, improved VBMS functionality, in concert with other transformation initiatives, has helped the Department make progress in reducing the claims backlog. Specifically, VBA recently reported a reduction in its inventory of claims over 125 days from approximately 557,000 in September 2012 to approximately 251,000 in January 2015. However, recent OIG oversight findings question the data integrity of claims backlog numbers. Specifically, in July 2014 we reported that VBA's Special Initiative to process the oldest pending claims was less effective than its existing rating process in providing benefits to veterans quickly.[4] Our report disclosed that VBA removed the provisionally rated claims from its pending inventory, although more work was needed to complete them. This process misrepresented VBA's actual workload of pending claims and its progress toward eliminating the overall claims backlog.

Conclusion

Agile software development practices enabled VA to accelerate deployment of planned VBMS functionality to all VAROs in 2013. Since then, Agile practices have supported additional software releases, providing needed enhancements. However, we noted that VBA and OI&T's reliance on manual processes for software traceability as part of the Agile approach

[4] *"Review of the Special Initiative To Process Rating Claims Pending Over 2 Years"* (Report No. 13-03699-209, July 14, 2014

increased the risk that VBMS program management will lack the visibility needed to effectively monitor implementation of planned functionality. VBA has reported that the VBMS functionality deployed to date has helped reduce the claims backlog, although we question the validity of the publicized statistics based on our recent oversight work. VBMS also is expected to improve data sharing across the enterprise to facilitate faster and more accurate claims processing going forward.

Recommendation

9. We recommended the Executive in Charge for the Office of Information and Technology minimize the use of manual requirements tracking processes and maximize the use of automated application lifecycle management tools to manage requirements traceability in accordance with industry best practices.

Management Comments

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, partially agreed with Recommendation 9 and stated that they have recently added indicators in Rational Tools that tie defects to the major release that will resolve them. They also states the VBMS Project Management Office is in the process of adding similar indicators that will tie business requirements to a major release once the release scope is baselined and approved as part of the change control process.

OIG Response

The Executive in Charge for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, comments were not fully responsive to Recommendation 9. Specifically, they asserted that adding indicators to the IBM Rational Tools will tie defects to major VBMS releases and and will result in more accurate traceability.

However, such changes to how Rational Tools are used do not fully address the need to minimize manual processes to track functionality requirements. As long as manual and automated change control processes are used, inconsistent results between both methods will continue and adversely impact the VBMS PMO's ability to monitor implementation of planned functionality. Accordingly, we plan to monitor related corrective actions and will close recommendation after we receive evidence that sufficient controls have been implemented to address the issues we identified.

Appendix A Background

VBA Transformation

In 2009, under the leadership of the former VA Secretary, VBA initiated efforts to address the claims process and backlog by modernizing the way it receives and processes benefits claims. VBA proposed a focused and multi-pronged Transformation Plan comprised of numerous initiatives that entailed reengineering VBA's culture, business processes, and information technology. VBA's Transformation Plan's initial focus was to improve business processes within the Compensation and Pension business line. Compensation and Pension relied on paper-based claims processing and has experienced a substantive backlog of disability claims.

VBA and OI&T are developing VBMS to improve enterprise data integration with existing initiatives to facilitate faster and more accurate benefits processing. For example, integration with Veterans Relationship Management is to provide veterans enhanced access to health care and benefits information through the Internet and telephone services. Further, data sharing via Virtual Lifetime Electronic Records currently give VA and non-VA medical service providers secure access to veterans' electronic health records. Per VA's FY 2015 Budget Submission, OI&T plans for ongoing Veterans Relationship Management and Virtual Lifetime Electronics Records integration with VBMS.

VBMS

The primary software application enabling the Transformation Plan is VBMS. VBMS is a multi-year technology project to transition VBA from paper-intensive claims processing environment to a paperless-based environment with the ultimate goal of a complete migration to an electronic claims processing system. Processing steps will be automated and existing applications will be modernized, resulting in a more standardized, tracked, and efficient claims processing solution.

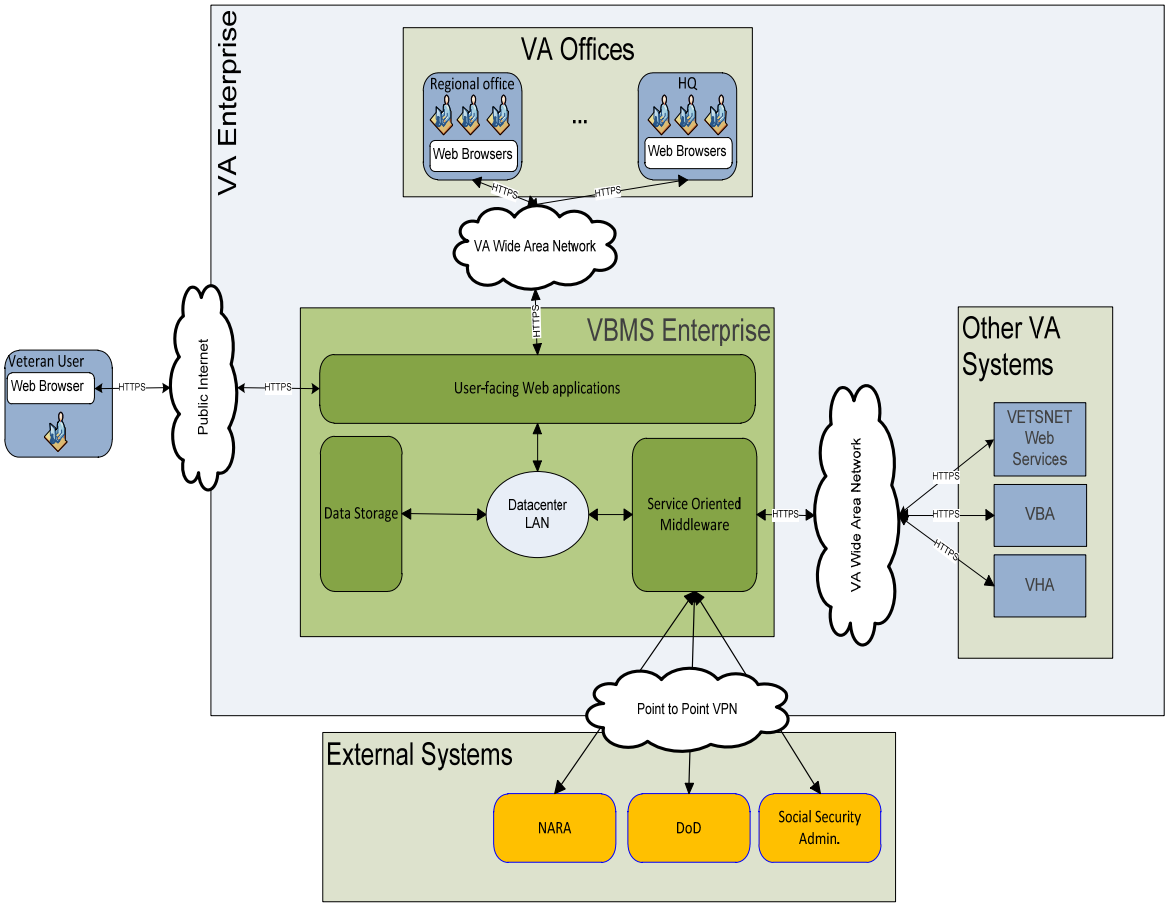
In 2015, future VBMS releases plan to deliver increased system functionality, more complex automation capability, while reducing dependency on legacy systems for establishing, developing and rating claims. Moreover, VA expects VBMS to provide increased processing capability for over a million claims submitted each year and reduce the inventory claims backlog. Ultimately, VBMS will integrate with existing systems and programs such as Compensation, Pension, Education, Burial benefits and Loan Guaranty to provide improved automated claims processing and benefit payments.

Additionally, the development of VBMS awards functionality will allow VBA to process benefit claims electronically from receipt to payment. Ultimately, VA expects that stabilization of VBMS system capabilities, in conjunction with business process improvements, will significantly increase production and quality of claim decisions to enable end users to process all claims within 125 days at 98 percent accuracy.

VBMS is an IT system designed to help claims adjudicators reach timely and informed decisions in a digital environment. VBMS is a web-based, electronic claims processing solution complemented by improved business processes. VBMS will assist in eliminating the existing claims backlog and serve as the technology platform for quicker, more accurate claims processing.

According to VBMS planning documents, internal VBA users access VBMS capabilities from VAROs connected to the VA Wide Area Network. Veterans and other external users, utilizing self service capabilities, access VBMS through secured sessions over the public Internet. Systems external to the VA domain leverage point to point secure connections to exchange data with VBMS. Figure 1 provides an overview of the major VBMS components and connections with system users and external systems.

Figure 1. VBMS Visual Depiction.



Source: VBMS Architecture Composite Document

As depicted in Figure 1, VBMS exchanges data between multiple systems across multiple boundaries. Information exchange begins with a claim being submitted online by a veteran user or by a VARO user on behalf of a veteran.

A claim folder is created and submitted to external vendors for scanning into the VBMS system.

VBMS PMO Roles and Responsibilities

The VBMS PMO is accountable for overall program success. The PMO defines and integrates VBMS technical and business solutions; coordinates and directs the work of suppliers and partners to integrate VBMS components; and manages program-level dependencies, risks, and issues. The PMO generates awareness, involvement, and ownership within the stakeholder community by developing and implementing strategies for stakeholder outreach, communications, training, workforce readiness, and onsite support. VBMS Program Management and Technical Support team members have implemented Agile project management processes in support of the VBMS solution.

Appendix B Scope and Methodology

Scope

To conduct our review, we examined VA's program management of VBMS development. Specifically, our review evaluated VA's use of Agile software development of VBMS to achieve cost, performance, and schedule goals. We conducted fieldwork at the VBMS PMO in Washington, DC; VAROs located in Atlanta, GA; Houston, TX; Phoenix, AZ; and Wichita, KS; and contractor sites in the Washington, DC area and Charleston, SC. We performed work from February 2013 through March 2015. This review period was considered necessary to review the implementation actions of this major system development initiative.

Methodology

We reviewed relevant VBMS program documentation and software development practices for evidence of effective governance controls supporting VBMS development and implementation. We used applicable criteria to review the documentation and practices supporting the software development project. Additionally, inquiry, observation, re-performance testing, and analysis were utilized to evaluate software development practices and program oversight.

We developed our conclusions primarily through inquiry of VBA program officials, VBMS Project Management Office staff and contractors, and OI&T personnel to gather program management information and get their perspective about the progress and challenges of the program. We also observed business and workflow system development processes, and analyzed system development artifacts and test results. Specifically, we reviewed:

- System development life cycle documents, quality assurance reports, project performance metrics, post-implementation reports, and project milestone reviews to learn about software development processes.
- Functional requirements and test plans, scripts, and procedures to learn about quality control of VBMS software releases and data conversion activities.
- Help Desk complaints and reports to identify issues regarding the functionality of VBMS applications.
- Software testing procedures, test results, and release plans to identify change control issues and their impact on VBMS development and production.
- The network architecture and integrated master schedule to identify system dependencies and interconnections with VBMS.
- Corrective action plans and supporting documentation to identify improvements since previous evaluations of the VBMS program.

- Office of Management and Budget Exhibit 300 submissions, vendor contracts, and financial reports to learn about costs and budgets associated with the VBMS program.

Fraud Assessment

The review team assessed the risk that fraud, violations of legal and regulatory requirements, and abuse could occur during this review. We also solicited the OIG's Office of Investigations for fraud indicators. The review team exercised due diligence in staying alert to any fraud indicators. We did not identify any instances of fraud during this review.

Data Reliability

VBMS PMO staff provided summary information on VBMS schedule, cost, and performance that was reported to Congress, the Office of Management and Budget, and the public since September 2009. We relied on PMAS project information reported in their system and information gathered by OIG staff as it related to our VBMS review objectives. We relied on the summary data to support our findings and conclusions although VA was unable to provide supporting information for some of their summary cost data. While we did not perform specific testing procedures on the data, we analyzed the summary data for potential errors, inaccuracies, or inconsistencies based on our knowledge of the VBMS program. Accordingly, we determined the summary data provided was sufficiently reliable as related to the objectives of this follow-up review.

Government Standards

We conducted this review in accordance with the Councils of Inspector General on Integrity and Efficiency's Quality Standards for Inspection and Evaluation.

Appendix C Potential Monetary Benefits in Accordance With Inspector General Act Amendments

Recommendation	Explanation of Benefits	Better Use of Funds	Questioned Costs
4	Annual (FY 2015) money budgeted to support legacy systems	$27,000,000	$0
	Total	**$27,000,000**	**$0**

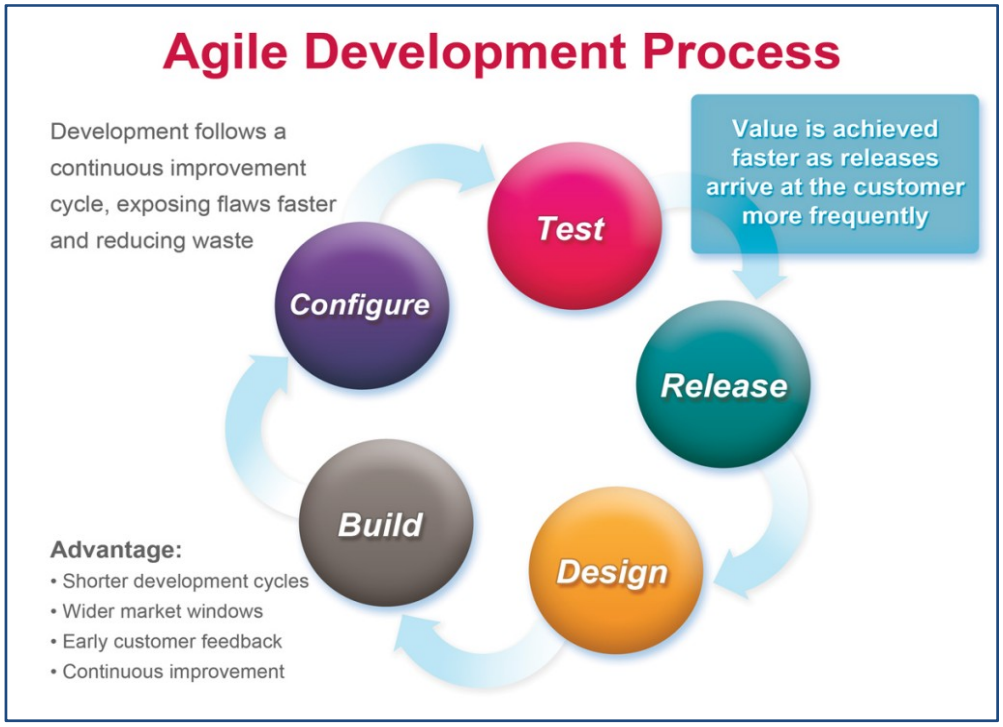
The FY 2015 *Department of Veterans Affairs, Volume II, Medical Programs and Information Technology Programs, Congressional Submission* includes a budget estimate of $27 million for legacy systems support. These legacy systems include the Veterans Service Network and the Benefits Delivery Network that are generally needed to process older paper claims not initiated in VBMS. These legacy systems require ongoing operations and maintenance funding apart from increasing VBMS development costs.

Appendix D Agile Development Process

Agile Overview

In accordance with the *Principles Behind the Agile Manifesto*, the name "Agile" reflects how the process allows for constant flexibility in engineering ever-changing customer requirements. Such flexibility in addressing project scope is expected to reduce the risk of the customer not receiving the intended product, compared to the former more rigid system development methods. Figure 2 provides a depiction of the Agile development process.

Figure 2. Depiction of The Agile Development Process



Source: New Horizons Computer Learning Center- Agile Project Management Graphic

The Agile process is expected to provide continuous and shorter development cycles with software releases deployed to the customer more quickly. Agile software development methods are iterative and incremental, with requirements and solutions evolving through collaboration among self-organizing, cross-functional teams. Following the *Principles Behind the Agile Manifesto*, Agile promotes adaptive planning, delivery of capability a little at a time, and rapid and flexible response to change. As such, Agile software development has allowed VA to quickly deploy VBMS functionality to the customer and incorporate frequent changes in project scope.

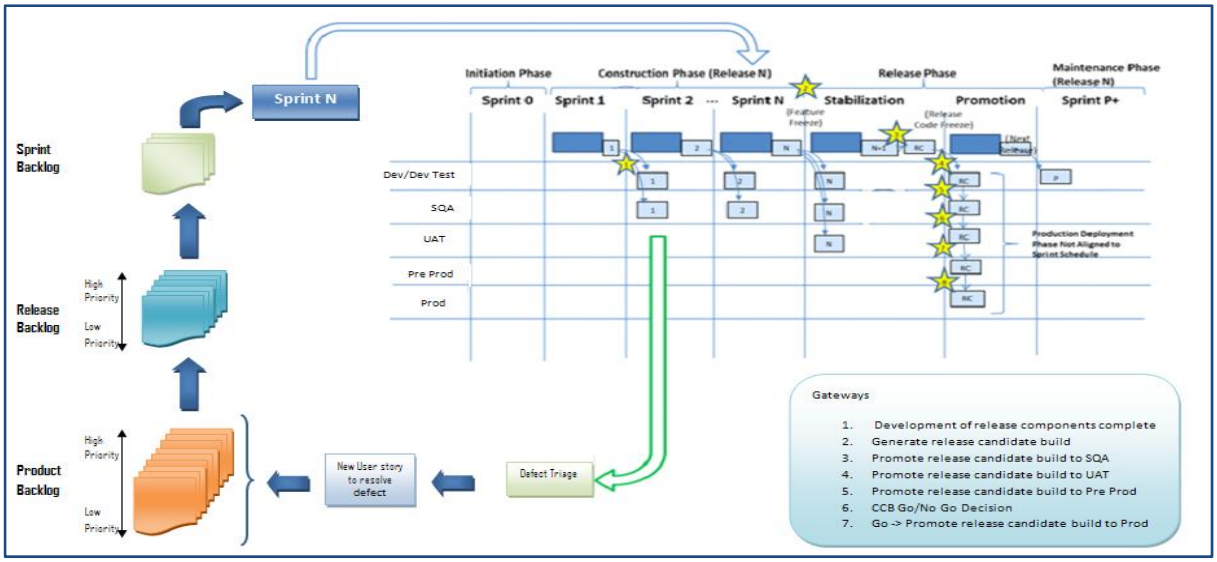
Agile and VBMS

In Agile software development, the duration of the project is fixed. The iterative software release dates are set by VBMS PMO based on coordination

with other software development initiatives and PMAS requirements. Given a set release date, the number of sprints and the amount of work that can be performed can be determined. This information is used to select the number of features that can be included in the next release.

At the start of the project, the product vision was broken down into user stories within the product backlog. For each software release, the highest priority stories are selected from the product backlog and moved to the release backlog. User stories are completed in order of priority, resulting in the highest possible business value being delivered within the fixed release schedule. Each release is initiated with a Release Planning meeting. Each Sprint is initiated with a Sprint Planning session. The Release Planning meeting sets boundaries for what needs to be included in the next sprint delivery. Figure 3 provides an overview of the 12-week VBMS Release Management cycle:

Figure 3. VBMS Release Management Cycle Depiction



Source: VBMS Release Management Plan

Appendix E The Executive in Charge for Information Technology (with Veterans Benefits Administration) Comments

Department of Veterans Affairs

Memorandum

Date: June 19, 2015

From: Executive in Charge and Chief Information Officer, Office of Information and Technology

Subj: OIG Draft Report, Follow-up Review of Veterans Benefits Management System (VBMS)

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

1. Thank you for the opportunity to review the subject draft Office of Inspector General report. The Office of Information and Technology in conjunction with the Veterans Benefits Administration (VBA) concurs with the findings in recommendations 2, 4, 5, 7, we partially concur or concur in principle with recommendations 6, 8-9; however, we non-concur with the findings in recommendations 1 and 3. We cannot fully concur with all recommendations because we believe the report fails to recognize that VA changed the mission and scope of VBMS based on the needs of the VBA transformation effort and the success of VBMS in both supporting that mission and its rapid delivery of new functionality via Agile and because data in the report related to system response times and availability is outdated.

2. VA is committed to its mission of ensuring timely delivery of benefits to Veterans, and VBMS is a critical component of meeting that mission. VA's success in deploying VBMS demonstrates that government can deliver large IT projects using iterative, agile methodology. VBMS is now in use by all claims processors at all VBA Regional Offices, and customer satisfaction and system reliability are both at peak levels after an initial transitional adjustment period. Because VBMS has proven so successful in helping claims processors in the delivery of benefits to Veterans, the Department decided to expand the scope of VBMS based on programmatic and business needs to ensure successful mission delivery. Cost and scope increases to VBMS occurred because VA understood the importance of expanding electronic capabilities for claims processors who serve Veterans, and not because of uncontrolled and unplanned IT development activities.

3. Please note that the Assistant Secretary for Information and Technology is not the lead for recommendations 6 and 8; VBA is the lead responsible office and prepared the responses to recommendations 6 and 8. We would also like to acknowledge that recommendation 9 will be accomplished in conjunction with VBA.

4. We appreciate your time and attention to our Veterans Benefit Management System. If you have any questions, contact me at 202-461-6910 or have a member of your staff contact Steve Schliesman, Assistant Deputy CIO, Project Management, at 732-440-9607 or Dawn Bontempo, Director, Veterans Benefits Management System, at 202-632-8656.

(original signed by:)

Stephen W. Warren

Attachment

Attachment

U.S. Department of Veteran Affairs
Office of Information and Technology (OI&T) &
Veterans Benefits Administration (VBA)
Joint Comments on OIG Draft Report:
"Follow-up Review of the Veterans Benefits Management System"

The following comments are submitted in response to the recommendations in the OIG draft report:

Recommendation 1: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, implement improved cost controls and stabilize Veterans Benefits Management System functionality requirements for the remainder of planned system development to restrict further cost increases.

OI&T and VBA Response: Non-Concur. VBMS scope and cost increases were planned as a direct result of programmatic and business decisions aligned with an agency priority goal to end the backlog through implementation of VBMS capabilities. The initial vision of VBMS was to provide an electronic document repository for storing scanned paper documents and to allow VBA employees to access claims information and evidence in an electronic format. VA purposely chose to develop VBMS using Agile methodology in order to accelerate its implementation and ensure flexibility to changing business requirements. The vision for VBMS expanded as VA has identified opportunities for improving the claims process electronically in alignment with transformation goals. Development of the project continued in support of evolving business requirements, and funding followed accordingly. VA has a robust prioritization process in which funding decisions are made based on mission outcomes. The VBMS cost-control plan is based on VBA business requirements and managed in alignment with project funding for each fiscal year. The VBMS OI&T team forecasts development capacity and manages cost based on VA strategic goals.

Recommendation 2: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, perform a formal budget versus cost analysis to identify actual costs expended in support of the Veterans Benefits Management System development effort.

OI&T and VBA Response: Concur. VBMS OI&T, in concert with the Information Technology Resource Management Office, maintains both the planned and actual costs expended in support of VBMS development. The initial VBMS investment submission was June 30, 2009. VBMS received Agency's Executive/Investment approval on June 10, 2010. VBMS development efforts were targeted to plateau and transition to operations and maintenance by FY14. However, a shift in VBA priorities resulted in an increase in LCC estimates to support the organizational adjustment in requirements. Both DME and O&M dollars saw an upward trend as a direct result of that analysis and re-baseline of functionality.

Table 2.1 depicts the planned versus actual costs expended to support VBMS Agile development. The Agile development methodology addresses changes in the system design and business requirements by allowing requirements and scope to change. The actual costs represented in Table 2.1 were not unplanned cost increases, but rather costs that resulted from business decisions made about functionality and capabilities necessary to transform how VA achieved an electronic claims processing solution and reduced the backlog. At the request of OIG, the VBMS PMO conducted a Reprioritization Impact Analysis that included a high level description of VBMS programmatic scope changes and a formal budget versus cost analysis to identify actual costs expended on VBMS. The Reprioritization Impact Analysis was delivered to OIG originally on January 12, 2014, and is attached with this response as evidence. Since the VBMS PMO has already conducted the formal budget versus cost analysis.

Target Completion Date: Evidence Attached – Recommend Closing

VBMS Planned vs. Actual Costs FY10 – FY15[5]
Table 2.1

	Planned ($M)				Actual ($M)				
Fiscal Year	VBMS DME	VBMS Marginal Sus	VBMS Mandatory Sus	Total Planned Costs	VBMS DME	VBMS Marginal Sus	VBMS Mandatory Sus	Total Actual Costs	Variance of Planned Vs Actual Cost
FY10	82.184		7.405	89.589	63.001		0.000	63.001	26.588
FY11	132.729	7.346		140.075	158.130	10.481	0.000	168.611	(28.536)
FY12	86.685		45.382	132.067	82.502	20.697	16.670	119.869	12.198
FY13	22.282	47.582	25.624	95.488	35.420	26.396	25.624	87.440	8.048
FY14	20.777	3.648	76.206	100.631	100.477	2.866	83.640	186.983	(86.352)
FY15	44.500	12.500	96.249	153.249	44.500	12.500	96.249	153.249	0.000
Totals	**389.157**	**71.076**	**250.866**	**711.099**	**484.030**	**72.940**	**222.183**	**779.153**	**(68.054)**

Recommendation 3: We recommended the Assistant Secretary for the Office of Information and Technology perform market analyses on all future Space and Naval Warfare Systems Command Atlantic task orders to determine whether the continued use of the interagency agreements is in the best interest of the Department.

OI&T and VBA Response: Non-Concur. This is already a standard practice, and has been since FY13. In preparation for each Part B, OI&T conducts market research and meets with VBMS program managers and leaders to discuss the VBMS development needs. OI&T documents the results of that research in a Market Research document, and then prepares a Business Case Memorandum which justifies the proposed acquisition approach. Based on the BCM, VA Office of Acquisition, Logistics, and Construction prepares a Determinations and Findings document which is approved in accordance with the Procurement Policy Memorandum 2013-06 Interagency Acquisition Guidance and Procedures Guidance. This occurs for each Part B issued under VA-SPAWAR IAA and has been a standard practice since FY13. The current OI&T market research activities conducted prior to implementation of each Part B is more than sufficient to determine whether the continued use of the SPAWAR IAA is in VA's best interest. Finally, note that the latest market research documents that industry vendors are now under direct contract with the VA to support the VBMS systems engineering and core application development efforts. Consequently, all SPAWAR Part Bs supporting VBMS development will conclude on September 30, 2016. An example of market research is attached with this submission.

SPAWAR has provided essential program management and systems development skills that were key to the success of the VBMS program. The SPAWAR team assisted VA with setting up the development and testing environments rapidly to meet VBMS requirements for incremental development and cycles. Most importantly, SPAWAR has served as the lead systems integrator and provided engineering competency that VA lacked when VBMS was launched. SPAWAR was the only organization VA identified that could simultaneously provide technology services related to the development, implementation, operations, and maintenance of VBMS. This combination of capabilities is known as federal integration and is a recognized industry best practice within IT application delivery. SPAWAR provided this federal integration capability to VA for VBMS before the Department was mature enough to do this function on its own. VA will continue to rely on SPAWAR to act as federal integrator for VBMS while VA stands up federal integrator capabilities in FY 2016. An SES has been recruited and is on staff establishing this key capability in OI&T.

[5] The Congressional programming line for VBMS includes VETSNET and Virtual VA. However, Table 2.2 includes development and maintenance costs for VBMS and associated web services in support of Benefits Transformation.

Target Completion Date: Evidence Attached – Recommend Closing

Recommendation 4: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, establish a clear strategy and plan to decommission legacy systems, eliminate redundant systems operations, and reduce system maintenance costs.

OI&T and VBA Response: Concur. VA will consider retiring legacy applications when the mission needs have changed, when a new system has taken on the capabilities of an old system, when system consolidation will improve Veteran service delivery, or when the system is no longer supported by a vendor. The age of the system is not a factor. The decision to execute the retirement will only occur if it offers a compelling return on investment. As VBMS continues to progress and evolve, development of VBMS functionality to encompass other areas of work may provide the opportunity to decommission legacy systems. Rating Board Automation (RBA 2000) is one of 11 applications included in the VETSNET suite and is used to conduct disability ratings and administer benefits to Veterans. As part of the VBA Transformation effort, VBA is replacing VETSNET with the new Veterans Benefit Management System. Specifically, RBA 2000 is to be subsumed by VBMS-Rating in FY15.

Target Completion Date: September 2015

Recommendation 5: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, fully develop and implement Veterans Benefits Management System electronic workflow and workload brokering functionality to facilitate more efficient claims processing.

OI&T and VBA Response: Concur. The National Work Queue (NWQ) is planned to be deployed to production pursuant to business priority and FY16 funding availability. NWQ capability has been developed and delivered, but given competing business priorities, the functionality will not be utilized until FY16. Currently, VA does not have an approved FY16 budget.

Target Completion Date: November 2015

Recommendation 6: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, provide adequate training with each Veterans Benefits Management System release to ensure VA Regional Office users fully benefit from the enhanced functionality provided.

VBA Response: Partially Concur. VBA manages all end-user training for VBMS and realizes that training can always be improved. Although the VBMS PMO has not had the benefit of reviewing the data or feedback from users referenced in the report, the PMO will continue to provide the training and resources users need to be successful while also engaging with them to understand where gaps may exist and identify best practices, and therefore partially concurs with this recommendation. The VBMS PMO is dedicated to providing the training and resources needed to support all end users and ensure the full benefits of enhanced functionalities are achieved. A comprehensive approach to train VBMS end-users is already in place that includes web-based training, instructor-led systems training, and a suite of materials and reference resources for end-users. This approach was successfully used to prepare superusers and end-users at all 56 regional offices during VBMS deployment. A train-the-trainer approach for superusers provides Delta (new functionality) training in advance of each system release to support end-users.

Given the Agile approach to VBMS development, training materials must be continually updated to align with major and minor system releases. The approach to the VBMS training program leverages the industry-standard Analysis-Design-Development-Implementation-Evaluation instructional design model, which is a systematic approach to training development. Superuser Delta trainings are held one week before every major release. New stakeholder superuser training is provided as new user communities

onboard with VBMS. The VBMS PMO determines training resource usage by analyzing metrics from both the Superuser Collaboration Site and VBMS intranet site. By analyzing these quantitative indicators of how often resources are accessed by end-users, the VBMS PMO is able to identify both training opportunities and gaps. The VBMS PMO is also able to effectively prioritize necessary updates and enhancements to existing training materials based on how often they are accessed.

As part of a field re-engagement strategy, the VBMS PMO traveled to six ROs from November 2014 to April 2015. These visits were implemented to reinforce training and resources for VBMS field users. Current VBMS training support materials found on the VBMS intranet include:

- Minute Videos: 55
- Job Aids: 49
- Toolkits: 3
- Other Resources:
- Fact Sheets & FAQs: 12
- Job Instruction Sheets (JISs): 20
- Release Information & User Guides: 10
- VBMS Connect Newsletters: 4

Target Completion Date: Upon receipt of OIG data and feedback from users, VBA will address training gaps within 90 days of receipt.

Recommendation 7: We recommended the Assistant Secretary for the Office of Information and Technology implement an improved Veterans Benefits Management System network infrastructure to mitigate single points of failure and reduce the network performance issues across the enterprise.

OI&T and VBA Response: Concur. Over the past 18 months, OI&T has already implemented improvements and made significant investments to increase the overall reliability of the infrastructure supporting VBMS as well as other systems supporting Veteran benefits. Table 7.1 lists some of the enterprise wide improvements implemented to mitigate singe points of failure and to improve network performance.

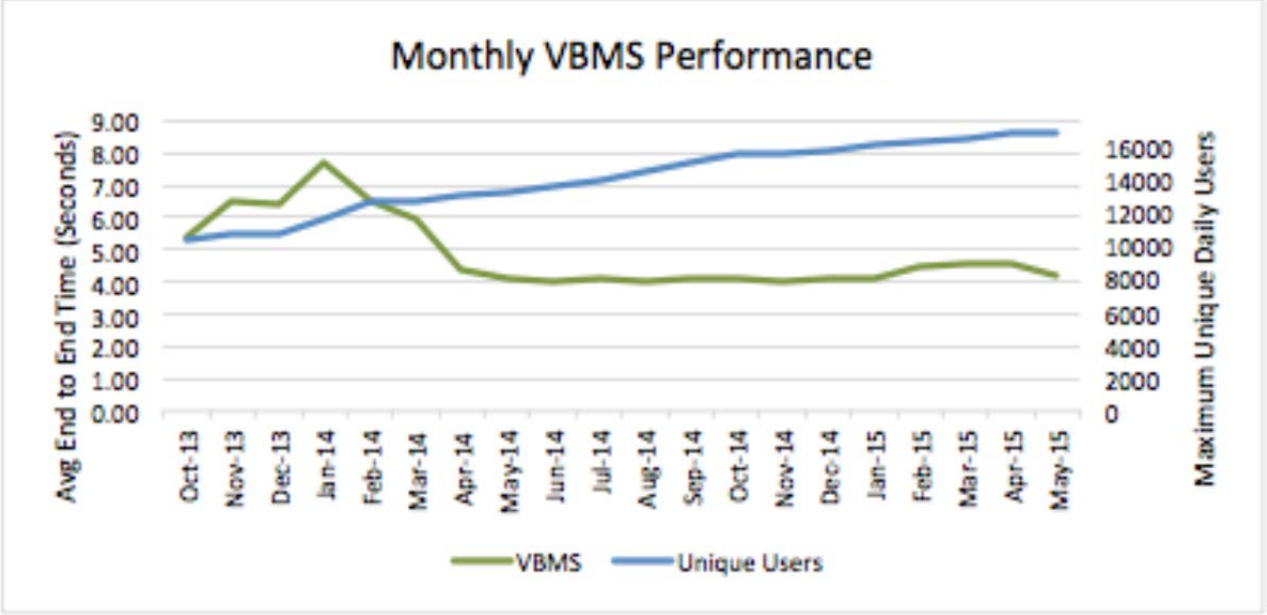
Table 7.1

Area	Description	Performance Improvement	Availability Improvement
F5 Load Balancer	Migrated to new Hardware version with higher capacity and faster SSL (Secure Socket Layer (security)) offload	✓	
Apache	Added new Apache nodes to increase capacity and improve redundancy	✓	✓
WebLogic	Added new WebLogic JVM's to increase capacity and improve redundancy in new Domain	✓	✓
Tuxedo	Added additional instances to increase capacity and minimize queuing	✓	✓
Oracle DB (vbaprod)	Moved to upgraded hardware	✓	
BIRLS Mainframe	Adjustments to settings that kill long running or	✓	

	hung queries to improve mainframe performance and availability; also applications other than VBMS which consume BIRLS resources have optimized some resource consuming queries.		
SiteMinder	Upgraded hardware and moved to newer version of Siteminder	✓	✓
Authentication	Provided text edits to remove prohibited password characters which caused authentication to hang	✓	

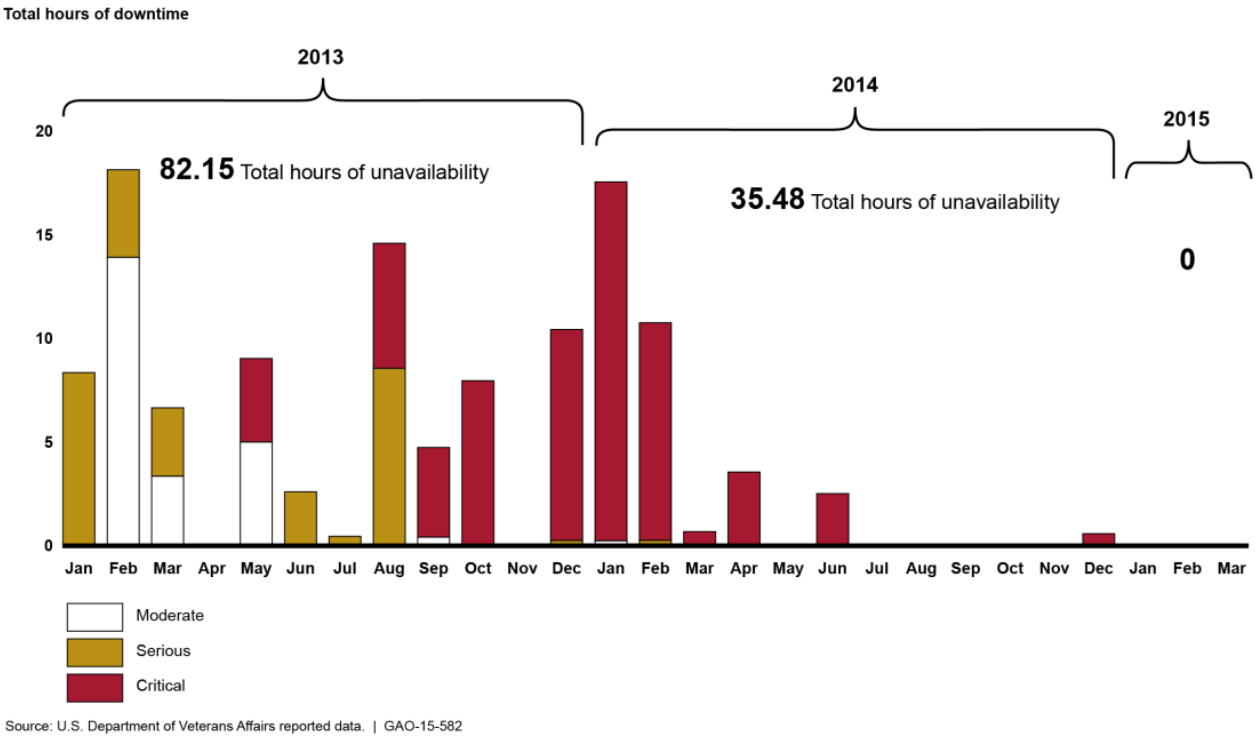
Based on system monitoring metrics that capture user end-to-end response times, a significant improvement in system performance can be seen over the past 18 months. Over the same course of time, the monthly maximum number of daily users increased 63% from 10,304 to 16,816, while average page end-to-end times decreased by 43% (Figure 7.1).

Figure 7.1



In addition, overall system availability has remained above 99.5% for the past 12 months in response to the enterprise-wide improvements detailed in Table 7.1. Figure 7.2 was produced as part of the recent GAO review of VBMS, and shows the hours of unplanned downtime from January 2013 to March 2015.

Figure 7.2



Some notable mentions in VBMS performance include:

- Over 29,000 VA users and stakeholders have access to VBMS.
- Record number of simultaneous unique end users (12,702) within one hour in VBMS on April 29, 2015
- Record number of daily unique end users (16,816) in VBMS on April 14, 2015

VBMS continues to implement periodic system performance monitoring and tuning improvements that are intended to optimize system performance and improve the end-user experience. These monitoring and tuning efforts have delivered important benefits during periods of high volume and high stress so users are not negatively impacted.

Target Completion Date: Evidence Enclosed (Table 7.1, Figures 7.1-7.2) – Recommend Closing

Recommendation 8: We recommended the Assistant Secretary for the Office of Information and Technology, in conjunction with the Under Secretary for Benefits, develop sufficient Veterans Benefits Management System performance metrics to demonstrate the system is improving VA's ability to efficiently process claims as compared to legacy practices.

VBA Response: Concur in Principle. VBMS is primary among several transformation initiatives designed to enhance the efficiency of the claims process. It is difficult to extract the impact of each transformation initiative from the combined people, process, and technology models that are being concurrently implemented to determine individual initiatives' contribution to productivity outcomes. VBA has experienced increased production through the integration of all of the transformation initiatives that have contributed to our current electronic processing environment. These gains are evident in the record 1.32 million disability rating claims completed last fiscal year, and even more evident in the increase in completed issues from 2.7 million in 2009 to 5.5 million in 2014. Since the start of transformation in 2011, production per FTE has increased 25 percent at the claim level; but more importantly, productivity per FTE has increased 67 percent at the medical issue level. This helped mitigate a 154 percent increase in

workload since 2007[6]. VBA metrics have demonstrated an improved ability to efficiently process claims as compared to legacy systems and practices.

Target Completion Date: Recommend Closing

Recommendation 9: We recommended the Assistant Secretary for the Office of Information Technology minimize the use of manual requirements tracking processes and maximize the use of automated application lifecycle management tools to manage requirements traceability in accordance with industry best practices.

OI&T and VBA Response: Partially Concur. The VBMS PMO utilizes IBM Rational Tools as the requirements, development, and testing tracking platform for the project. We recently added indicators in Rational Tools that tie defects to the major release that will resolve them. A screenshot of Rational Tools is provided with this response as evidence of this change. The VBMS PMO is also in the process of adding similar indicators that will tie business requirements to a major release once the release scope is baselined and approved as part of the change control process. We anticipate completing the implementation of this change by September 1, 2015. These improvements will result in more accurate traceability for each requirement and defect throughout the requirements, development, testing, and implementation lifecycle.

Target Completion Date: September 2015

[6] Source: *Summary of House Committee on Veterans' Affairs Hearing on U.S. Department of Veterans Affairs Budget Request for FY 2016 (February 11, 2015)*

Appendix F Office of Inspector General Contact and Staff Acknowledgments

OIG Contact	For more information about this report, please contact the Office of Inspector General at (202) 461-4720.
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