



U.S. OFFICE OF PERSONNEL MANAGEMENT
OFFICE OF THE INSPECTOR GENERAL
OFFICE OF AUDITS

Final Audit Report

Subject:

AUDIT OF THE USAJOBS SYSTEM DEVELOPMENT LIFECYCLE FY 2012

Report No. 4A-HR-00-12-044

Date: September 28, 2012

--CAUTION--

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Audit Report

U.S. OFFICE OF PERSONNEL MANAGEMENT

AUDIT OF THE USAJOBS
SYSTEM DEVELOPMENT LIFECYCLE
FY 2012

WASHINGTON, D.C.

Report No. 4A-HR-00-12-044

9/28/12



Michael R. Esser
Assistant Inspector General
for Audits

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Executive Summary

U.S. OFFICE OF PERSONNEL MANAGEMENT

AUDIT OF THE USAJOBS
SYSTEM DEVELOPMENT LIFECYCLE
FY 2012

WASHINGTON, D.C.

Report No. 4A-HR-00-12-044

Date: 9/28/12

The objectives of this audit were to assess the system development lifecycle (SDLC) methodology of USAJOBS and to determine if any lessons learned from the USAJOBS 3.0 deployment could be applied to future system implementation projects at the U.S. Office of Personnel Management (OPM). OPM has been historically plagued with failed and troubled system implementation projects, and we believe that weak SDLC practices have played a major role in this.

Our audit evaluated SDLC elements such as requirements gathering, infrastructure change management, application change management, and testing. We looked at both the controls that were in place at the time of system deployment in October 2011, and also the controls that have been implemented and improved in the nine months since deployment.

Although our audit revealed some specific weaknesses in the original USAJOBS SDLC and some recommendations to improve current procedures, we believe that the overall methodology has improved significantly and that the system is operating with a stable change management process.

Our primary concern relates to the fact that the entire USAJOBS SDLC methodology was developed independent of any agency-wide requirements or guidance – because no current guidance exists at OPM. Although OPM’s internal website contains policies and procedures related to SDLC, many of these documents have not been updated in over 10 years, and they are not routinely used to manage current development projects.

After reviewing our draft audit report, the Office of the Chief Information Officer (OCIO) notified us of recent and ongoing efforts to create a current SDLC policy. While we acknowledge that creating a policy is a significant first step in implementing a centralized SDLC methodology at OPM, the policy will need additional updating in order to address the specific deficiencies identified in this report. In addition, policy alone will not improve the historically weak SDLC management capabilities of OPM.

We recommend that the OCIO establish an SDLC review process in which the OCIO must review and formally approve SDLC work at various milestones for all OPM system implementation projects. All of our audit recommendations related to a centralized SDLC program at OPM should remain open until this process has been fully implemented and evidence can be produced to indicate that the new policies are actively enforced.

In addition to our concerns about OPM's overall SDLC management, this audit discovered the following controls in place and opportunities for improvement specific to the USAJOBS system:

- We reviewed system requirements of USAJOBS and determined that they were well documented and organized. Nothing came to our attention to indicate that there were any deficiencies in the OCIO’s requirements gathering methodology for USAJOBS.
- The OCIO generally has good controls related to infrastructure change management. However, we were unable to independently verify that all infrastructure changes were formally approved. We also determined that the OCIO has not yet implemented a process to routinely audit the actual configuration of its servers to ensure that they are compliant with the approved baseline.
- The OCIO has implemented a thorough change management process to facilitate changes to the USAJOBS application. However, we noticed an inconsistency in the way change requests were approved and recommend that the OCIO develop a policy that outlines what individuals can make formal approvals at various stages in the USAJOBS application change management process.
- Prior to its deployment, USAJOBS 3.0 was subject to rigorous testing from a variety of sources. However, the test environment available in the weeks prior to deployment did not have the full set of data that would be loaded to the production environment. OPM experienced great difficulty in cleanly transferring the data from the old Monster Government Solutions (MGS) system to the new USAJOBS 3.0. These difficulties were driven by the weak contract language that did not require MGS to provide OPM with the system details that would facilitate a more graceful transition of data.

- Most of the issues experienced in the first week after the deployment of USAJOBS 3.0 were related to an unprecedented number of users stressing the system's resources. The OCIO provided us with evidence indicating that they did perform a variety of stress tests on USAJOBS prior to launch. However, the system was unable to handle the unprecedented number of users that attempted to access the system once it went live. We believe that the OCIO should analyze and document the lessons learned from this experience and apply them toward future system development projects at OPM.
- The testing process for USAJOBS has consistently improved since the system's deployment and is now functioning adequately.

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Introduction and Background

USAJOBS is the federal government's official one-stop source for Federal jobs and employment information. The USAJOBS website provides public notice of Federal employment opportunities to Federal employees and United States citizens. USAJOBS is cooperatively owned by the federal Chief Human Capital Officer (CHCO) council.

In 2003, OPM contracted with Monster Government Services (MGS) to host and maintain the USAJOBS system. In 2010, the Office of Personnel Management (OPM) and the CHCO Council made the decision to not renew its contract with MGS and to bring USAJOBS in-house at OPM. One element of this decision was based on the fact that two separate security breaches at MGS led to the disclosure of sensitive USAJOBS data.

In October 2011, OPM launched USAJOBS 3.0. This new version of USAJOBS was developed by various members of the CHCO council with primary contributions from OPM, the Department of Homeland Security, and the Department of Defense. USAJOBS 3.0 is hosted at OPM's data center in Macon, Georgia and is maintained by two divisions of OPM's Office of the Chief Information Officer (OCIO): the application business owners – USAJOBS Program Office, and the development and technical infrastructure support team – Human Resources Tools and Technology (HRTT.)

When USAJOBS 3.0 was deployed, the system became flooded with an unprecedented number of users trying to access the public website. The system's communications lines did not have the bandwidth to manage the traffic and many users experienced a variety of errors that resulted from dropped network communications, or were unable to access the system altogether. These issues led to a public outcry from the media and by the general population via the USAJOBS social networking websites. Furthermore, the House of Representatives Committee on Oversight and Government Reform questioned the OPM Director about the agency's ability to manage large information system development projects.

Objectives

The objectives of this audit were to assess the SDLC methodology of USAJOBS and to determine if any lessons learned from the USAJOBS 3.0 deployment could be applied to future OPM system implementation projects. These objectives were met by reviewing the following elements of the USAJOBS project:

- Requirements Gathering;
- Infrastructure Change Management;
- Application Change Management; and,
- Testing.

Scope and Methodology

This performance audit was conducted by the Office of the Inspector General (OIG) in accordance with Government Auditing Standards, issued by the Comptroller General of the

United States. Accordingly, the audit included an evaluation of related policies and procedures, compliance tests, and other auditing procedures that we considered necessary. The audit documented the controls in place for USAJOBS as of July 2012.

We considered the USAJOBS internal control structure in planning our audit procedures. These procedures were mainly substantive in nature, although we did gain an understanding of management procedures and controls to the extent necessary to achieve our audit objectives.

Our audit evaluated SDLC elements such as requirements gathering, infrastructure change management, application change management, and testing. We looked at both the controls that were in place at the time of system deployment in October 2011, and also the controls that have been implemented and improved in the nine months since deployment.

In conducting the audit, we relied to varying degrees on computer-generated data. Due to time constraints, we did not verify the reliability of the data generated by the various information systems involved. However, nothing came to our attention during our audit testing utilizing the computer-generated data to cause us to doubt its reliability. We believe that the data was sufficient to achieve the audit objectives. Except as noted above, the audit was conducted in accordance with generally accepted government auditing standards issued by the Comptroller General of the United States.

Details of our audit findings and recommendations are located in the “Results” section of this report. Since our audit would not necessarily disclose all significant matters in the internal control structure, we do not express an opinion on the USAJOBS system of internal controls taken as a whole.

The audit was conducted from February through July 2012 in OPM’s Washington, D.C. headquarters building.

Compliance with Laws and Regulations

In conducting the audit, we performed tests to determine whether OPM’s management of USAJOBS is consistent with applicable standards. Nothing came to our attention during this review to indicate that OPM is in violation of relevant laws and regulations.

Results

The sections below provide a summary of our audit findings and recommendations related to the SDLC of USAJOBS and OPM's overall SDLC methodology.

A. SDLC Overview

We reviewed the USAJOBS SDLC to verify that the OCIO has implemented adequate controls to ensure that the system continues to operate smoothly and to prevent reoccurrences of the problems that occurred in the first few days after the system was deployed. OPM has been historically plagued with failed and troubled system implementation projects, and we believe that weak SDLC practices have played a major role in this.

Our audit evaluated SDLC elements such as requirements gathering, infrastructure change management, application change management, and testing. We looked at both the controls that were in place at the time of system deployment in October 2011, and also the controls that have been implemented and improved in the nine months since deployment.

Although the sections below detail some specific weaknesses in the original USAJOBS SDLC and some recommendations to improve current procedures, we believe that the overall methodology has improved significantly and that the system is operating with a stable change management process.

Our primary concern relates to the fact that the entire USAJOBS SDLC methodology was developed independent of any agency-wide requirements or guidance – because no current guidance exists at OPM. Although OPM's internal website contains policies and procedures related to SDLC, many of these documents have not been updated in over 10 years, and they are not routinely used to manage current development projects. System development at OPM has become a decentralized process managed by the individual program offices that own and operate information systems. Our audits of these various projects have revealed significant inconsistencies in the methodology and quality of SDLC management.

We believe that the OCIO needs to develop current policies and procedures that outline the minimum requirements of critical SDLC components. The OCIO should also take an active oversight role in all systems development projects in the agency, and establish a formal SDLC review team that must review SDLC work at various milestones or checkpoints and formally approve the project to move forward.

Recommendation 1

We recommend that the OCIO develop an agency-wide SDLC methodology with specific policies and procedures that must be followed for all system development projects at OPM. The policies and requirements should consider the various approaches to system implementation (build-from-scratch, commercial software, etc.) routinely used by OPM.

OCIO Response:

“The Office of CIO has updated the Information Technology Systems Manager (ITSM) standards to reflect an agency-wide system development life cycle (SDLC) methodology. The update is called ‘OPM System Development Life Cycle Policy and Standards.’ The policy document applies to all OPM programs with an IT component, regardless of funding type and amount. It is to be used in conjunction with ITSM templates and will replace other ITSM documentation and addresses various approaches to system implementation routinely used by OPM . . . This document has completed final reviews and is undergoing Web Team preparation to be published on the agency public website (www.opm.gov) in the near future. The templates, which are to be used with it, are currently located on THEO at <http://theo.opm.gov/itsm/Templ.asp>.”

OIG Reply:

We agree that the new OPM System Development Life Cycle Policy and Standards document is a significant first step in implementing a centralized SDLC methodology at OPM. However, the policy will need additional updating in order to address the specific deficiencies identified in this report. Additionally, policy alone will not improve the historically weak SDLC management capabilities of OPM. This recommendation should remain open until the SDLC review process (see Recommendation 2) has been fully implemented and evidence can be produced to indicate that the new policies are actively enforced.

Recommendation 2

We recommend that the OCIO establish an SDLC review process in which the OCIO must review and formally approve SDLC work at various milestones for all OPM system implementation projects. The minimum elements that the OIG believes should be incorporated into this review process are detailed in Recommendations 3, 7, and 8, below.

OCIO Response:

“We will review the new SDLC Policy and Standards document and the templates described above to identify appropriate responsibility for approval of SDLC work at various milestones.”

OIG Reply:

In addition to identifying appropriate personnel to approve SDLC work at various milestones, the OCIO should update the SDLC policy to provide details of these milestones and the requirements and deliverables for each.

B. Requirements Gathering

After the decision was made to in-source USAJOBS, OPM faced the task of documenting the functional requirements of the system. Due to weak language in the original contract with MGS, OPM did not have access to the source code, database schemas, data values, tables, etc., of the existing USAJOBS system operated by MGS. Therefore, engineers in the OCIO had to reverse-engineer the functional elements of the system to document its requirements.

Using the Agile system development lifecycle approach, the developers and the business owners worked together to develop specific functional requirements in the form of “user stories.”

We reviewed the original set of user stories and determined that the original requirements of USAJOBS appeared to be well documented. Nothing came to our attention to indicate that there were any deficiencies in the OCIO’s requirements gathering methodology for USAJOBS.

However, the methodology successfully used by the USAJOBS program office was implemented by the system’s developers and business owners and was independent of any agency-wide policy, procedures, or guidance. We have reviewed a variety of failed and troubled systems implementation projects at OPM and have often found that poor requirements gathering and documentation contributed to the failure.

Recommendation 3

As part of the recommended SDLC review process, we recommend that the OCIO develop a policy that provides guidance on requirements gathering for new information systems and outlines minimum documentation requirements.

OCIO Response:

“Please see the new SDLC Policy and Standards document, attached.”

OIG Reply:

We acknowledge the fact that the new SDLC Policy addresses requirements gathering. However, the policy should be updated to outline the requirements and deliverables related to this milestone in the SDLC process. This recommendation should remain open until the SDLC review process (see Recommendation 2) has been fully implemented and evidence can be produced to indicate that the new requirements gathering policies are actively enforced.

C. Infrastructure Configuration and Change Management

The OCIO generally has good controls related to infrastructure change management. However, we did note two opportunities for improvement in this area.

The OCIO maintains a detailed inventory of the computer hardware that supports the USAJOBS system infrastructure, and has developed a detailed baseline configuration that outlines a standard secure configuration for both application and web servers.

All changes to the approved configuration have been documented for all USAJOBS servers. However, we were unable to independently verify that all changes were formally approved. We selected a sample of USAJOBS infrastructure changes and asked the OCIO for evidence that these changes were approved. The OCIO’s response indicated that many of the changes were approved verbally or via informal e-mail. Although we have no reason to believe that these changes were not verbally approved, the OCIO should begin to formally document this communication so that there is an auditable trail of approval activity.

In addition, the OCIO has not yet implemented a process to routinely audit the actual configuration of its servers to ensure that they are compliant with the approved baseline. Routine configuration audits would alert the OCIO of any changes that were made outside of the standard change management process.

Recommendation 4

We recommend that the OCIO develop and implement a procedure to formally document approvals for USAJOBS infrastructure changes (changes made to server configurations).

OCIO Response:

“On July 30, the USAJOBS Configuration Management Plan was updated to outline formal approvals for USAJOBS infrastructure changes. Specifically, future changes to server configurations will be approved in writing by the Chief, Systems Capacity Branch (SCB), HRTT. The records of these approvals will be stored with the HRTT SCB.”

OIG Reply:

As part of the audit resolution process, we recommend that the OCIO provide OPM’s Internal Oversight and Compliance Office (IOC) with evidence that the Configuration Management Plan was updated and that the subsequent infrastructure changes were approved in writing.

Recommendation 5

We recommend that the OCIO develop and implement a procedure to routinely audit the actual configuration of the USAJOBS servers and compare the settings to the approved baseline configuration.

OCIO Response:

“A thorough annual review of the USAJOBS configuration is conducted by the USAJOBS Designated Security Officer (DSO) and the HRTT SCB as required by the HRTT Information Technology (IT) Security Standard Operating Procedure (SOP). The DSO also receives and reviews a monthly report of the servers, software versions, and configurations. The USAJOBS Configuration Management Plan has been updated to include this review activity for USAJOBS configuration changes and comparison with approved baseline configurations.”

OIG Reply:

As part of the audit resolution process, we recommend that the OCIO provide IOC with evidence that the Configuration Management Plan was updated and that a configuration audit has been conducted.

D. Application Change Management

The OCIO has implemented a thorough change management process to facilitate changes to the USAJOBS application. A software product, [REDACTED] is used to manage system requirements and the status of all changes to the application. [REDACTED] contains

the details of all existing features of the system and also a “backlog” of fixes and enhancements that are being developed for future releases.

Both the developers (HRTT) and the business owners (USAJOBS Program Office) have access to [REDACTED] and both use this product to facilitate real-time communication on the status of individual work items. [REDACTED] is also used to track the various approvals that are required throughout the application change process.

We selected a sample of application changes and viewed the history of these items within [REDACTED]. All changes in the sample were subject to formal approvals within [REDACTED]. However, we did notice an inconsistency in the way these items were approved. Some work items were approved by the business owners and others were approved by individuals that worked on the development staff. The OCIO explained that none of the developers that actually worked on coding a work item were involved in approving that change (which would be a conflict of interest). Although the OCIO’s explanations of these anomalies seems reasonable, there is no formal policy describing who can approve various types of application changes, and we were therefore unable to independently verify that these approvals were appropriate.

Recommendation 6

We recommend that the OCIO develop a policy that outlines which individuals can make formal approvals at various stages in the USAJOBS application change management process.

OCIO Response:

“While there was a standard operating procedure in place, it was not formally documented. On July 27, the USAJOBS Release Management SOP was updated to address the steps performed in [REDACTED] to track development work as it moves from one stage of the process through the next. It outlines which approvals are represented and who is required to perform the action.”

OIG Reply:

As part of the audit resolution process, we recommend that the OCIO provide IOC with evidence that the Release Management SOP was updated to address this recommendation.

E. Testing

We evaluated the OCIO’s methodology for testing USAJOBS prior to its deployment and also the testing process currently in place today.

Pre-deployment functionality testing

Prior to its deployment, USAJOBS 3.0 was subject to rigorous testing from a variety of sources. The OCIO maintains evidence that the system was tested by developers, business owners, users, and also by external vendors whose systems interface with USAJOBS.

All pre-deployment test plans had passed before the system went live. However, the test environment available in the weeks prior to deployment did not have the full set of data that

would be loaded to the production environment. OPM experienced great difficulty in cleanly transferring the data from the old MGS system to the new USAJOBS 3.0. These difficulties were driven by the weak contract language that did not require MGS to provide OPM with the system details that would facilitate a more graceful transition of data. Therefore, most of the pre-deployment testing occurred in a test environment that, while fully functional, did not have all of the data that would be present in production.

As a result, pre-deployment tests could not reveal all anomalies in the system. This was a particular problem for the testing of location codes (i.e., the search engine's ability to recognize abbreviations and alternate spellings of locations and provide accurate results). For example, test searches for Ft. Meade, MD and Fort Meade, Maryland may not produce consistent results because the limited test environment data didn't include any job postings from that area. The full set of clean data was not loaded to the system until just before the deployment date, and the OCIO did not have time to start the testing process over. Delaying the release of the system to conduct further testing would have cost OPM \$500,000 per month in contract extension fees with MGS.

Although no current audit recommendations can address the problems that occurred with USAJOBS, we believe that the OCIO should take steps to prevent testing related issues from occurring in future system development projects.

Recommendation 7

As part of the recommended SDLC checkpoint process, we recommend that the OCIO implement a policy that provides general guidance and minimum requirements for pre-deployment testing. The policy should also require all new systems to undergo testing in a fully functional test environment with a full set of data prior to system launch.

OCIO Response:

“See the new SDLC Policy and Standards document, attached. It addresses testing requirements. (See, for example, section 4.2.5 ‘Build System Components Phase’, p. 23, and Appendix D.4, p. 86 – 97. See also Appendix D.2, ‘Define System Requirements Phase Activities’, p. 66 – 78.) Such sections provide general guidance, including checklists of activities for testing. We will evaluate the new SDLC Policy and Standards document, and will consider other options as well, to determine the best approach for establishing minimum requirements for pre-deployment testing.”

OIG Reply:

We acknowledge the fact that the new SDLC Policy addresses system testing at a high level. However, the policy should be updated to outline the requirements and deliverables for testing-related milestones in the SDLC process. This recommendation should remain open until the SDLC review process (see Recommendation 2) has been fully implemented and evidence can be produced to indicate that the testing requirements are being actively enforced.

Pre-deployment stress testing

Most of the issues experienced in the first week after the deployment of USAJOBS 3.0 were related to an unprecedented number of users stressing the system's resources. The OCIO provided us with evidence indicating that they did perform a variety of stress tests on USAJOBS prior to launch. The system was able to successfully process a traffic load that simulated the busiest day on USAJOBS under the prior operator.

However, the system was unable to handle the unprecedented number of users that attempted to access the system once it went live. Although the servers and databases were not operating at capacity, the communications lines did not have the bandwidth necessary to manage the traffic. As a result, users experienced a variety of errors that resulted from dropped packets or were unable to access the system altogether.

Another issue that added stress to the system was the fact that every USAJOBS user was required to change their password upon first login to the new USAJOBS 3.0 system. This was a result of MGS not having to transfer existing password data to OPM (see reference to weak contract language in section A, above).

Within a week of the system's deployment, OPM contracted with a content delivery network solution provider whose services drastically reduced the stress on OPM's communication lines. USAJOBS is now operating at about 10-12% capacity on the communications lines.

The system is now stable and no current audit recommendation would be relevant to USAJOBS stress testing. However, in hindsight it is easy to recognize the variables that led to the unprecedented traffic that USAJOBS experienced (for example: the advertisement of a "new jobs site" in a weak economy, the fact that users were unable to access the system for almost a week prior to launch, and search engine spiders exploring and archiving the new website.) We believe that the OCIO should analyze and document the lessons learned from this experience and apply them toward future system development projects at OPM.

Recommendation 8

As part of the recommended SDLC checkpoint process, we recommend that the OCIO develop a policy that outlines the minimum requirements for stress testing of a new information system.

OCIO Response

"Please see the new SDLC Policy and Standards document, attached. As noted in response to Recommendation 7, above, it addresses testing requirements, and provides general guidance and checklists of activities for testing. We will evaluate the new SDLC Policy and Standards document, and will consider other options as well, to determine the best approach for establishing minimum requirements for stress testing of new information systems."

OIG Reply:

We acknowledge the fact that the new SDLC Policy addresses system testing at a high level. However, the policy should be updated to outline the requirements and deliverables for testing-related milestones in the SDLC process. This recommendation should remain open until the SDLC review process (see Recommendation 2) has been fully implemented and evidence can be produced to indicate that the testing requirements are being actively enforced.

Current testing process

We evaluated the OCIO's procedures for testing post-deployment changes to USAJOBS by reviewing testing documentation for all modifications made to USAJOBS since its initial release. Although portions of the testing process were inconsistent and not well documented in the first months after the system's deployment, we believe that the testing methodology has consistently improved and is now functioning adequately.

All changes to the USAJOBS application are subject to testing from both the development (HRTT) and the business owner (USAJOBS program office) sides. Each side has its own unique testing methodology. The program office testing methodology has been consistent and well documented since the beginning of the USAJOBS 3.0 project, and we were able to review detailed test scripts and results for every change. However, the testing process for the HRTT developers has evolved since the initial release of USAJOBS 3.0.

While we have no reason to doubt that HRTT has tested all post-deployment changes to USAJOBS, the testing activity was poorly documented for early changes to the system. There are several changes where no testing-related documentation exists (testing activity was communicated verbally), and others where testing was documented via informal e-mails simply stating "the test passed." In addition, these early changes were not tested with formally documented test scripts.

HRTT has recently implemented a software package that helps it manage change testing activity. This software allows the developers to document a detailed test script complete with expected results. The system also allows the developers to mark items as "passed" once they have been successfully tested, thereby creating an auditable record of testing activity.

We reviewed the completed test plan for the latest release of updates to USAJOBS. Although we did not detect any anomalies in the recent testing documentation we believe that, since this process is relatively new, it should be subject to further monitoring to ensure that it is functioning appropriately. We also believe that the OCIO should formalize and document its now-stable testing methodology to ensure that all future changes are tested and documented consistently.

Recommendation 9

We recommend that the OCIO provide IOC with the developer test plans and documented results for the next two releases/updates of USAJOBS.

OCIO Response

“We will provide test documentation for Release 3.3 and 3.4 upon completion of 3.4 and deployment by August 31, 2012.”

Recommendation 10

We recommend that the OCIO develop a testing policy for USAJOBS that outlines all of the elements that need to be documented for all testing activity (test plans, test scripts, results, etc.)

OCIO Response

“The USAJOBS Program Office drafted this policy for the program in February 2012, however, it was never completed. The USAJOBS Program Office and HRTT will jointly work together to update our Testing Plan to specifically outline testing artifacts, activities, and the location of these records for audit purposes. We estimate that we can complete this activity by December 31, 2012.”

Major Contributors to this Report

This audit report was prepared by the U.S. Office of Personnel Management, Office of Inspector General, Information Systems Audits Group. The following individuals participated in the audit and the preparation of this report:

- [REDACTED], Group Chief
- [REDACTED], Senior Team Leader

Appendix



UNITED STATES OFFICE OF PERSONNEL MANAGEMENT
Washington, DC 20415

Chief Information
Officer

MEMORANDUM FOR [REDACTED]

CHIEF
INFORMATION SYSTEMS AUDITS GROUP

FROM:

MATTHEW E. PERRY
CHIEF INFORMATION OFFICER

Matthew E. Perry
02/07/2012

Subject:

Response to the Draft Report:
Audit of the System Development Lifecycle of the U.S. Office of
Personnel Management's USAJOBS System (Report No. 4A-HR-00-
12-044)

The Office of Personnel Management (OPM) USAJOBS Program Office and the Human Resource Tools and Technology (HRTT) division acknowledge and appreciate the work of the Office of the Inspector General (OIG) to evaluate the software development lifecycle procedures of the USAJOBS information system. This memo serves as office response to the draft report content.

SDLC Overview

Recommendation 1 states, "We recommend that the OCIO develop an agency-wide SDLC methodology with specific policies and procedures that must be followed for all system development projects at OPM."

Chief Information Officer (CIO) Response: The Office of CIO has updated the Information Technology Systems Manager (ITSM) standards to reflect an agency-wide system development life cycle (SDLC) methodology. The update is called "OPM System Development Life Cycle Policy and Standards." The policy document applies to all OPM programs with an IT component, regardless of funding type and amount. It is to be used in conjunction with ITSM templates and will replace other ITSM documentation and addresses various approaches to system implementation routinely used by OPM. (See the attached OPM system Development Life Cycle Policy and Standards, section 1.2, p. 5.) This document has completed final reviews and is undergoing Web Team preparation to be published on the agency public website (www.opm.gov) in the near future. The templates, which are to be used with it, are currently located on THEOR at <http://theo.opm.gov/itsm/Templ.asp>.

Recommendation 2 states, "We recommend that the OCIO establish an SDLC review process in which the OCIO must review and formally approve SDLC work at various milestones for all OPM system implementation projects."

CIO Response: The new SDLC Policy and Standards document, mentioned above, describes phases and methods and identifies responsibility for approval of many SDLC products. (Unlike the ITSM, which did not address Agile process, the new SDLC Policy and Standards document requires that for Agile (Scrum) methodology there be Stage Gate Reviews of monthly milestones so that performance can be determined. See Appendix F.6 of the new SDLC document.)

We will review the new SDLC Policy and Standards document and the templates described above to identify appropriate responsibility for approval of SDLC work at various milestones.

Recommendation 3 states, “As part of the recommended SDLC review process, we recommend that the OCIO develop a policy that provides guidance on requirements gathering for new information systems and outlines minimum documentation requirements.”

CIO Response: Please see the new SDLC Policy and Standards document, attached.

Infrastructure Configuration and Change Management

Recommendation 4 asked that the Office of the Chief Information Officer (OCIO) develop and implement a procedure to formally document approvals for USAJOBS infrastructure changes (changes made to server configurations).

CIO Response: On July 30, the USAJOBS Configuration Management Plan was updated to outline formal approvals for USAJOBS infrastructure changes. Specifically, future changes to server configurations will be approved in writing by the Chief, Systems Capacity Branch (SCB), HRTT. The records of these approvals will be stored with the HRTT SCB.

Recommendation 5 recommended that the OCIO develop and implement a procedure to routinely audit the actual configuration of the USAJOBS servers and compare the settings to the approved baseline configuration.

CIO Response: A thorough annual review of the USAJOBS configuration is conducted by the USAJOBS Designated Security Officer (DSO) and the HRTT SCB as required by the HRTT Information Technology (IT) Security Standard Operating Procedure (SOP). The DSO also receives and reviews a monthly report of the servers, software versions, and configurations. The USAJOBS Configuration Management Plan has been updated to include this review activity for USAJOBS configuration changes and comparison with approved baseline configurations.

Application Change Management

Recommendation 6 recommended that the OCIO develop a policy that outlines what individuals can make formal approvals at various stages in the USAJOBS application change management process.

CIO Response: While there was a standard operating procedure in place, it was not formally documented. On July 27, the USAJOBS Release Management SOP was updated to address the steps performed in [REDACTED] to track development work as it moves from one stage of the process through the next. It outlines which approvals are represented and who is required to perform the action.

Testing

Recommendation 7 states, “As part of the recommended SDLC checkpoint process, we recommend that the OCIO implement a policy that provides general guidance and minimum requirements for pre-deployment testing. The policy should also require all new systems to undergo testing in a fully functional test environment with a full set of data prior to system launch.”

CIO Response: See the new SDLC Policy and Standards document, attached. It addresses testing requirements. (See, for example, section 4.2.5 “Build System Components Phase”, p. 23, and Appendix D.4, p. 86 – 97. See also Appendix D.2, “Define System Requirements Phase Activities”, p. 66 – 78.) Such sections provide general guidance, including checklists of activities for testing. We will evaluate the new SDLC Policy and Standards document, and will consider other options as well, to determine the best approach for establishing minimum requirements for pre-deployment testing.

Recommendation 8 states, “As part of the SDLC checkpoint process, we recommend that the OCIO develop a policy that outlines the minimum requirements for stress testing of a new information system.”

CIO Response: Please see the new SDLC Policy and Standards document, attached. As noted in response to Recommendation 7, above, it addresses testing requirements, and provides general guidance and checklists of activities for testing. We will evaluate the new SDLC Policy and Standards document, and will consider other options as well, to determine the best approach for establishing minimum requirements for stress testing of new information systems.

Recommendation 9 asked the OCIO provide IOC with the developer test plans and documented results for the next two releases/updates of USAJOBS.

CIO Response: We will provide test documentation for Release 3.3 and 3.4 upon completion of 3.4 and deployment by August 31, 2012.

Recommendation 10 recommended that the OCIO develop a testing policy for USAJOBS that outlines all of the elements that need to be documented for all testing activity (test plans, test scripts, results, etc).

CIO Response: The USAJOBS Program Office drafted this policy for the program in February 2012, however, it was never completed. The USAJOBS Program Office and HRTT will jointly work together to update our Testing Plan to specifically outline testing artifacts, activities, and the location of these records for audit purposes. We estimate that we can complete this activity by December 31, 2012.

If you would like more information about the new OPM System Development Life Cycle Policy and Standards document, please contact [REDACTED], Chief, IT Investment Management at [REDACTED] or [REDACTED].

We appreciate continued support of the USAJOBS program and the CIO SDLC initiatives.

Attachment

- OPM System Development Life Cycle Policy and Standards, v. 1.0, June 2012

cc:

[REDACTED]

Director, Integrated Hiring Systems
Office of the Chief Information Officer

[REDACTED]

Chief, IT Investment Management
Office of the Chief Information Officer

[REDACTED]

Chief, Information Security and Privacy
Office of the Chief Information Officer

[REDACTED]

Director
Internal Oversight and Compliance