

VA Office of Inspector General

OFFICE OF AUDITS AND EVALUATIONS



Department of Veterans Affairs

*Review of
Alleged Waste of Funds
on a Cloud Brokerage
Service Contract*

January 31, 2017
15-02189-336

ACRONYMS

AITC	Austin Information Technology Center
COR	Contracting Officer Representative
IT	Information Technology
NIST	National Institute of Standards and Technology
OIG	Office of Inspector General
OI&T	Office of Information and Technology
PMAS	Project Management Accountability System
VA	Department of Veterans Affairs

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Highlights: Review of Alleged Waste of Funds on a VA Cloud Brokerage Service Contract

Why We Did This Review

In January 2015, the VA Office of Inspector General received an anonymous Hotline complaint alleging that the Office of Information and Technology (OI&T) spent over \$2 million on a cloud brokerage service contract that provided only limited brokerage functionality and that VA's actions did not ensure adequate system performance or return on investment.

What We Found

We substantiated that OI&T spent over \$2 million on a cloud brokerage service contract that provided limited brokerage functionality and that VA's actions did not ensure adequate system performance or return on investment. We determined total project costs exceeded \$5 million and the system's limited brokerage service functionality prevented it from being used in a production environment. This capability is essential for delivery of cloud services. The project manager did not ensure that formal testing and acceptance were conducted on project deliverables. Project management was not performed in accordance with established procedures and the Project Management Accountability System was not used to hold project managers accountable for meeting project goals.

These deficiencies occurred because of a lack of executive oversight and ineffective project management. Without enforcement of oversight controls, project leadership cannot ensure it will receive the value of contract deliverables or demonstrate an adequate return on investment for the project.

What We Recommended

We recommended that the Assistant Secretary for Information and Technology implement improved controls to ensure effective oversight of information technology projects and compliance with information technology project management procedures. Additionally, the Assistant Secretary should enforce the use of the Veteran-focused Integration Process on all software development projects and ensure all VA-developed software costs are funded with Information Technology Systems appropriations.

Agency Comments

The Executive Director for Quality, Performance, and Oversight Office of Information and Technology concurred with our findings and recommendations. We will follow up on the implementation of corrective actions.

A handwritten signature in blue ink that reads "Larry M. Reinkemeyer".

LARRY M. REINKEMEYER
Assistant Inspector General
for Audits and Evaluations

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INTRODUCTION

Allegation

In January 2015, the VA Office of Inspector General (OIG) received a Hotline allegation that VA Office of Information and Technology (OI&T) Service Delivery and Engineering's Enterprise Operations (Enterprise Operations) spent over \$2 million on a cloud brokerage service contract. The complainant alleged that the brokerage service provided only limited functionality and that VA's actions did not ensure adequate system performance or return on investment.

Cloud brokerage manages the use, performance, and delivery of cloud services and negotiates relationships between cloud providers and cloud consumers. We conducted this review to determine the merits of the allegation that OI&T spent over \$2 million on a project that provided limited functionality and did not provide an adequate return on the investment.

Cloud Service Project

The 3X Cloud Expansion/Production Environment (3X Cloud) project consisted of a task order issued by contractor Systems Made Simple on behalf of Enterprise Operations to Booz Allen Hamilton in September 2013. This acquisition was part of VA's Data Center Acquisitions Transformation Twenty-One Total Technology contract. The technology contract supports the transformation of VA's Information Technology (IT) programs with the goal of improving the quality of health care and benefits services for veterans and families.

The purpose of the 3X Cloud development was to obtain commercial assistance to implement a scalable cloud brokerage infrastructure that would meet National Institute of Standards and Technology's (NIST) characteristics for private cloud deployment. Simply defined, cloud computing is the delivery of on-demand computing resources over the Internet on a pay-for-use basis. NIST states that cloud computing is a model for enabling on-demand network access to a shared pool of computing resources that can be provisioned with minimal management effort or service provider interaction. Appendix C provides additional background information.

RESULTS AND RECOMMENDATIONS

Finding **VA's Cloud Brokerage Service Contract Provided Limited Functionality and Return on Investment**

In January 2015, the OIG received an anonymous Hotline allegation that Enterprise Operations spent over \$2 million on a cloud brokerage service contract that provided only limited brokerage functionality. According to the complainant, VA's actions did not ensure adequate system performance or return on investment.

What We Did

To address the above allegations, we interviewed Enterprise Operations project personnel and staff, VA contracting officials, and contractors. We also reviewed documentation including the contract, related invoices and vouchers, project deliverables, policies, and emails relevant to the project. We performed site visits at the Austin Information Technology Center (AITC) where the project was initiated and managed. We examined the information obtained and evaluated it relative to VA policies and procedures for IT project management.

What We Found

We substantiated the allegation that Enterprise Operations spent over \$2 million on a cloud brokerage service contract that provided limited brokerage functionality and that VA's actions did not ensure adequate system performance or an adequate return on investment. We identified that the total project costs exceeded \$5 million and that limited capability prevented it from being used in a production environment.

We found the VA project manager did not ensure that formal testing and acceptance were conducted on project deliverables as required by the contract. In addition, project management was not performed in accordance with established procedures, and the Project Management Accountability System (PMAS) was not used to hold project managers accountable for meeting schedule, cost, and performance goals on the project. These deficiencies occurred because of a lack of executive oversight and ineffective project management. Without enforcement of these oversight controls, OI&T could not ensure the value of contract deliverables or demonstrate an adequate return on investment for the project.

Cost Exceeded \$5 Million and Functionality Was Limited

We determined that the total 3X Cloud project costs exceeded \$5 million. Two 3X Cloud purchase orders were procured under the Data Center Acquisitions Transformation Twenty-One Total Technology contract. The first purchase order for \$2.6 million was to procure certain material items such as servers, software suites, software licenses, hardware, and software support. The second purchase order for \$2.8 million was to procure cloud front-end software implementation and management, vendor contractor travel, and software consulting and training credits.

The task order performance work statement identified minimum requirements for the cloud service broker software to include the:

- Ability of the end user to monitor performance of installed resources and services
- Automation of resource management workflow and orchestration tasks used to monitor and deploy resources
- Ability to manage multiple server images easily in order to save time

Despite the task order minimum requirements, the cloud brokerage solution's functionality was extremely limited. Specifically, OI&T subject matter experts noted that the product could not run on multiple servers in a production environment. This capability is essential for a cloud broker to effectively manage the use, performance, and delivery of cloud services and negotiate relationships between cloud providers and cloud consumers.

In January 2015, the 3X Cloud project manager prepared a Contract Performance Review in which he stated that the cloud broker technical solution was not currently supportable as an enterprise service and that an alternate path was being pursued. According to the project manager, the product selected had limited vendor implementation support and would require further development to successfully deliver the needed functionality and services.

*Formal Testing
and
Acceptance
Were Not
Performed*

VA did not ensure adequate system performance on contract deliverables. We noted the project manager did not ensure that formal testing and acceptance were conducted as required by the contract. Additionally, there was no documentation of VA's acceptance of all deliverables as required by AITC project management guidance. While the vendor delivered a contract-required Technical Implementation Plan and a User Acceptance Test Plan that identified test cases, steps to execute, and expected results, the plans were not formally used to evaluate whether the developed system met contract requirements. The project manager stated that he completed the acceptance criteria sheet but that he was not sure if he had provided it to anyone. Ultimately, the project manager could not provide any evidence of testing of contract deliverables or whether the product met minimum acceptable requirements.

We noted that a technical writer had conducted some ad hoc testing in order to develop a user guide for the cloud brokerage system. Due to the large volume of functionality issues found during testing, the technical writer created a tracking spreadsheet to report numerous system issues to the vendor and the 3X Cloud management team. However, there was no

evidence to show that system testing was formally performed in accordance with the contract or AITC Program Management guidance.¹

*Project
Management
Noncompliant
With Policy*

VA did not manage the project in accordance with AITC project management procedures, and this contributed to an inadequate return on investment. For example, we noted that the Project Management Review reporting did not include cost performance or schedule performance indices using Earned Value Management calculations as required by AITC Project Management guidance.² This guidance defines the high-level project management requirements that should be met by all AITC business units to ensure that IT investments will be carefully selected and managed. The goal of Earned Value Management is to effectively integrate the work scope of a program with the schedule and cost elements for optimum program planning and control. Without the use of Earned Value Management, the project's performance and schedule metrics did not reflect the true status of how well project goals were met in relation to planned schedules or milestones.

*PMAS Not
Used To
Manage Project
Development*

The project manager did not use PMAS to help ensure the 3X Cloud project delivered value on the contract. Although PMAS artifacts were created, the project manager stated that PMAS was not used to monitor the project. Enterprise Operations subject matter experts confirmed that PMAS was not used. We noted that the 3X Cloud performance work statement directed that deliverables would generate customer-facing functionality as required by PMAS. We also noted that vendor-provided Project Management Reviews, including the final one, stated that VA points of contact were scheduling PMAS reviews. Despite documentation indicating that PMAS reviews would be performed, there was no evidence to support that these reviews occurred.

PMAS is a disciplined approach to IT project development and delivery. PMAS has been VA's principal means of holding IT project managers accountable for meeting cost, schedule, and scope milestones. PMAS was designed to reduce project implementation risks, institute monitoring and controls, establish accountability, and create a reporting discipline. VA Directive 6071 stated that PMAS was mandated for all IT development projects, whether the project created new functionality or enhanced existing capabilities within VA's current systems or infrastructure, and whether funded by the IT Systems Appropriation or any other appropriation, and that was resourced at a value greater than \$250,000 for total life-cycle costs. In December 2015, the VA Assistant Secretary for Information and Technology approved the transition from PMAS to the Veteran-focused Integration Process.

¹ AITC Handbook 6020.01, Project Management

² AITC Handbook 6020.01; and AITC Directive 6020/3, Project Management

Why This Occurred

These deficiencies occurred because of a lack of executive oversight and ineffective project management. The Enterprise Infrastructure Support Director did not provide the oversight required by AITC policy for managing projects and investment portfolios. For example, the director did not ensure the creation of a project charter that established the purpose, participants, and direction for a project. Additionally, the director did not adequately monitor the performance of the 3X Cloud project manager. AITC project management guidance states that AITC executives or senior management are responsible for:

- Ensuring that required resources are made available to AITC project managers in a timely manner
- Ensuring personnel under their supervision and control are trained and competent to perform their assigned project tasks
- Monitoring the performance of AITC project managers assigned to their sponsored projects

The Enterprise Infrastructure Support Director also did not ensure that the project manager complied with direction from the primary contracting officer's representative (COR). For example, the program manager's alternate COR designation was revoked in November 2013. Subsequently, the primary COR directed the program manager to cease all contact with the prime contractor and its subcontractors. Despite these prohibitions, the program manager continued to direct and have regular communications with the contractor team lead.

Enterprise Operations funded 3X Cloud with VA Franchise Funds, not as an IT Appropriation Budget Operating Plan request, which requires PMAS oversight in accordance with the VA OI&T Financial Management and Internal Controls Guide.

VA Financial Policies and Procedures for the VA Franchise Fund allows purchases of IT equipment for internal use to not be included in the VA IT Systems Appropriation under Public Law 109-114. However, this same document clarifies that all VA-developed software costs are to be charged as IT Systems Appropriations. 3X Cloud was an IT and software development project. A key deliverable of the 3X Cloud project was the development of a cloud brokerage service solution. As a development project, 3X Cloud should have been funded as an IT Systems Appropriations and subject to PMAS oversight for IT development efforts as specified by VA Directive 6071 for PMAS.

What Resulted

Without enforcement of project management controls, project leadership could not ensure delivered value on the contract or demonstrate a good return on investment for the project. We noted that the 3X Cloud project manager in charge did not properly evaluate the work performed and thus could not

ensure delivered value on the contract. Ultimately, any potential benefit to veterans and taxpayers could not be realized. In light of established project management procedures, PMAS oversight requirements, and the seniority of the project leadership, there was no reasonable justification for the avoidance of established methods and controls.

The project manager stated that Enterprise Operations did not successfully implement a cloud brokerage solution in part because of limited vendor implementation support, limited project skillsets, and organizational resistance encountered. The project manager also explained that successful cloud computing implementation across the industry was complex, that the 3X Cloud project was consistent with overall industry results, and that the reason industry continued to invest in efforts like this was the potential return on investment. Despite these assertions, project leadership could not ensure delivered value and show adequate return on investment because they did not implement required project management controls.

Conclusion

We substantiated the allegation that OI&T spent over \$2 million on a cloud brokerage service contract that provided limited brokerage functionality and that VA's actions did not ensure adequate system performance or return on investment. To improve performance in this area, OI&T must implement more effective IT project management controls to help ensure software deliverables meet contract requirements and offer a good return on investment for significant IT projects. Without enforcement of these controls, project leadership cannot ensure delivered value or demonstrate a good return on IT investments.

Recommendations

1. We recommended the Assistant Secretary for Information and Technology implement improved controls to ensure the effective oversight of information technology projects and compliance with information technology project management procedures in order to ensure delivery of value.
2. We recommended the Assistant Secretary for Information and Technology enforce the use of the Project Management Accountability System or Veteran-focused Integration Process on all Office of Information and Technology software development projects to ensure that such efforts will provide an adequate return on investment.
3. We recommended the Assistant Secretary for Information and Technology establish oversight mechanisms to ensure all VA-developed software costs are funded with Information Technology Systems appropriations.

**Management
Comments
and OIG
Response**

The Executive Director for Quality, Performance, and Oversight – Office of Information and Technology concurred with our findings and recommendations and has requested closure of report recommendations. We will monitor the Office of Information and Technology’s implementation of corrective actions until all proposed actions are completed. Appendix C contains the full text of the Executive Director’s comments.

Appendix A Background

Cloud Computing Brokerage

The 3X Cloud Expansion/Production Environment (3X Cloud) project consisted of a task order issued by contractor Systems Made Simple on behalf of Enterprise Operations to Booz Allen Hamilton in September 2013. This acquisition was part of VA's Data Center Acquisitions Transformation Twenty-One Total Technology contract. The period of performance for the task order was from September 2013 through August 2014.

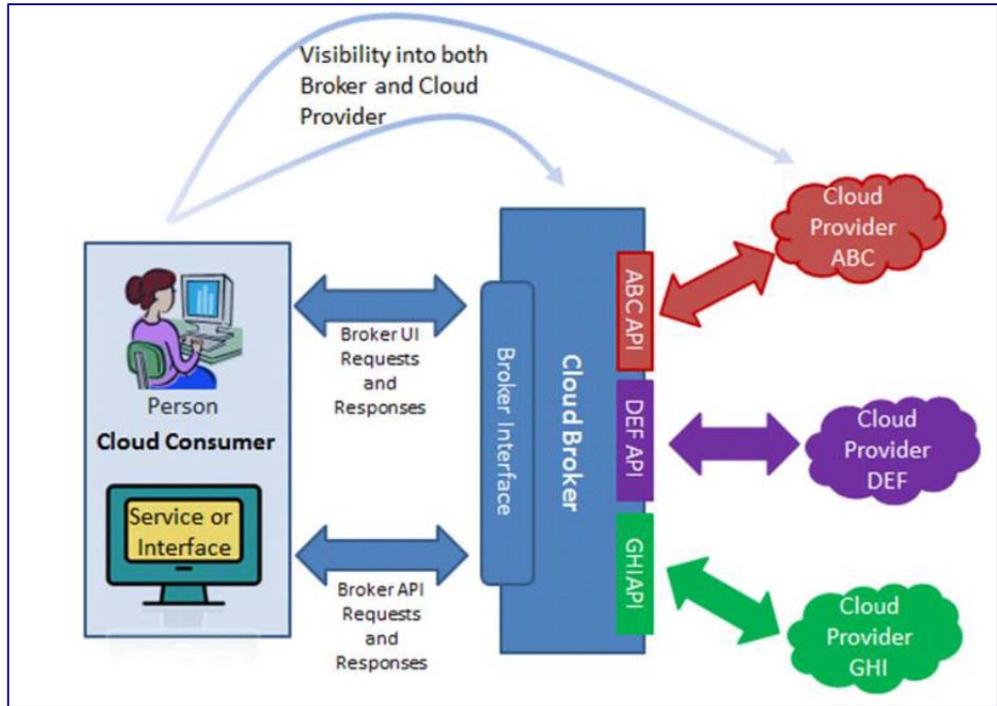
The purpose of the 3X Cloud development was to obtain commercial assistance to implement a scalable cloud brokerage infrastructure that would meet NIST characteristics for private cloud deployment. To this end, a key deliverable of the 3X Cloud project was the development of a cloud service brokerage solution. Simply defined, cloud computing is the delivery of on-demand computing resources over the Internet on a pay-for-use basis. In its *FY 2013-2015 Information Resources Management Strategic Plan*, VA recognized that emerging technology such as cloud computing could transform VA networks and be adopted where economically justified. VA's efforts were in line with the Office of Management and Budget's Fiscal Year 2013 PortfolioStat Guidance, which recognized that cloud computing could advance service delivery for a more scalable and transparent way to provide IT services.

In April 2015, OI&T leadership held a cloud computing "lockdown" to define an enterprise cloud strategy that aligned with leadership's vision, considered policy constraints, and delivered value to IT architecture design patterns. Additional factors concerning cloud brokerage services included agreeing to establish cloud brokerage functionality and the need to integrate cloud brokerage into existing OI&T governance processes. Risk mitigation strategies, such as cloud service pilot tests that support informed decision-making and iterative adoption of cloud computing services were also documented.

NIST defines a cloud broker as an entity that manages the use, performance, and delivery of cloud services and negotiates relationships between cloud providers and cloud consumers. According to NIST, as cloud computing evolves, the integration of cloud services can be too complex for cloud consumers to manage. A cloud consumer may request cloud services from a cloud broker, instead of contacting a cloud provider directly. A leading IT research and advisory company predicts that as cloud services are adopted, the ability to govern their use, performance, and delivery will be provided by cloud service brokerages. These brokerages will use several types of brokers and platforms to enhance service delivery, and, ultimately, service value.

The figure below shows a basic example of cloud brokerage. Depending upon the broker services rendered, the brokerage can be business oriented, technically oriented, or a combination of the two. Cross-provider business services might include service catalogue lookups, subscription handling, and customer relation management.

Figure: Cloud Broker Interactions



Source: NIST Special Publication 500-293, US Government Cloud Computing Technology Roadmap, Volume I.

UI = User Interface; API = Application Programming Interface

Appendix B Scope and Methodology

Scope and Methodology

We conducted this review from April 2015 through April 2016. We interviewed Enterprise Operations project personnel and staff, VA contracting officials, and contractors. We reviewed documentation such as the contract, related invoices and vouchers, project deliverables, policies, and emails relevant to the project. We performed site visits at the AITC where the project was initiated and managed. We examined the information obtained and evaluated it relative to VA policies and procedures for IT project management.

Government Standards

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

Appendix C Management Comments

Department of Veterans Affairs Memorandum

Date: June 8, 2016

From: Executive Director for Quality, Performance and Oversight (005X)

Subj: OIG Draft Report, "Review of Alleged Waste of Funds on Cloud Brokerage Service Contract"

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

Thank you for the opportunity to review the Office of Inspector General (OIG) draft report, "Review of Alleged Waste of Funds on Cloud Brokerage Service Contract". The Office of Information and Technology concurs with the OIG's findings and submits the attached written comments for recommendations 1-3. If you have any questions, contact me at 202-461-6910 or have a member of your staff contact Eddie Pool, Acting Executive Director Enterprise Operations, at 202-461-6223.

(original signed by:)

Martha K. Orr

Attachment

Attachment

**U.S. Department of Veteran Affairs
Office of Information and Technology (OI&T)
Comments on OIG Draft Report:
"Review of Alleged Waste of Funds on Cloud Brokerage Service Contract"**

OIG Recommendation 1: We recommended the Assistant Secretary for Information and Technology implement improved controls to ensure the effective oversight of information technology projects and compliance with information technology project management procedures in order to ensure delivery of value.

Comments: Concur. VA will continue to ensure staff is aligned and current policies are enforced as VA transitions to Veteran-focused Integration Process (VIP).

With VIP, VA has led to a more streamlined incremental approach to project management modeled after the Agile methodology. Elements of VIP also include a re-structuring of the organization into a portfolio management construct, which includes daily and weekly project oversight through Scrum meetings. Scrums allow for team self-management and facilitate the ability to build properly tested product increments within short iterations. Daily Scrum meetings and weekly "Scrum of Scrum" meetings are rigorous controls to ensure the effective oversight of information technology projects and compliance with information technology project management procedures.

VIP incorporates two critical decision review events during a project's lifecycle. At the first critical decision point, when project planning has been completed, the project is approved to start development work. Prior to the first critical decision point, the project is checked by both the program managers and Portfolio directors. Any impediments encountered in the project are elevated through Scrum meetings to facilitate resolution.

The second critical decision point confirms that the project team has developed and tested the product being delivered, and the project is ready for release to the VA network.

At both critical decision points, the Portfolio Director, receiving organization, and product owner are the decision-makers. VA is confident that through these multiple elements with the VIP Framework, it is continuing and strengthening oversight.

OI&T considers this recommendation complete and requests closure.

OIG Recommendation 2: We recommended the Assistant Secretary for Information and Technology enforce the use of the Project Management Accountability System or Veteran-focused Integration Process on all Office of Information and Technology software development projects to ensure that such efforts will provide an adequate return on investment.

Comments: Concur. In order to ensure an adequate return on investment, VA will continue to enforce VIP. The embedded VIP Guide [Section 1.2 Projects That Qualify for VIP] states "...if an effort touches VA's network, or spends money from VA's Congressional IT Appropriation, the VIP framework is mandated for that work."

OI&T considers this recommendation complete and requests closure.

OIG Recommendation 3: We recommended the Assistant Secretary for Information and Technology establish oversight mechanisms to ensure all VA-developed software costs are funded with Information Technology Systems Appropriations.

Comments: Concur. Fiscal oversight mechanisms are provided by the project management governance structure and processes established by OI&T's Enterprise Program Management Office (EPMO). VA has external reporting commitments which will be provided via the VIP Dashboard. The Monthly Office of Management and Budget (OMB) 300B submission (containing approximately 40 data elements per project activity) will be submitted monthly by the VA directly to the Federal IT Dashboard. OMB uses 300B to make both quantitative decisions about budgetary resources consistent with the Administration's program priorities and qualitative assessments about whether the agency's programming processes are consistent with OMB policy and guidance. OMB will be evaluating all elements of the budget submission and will communicate the results of these evaluations in the course of the budget process.

OI&T considers this recommendation complete and requests closure.

For accessibility, the format of the original memo has been modified to fit in this document.

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

Recommendations	Explanation of Benefits	Better Use of Funds	Questioned Costs
1 and 2	Amount that potentially could have been saved with proper project oversight	\$5.3 Million	\$0
		Total \$5.3 Million	\$0

Appendix E **OIG Contact and Staff Acknowledgments**

Contact	For more information about this report, please contact the Office of Inspector General at (202) 461-4720.
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Acknowledgments	Michael Bowman, Director Wade Greenwell Jack Henserling George Ibarra Ryan Nelson Richard Wright
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