Audit of the NARANet Server Upgrade Project

OIG Audit Report No. 11-06

November 30, 2010

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Executive Summary

The National Archives and Records Administration (NARA) Office of Inspector General (OIG) completed an audit of the NARANet Server Upgrade (NSU) Project. The purpose of this project was to upgrade the server hardware and software infrastructures of the current NARANet system installed across NARA. This upgrade was necessary because the current system was at risk of failure due to outdated hardware and unsupported software. The current system is based on a Novell environment, which includes platforms and software for Novell NetWare[1], GroupWise[2], eDirectory, and ZenWorks. During this audit, we assessed whether the project was developed in accordance with NARA requirements and system development was adequately managed and monitored to ensure requirements were met in the most economical and efficient manner. Additionally, the audit focused on the decision to upgrade to the latest versions of the Novell products.

The future of the Novell Corporation and its products has long been debated. Its market share for network operating systems has been declining since the mid-1990's. Recently, the company has been under pressure from what has been reported as an unsolicited and unwelcomed buyout bid. The bid was turned down; however, based on trade articles, questions remain about the future of Novell's current suite of products, including the SUSE Linux platform, the target environment for the NSU Project. The transition to this environment for NARA will only stabilize its information technology (IT) environment and may not meet NARA's need for a flexible, robust, and scaleable infrastructure system. Given the evolving nature of IT, another transition may be necessary resulting in the expenditure of additional resources to better stabilize NARA's IT infrastructure.

Our review found that this project was not adequately managed and monitored to ensure requirements were met in the most economic and efficient manner. Specifically, we found that while the project development met most of NARA requirements for a Technology Refresh Investment, planning was not adequate and critical stakeholders were not included in the decision to continue with Novell. Further, a comprehensive analysis of alternatives was not completed for this project. Specifically, other platforms, which could have improved productivity and increased efficiencies, were not fully considered during the planning of this project. Finally, monthly status reports, used by management to monitor the project, did not accurately reflect the full cost and risks of the project.

[1] NetWare is a network operating system developed by Novell. NetWare (version 6.5) handles NARA's file services, print services, software distribution, and desktop integration and management.

[2] GroupWise is a messaging and collaborative software that supports email and calendaring personal information management. GroupWise provides NARA's email post office management and email access services.

By not placing a dollar limit on projects classified as Technology Refresh Investments, NARA policy created a loophole for projects such as the NSU Project. Many critical requirements, including adequate planning, involvement of key stakeholders, in-depth cost benefit analysis, and analysis of alternatives, were not required for the NSU Project since it was classified as a Technology Refresh. Therefore, despite the widely known fact that NetWare's anticipated lifespan was in flux, NH officials did not consider it a priority to keep the NARANet infrastructure up-to-date, and specific strategies and plans had not been developed for the future of the NARANet infrastructure.

As a result, the best alternative to maximize value or minimize risk may not have been chosen, and limited resources may have been wasted. Specifically, opportunities have been missed to switch to a new environment, which could improve efficiency, productivity, performance, and interoperability. By staying with Novell, NARA will continue to trail in its ability to communicate with core constituencies and fulfill its mission and additional resources will need to be expended to update NARA's environment. Had NARA considered an alternative environment or platform, such as Microsoft, only one upgrade or transition would have been necessary. Instead, NARA is upgrading its Novell environment with the possibility of needing to transition to another platform, resulting in the expenditure of additional funds. With adequate planning, NARA could have avoided this $2.9 million upgrade of Novell products.

Finally, unnecessary risks have been placed on NARA's IT infrastructure and alternative solutions are limited. Specifically, the hardware platforms being used to run the current Novell software are past the end of their useful lifecycle, thereby creating increased operational risk for hardware failures and consequent business services disruptions that such failures would entail. This unstable environment created by outdated hardware has limited NARA's ability to seek other alternatives, until the environment has been stabilized.

To mitigate these risks and prevent similar occurrences, we made seven recommendations to aid in the completion of the NSU Project and improve NARA's IT Investment Management Process.

Background

In 2005 and 2006, the OIG issued several audit products[3] related to the last Novell NetWare and GroupWise upgrades. These audit products highlighted significant concerns related to these upgrades. Specifically, in March 2005, the OIG found that the "go" decision to upgrade from Novell Netware 4.11 to 6.5 and GroupWise 5.5 to 6.5 was made without comprehensive adherence to the requirements of NARA Directive 801. The OIG also found that an inadequate Analysis of Alternatives was conducted for the Novell software upgrade project. In fact, NARA officials did not analyze the best alternatives available, and the analysis never disclosed the fact, widely known in the IT community, that Novell was experiencing dwindling support from third-party software developers, and was planning to phase out its proprietary Netware operating system.

Later, in August 2006, the OIG reported[4] that upgrading Novell Netware and GroupWise to version 6.5 was only an interim solution for upgrading NARA's computer network infrastructure of obsolete software products because Novell was phasing out its proprietary Netware operating system. The Novell/GroupWise solution, which was estimated to provide an additional two to four years of network stability, would allow NH management to plan for the migration to another operating system and e-mail platform. Thus, the OIG recommended that the Assistant Archivist for Information Services (NH)/Chief Information Officer (CIO) should immediately begin planning for the migration from Novell Netware to another type of operating system software, e.g., Microsoft or Linux. However, management did not concur with this recommendation, stating that NARA has identified no business need to immediately begin planning a migration from Novell Netware to another type of operating system.

Enacted in 1996, the Clinger-Cohen Act required the head of each agency to design and implement a process for maximizing the value, and assessing and managing the risks of IT acquisitions. In response to the Clinger-Cohen Act, NARA developed the NARA 801 Directive, *Capital Planning and Investment Control (CPIC).* The purpose of this directive was to establish NARA's review policy for IT investment management. The directive and the associated CPIC Guide defined the processes and activities necessary to manage NARA's CPIC Process, which should allow NARA to optimize the use of limited IT resources, address NARA's strategic needs, and comply with applicable laws and guidance.

[3] These included OIG Report No. 05-10, *Review of NARA's Information Technology Investment Management Decide Process Accomplished for the Novell Software Upgrade Project*; Advisory Report No. 06-14, *OIG Monitoring of the Novell Netware/GroupWise Upgrade Project;* Advisory Report No. 06-15 *OIG Monitoring of the Novell Netware/GroupWise Upgrade Project*; and OIG Report No. 06-09, *Review of NARA's Information Security Program*.

[4] OIG Report No. 06-09, *Review of NARA's Information Security Program*.

The Clinger-Cohen Act also assigned responsibility to the Chief Information Officer (CIO) for developing, maintaining, and facilitating the implementation of sound and integrated information technology architecture for the agency and promoting the effective and efficient design and operation of all major information resources management processes for the agency. Additionally, the CIO was assigned responsibility to advise the head of the agency regarding whether to continue, modify, or terminate a program or project.

Objectives, Scope, Methodology

The objective of this audit was to determine whether the NARANet Server Upgrade Project was developed in accordance with NARA requirements, and whether system development was adequately managed and monitored to ensure requirements were met in the most economical and efficient manner. Specifically, we sought to determine whether the project proposal, approval, and management were completed in accordance with NARA 801 requirements, and whether alternative products and solutions were fully considered.

To accomplish our objective, we examined applicable laws, regulations, and NARA guidance, including (a) the Clinger-Cohen Act of 1996; (b) NARA Directive 801, *Capital Planning and Investment Control (CPIC)*; and (c) Supplement to NARA Directive 801, *Capital Planning and Investment Control Guide*, dated November 2009. In addition, we reviewed prior audit reports related to the previous upgrade of the NARA network. We met with NH officials and other personnel involved with the NARANet Server Upgrade Project and reviewed documentation related to the project, including the Business Case, CIO Approval Memorandum, Project Plan, and Monthly Status Reports. Finally, we reviewed contracting documents for the services related to this project. These included the Statement of Work and the following documents prepared by the contractor, Capstone Corporation: Proposal for Work; Cost Proposal; and Bill of Materials.

Our audit work was performed at Archives II in College Park, MD between January and September 2010. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Audit Results

1. Intent of Clinger-Cohen Act Not Met

While the NARANet Server Upgrade (NSU) Project followed most of the requirements outlined in NARA 801 Directive, *Capital Planning and Investment Control (CPIC)*, it did not meet the intent of the Clinger-Cohen Act. The Clinger-Cohen Act requires agencies to design and implement a process for IT acquisitions that manages risk, informs senior management of progress, and facilitates the implementation of sound and integrated information technology architecture. The NSU Project was not subject to these requirements since it was classified as a Technology Refresh[5], which under NARA 801 is subject to less scrutiny. Also, despite the widely known fact that NetWare's anticipated lifespan was in flux, NH officials did not consider keeping the NARANet infrastructure up-to-date a priority, and specific strategies and plans had not been developed for the future of the NARANet infrastructure. As a result, unnecessary risks have been placed on the NARA's IT infrastructure.

The Clinger-Cohen Act requires the head of each agency to design and implement a process for maximizing the value of, and assessing and managing the risks of information technology acquisitions. This process should provide for the selection, management, and evaluation of such IT investments. Also, this process should provide the means for senior management of the agency to obtain timely information regarding the progress of the investment. The Act also requires the CIO to annually assess the achievement of requirements and performance goals established for information resources management, and develop strategies and specific plans to rectify any deficiency in meeting those requirements or goals.

In response to this Act, NARA developed the NARA 801 Directive, which established the review policy for IT investment management. This directive and the associated guide defined the processes and activities necessary to manage NARA's CPIC Process. This process is a structured approach to managing NARA's IT investments to ensure they support a business need and align with NARA's mission, strategic goals, and objectives. The CPIC Process also strives to minimize risks and maximize returns throughout the investment's life cycle by relying on a systematic selection, control, and continual evaluation processes to ensure that the investments' objectives are met efficiently and effectively. The process strives to define accountability, add value, be pragmatic, assess progress, and generate decisions. Finally, the CPIC Process should ensure that all NARA IT initiatives are properly planned, costed, reviewed, and approved by senior staff before significant funds are expended.

[5] According to NARA 801, Technology Refresh Investments consist of a hardware or software technology refresh that do not significantly change existing business processes.

We found that the NARANet Server Upgrade (NSU) Project[6] met the NARA 801 requirements for a Technology Refresh Investment, which under NARA 801 is subject to less review and scrutiny. Consequently, we found that planning for the project did not begin early enough and critical stakeholders were not included in the decision to go forward with the project. In other words, the project was not adequately planned and vetted prior to its approval. Consequently, it did not meet the intention of the Clinger-Cohen Act.

Despite the 2006 OIG recommendation to begin planning for the next upgrade, NARA management did not begin planning the upgrade until middle of 2009. Specifically, in a previous audit[7], the OIG recommended that the Assistant Archivist for Information Services (NH)/Chief Information Officer (CIO) immediately begin planning for the migration from Novell Netware to another type of operating system software, e.g., Microsoft or Linux. In their formal response, management did not concur with this recommendation, stating that NARA had not identified a business need to immediately begin planning a migration from Novell Netware to another type of operating system. However, in meetings with NARA officials and the former Archivist, there was agreement that upgrading the Novell operating system and electronic mail software to version 6.5 was only an interim solution, and that planning would begin immediately for the migration from Novell Netware to another type of operating system. Also, the need to start planning for a move to another operating system and e-mail platform was documented in the 2006 Netware/GroupWise Upgrade Product Plan; however, planning for the next upgrade was not started until 2009.

We also found that other stakeholders expressed concerns with the current environment; however, these stakeholders were not appropriately notified and involved in the development of the upgrade project. Specifically, in 2008 the Directors of the Presidential Libraries expressed concerns with the Novell/GroupWise system. One of their concerns was interoperability problems with their strategic partners. The Directors suggested an independent analysis of the Novell platform that objectively evaluated the positive and negative aspects of a conversion. In the former Archivist's response, he stated that planning would begin for the next major upgrade and they will look at the costs and benefits of Novell versus Microsoft, as well as any other options available in the marketplace. The former Archivist stated "these decisions will not be made in a vacuum and you will be consulted." Despite their concerns, critical stakeholders were not engaged in the planning for the next major upgrade until a decision had already been made to continue with Novell.

[6] The target environment for this upgrade project is to run the most recent release of Novell Open Enterprise Server [OES] version 2 on an open, industry standard Linux platform (SUSE Linux Enterprise Server 10) and to upgrade to the latest version of GroupWise.

[7] OIG Report No. 06-09, *Review of NARA's Information Security Program*, August 8, 2006.

Finally, a forward plan or an IT Roadmap[8] for the NARANet infrastructure was not established. Specifically, strategies and specific plans to improve NARA's IT infrastructure beyond this critical upgrade were not developed as part of the CIO's annual strategic planning. The need to upgrade NARA's IT infrastructure was included in NH's Strategic Plan. However, specific strategies or plans to stay on top of the evolving nature of technology were not included in the plan. The plan simply stated that NH plays a critical role in support of NARA's vision and mission and must adapt to changes in the current environment and prepare for the future. When asked about the future of NARA's IT infrastructure and whether or not platforms other than Novell will be considered, the Deputy CIO stated that NH was open to different options.

A forward plan for NARANet's infrastructure was not developed because NH officials did not consider on keeping NARANet up-to-date a priority. Despite the widely known fact that NetWare's anticipated lifespan has been in flux and Novell had been losing market share since the mid-1990s, NARA officials did not see a business need to migrate from Novell Netware to another type of operating system. Also, according to one NARA official, there has never been a balanced assessment of the relative costs of Novell versus Microsoft or other vendors at NARA.

Further, NARA's IT Investment Management Process allows for projects to be classified as a Technology Refresh. Classified as a Technology Refresh, the NSU Project was subject to less scrutiny and review. For instance, NARA 801 allows Technology Refresh projects to be approved by the Architect Review Board (ARB) via email and approval from the Information Technology Executive Committee (ITEC) is not required. Also, NARA 801 does not require the Archivist to review and approve Technology Refresh projects. IT governance, such as this, provides the framework for decision-making, transparency, and accountability, thereby ensuring IT initiatives meet the NARA's strategic and business objectives.

Additionally, specific strategies and plans were not developed to achieve or rectify IT deficiencies, such as the NARANet infrastructure. Instead, NH's Strategic Plan simply stated that NH must provide information products and services that meet their customers' requirements. Without specific details, it appeared that NARA lacked a true vision or strategy to develop and maintain the agency's IT infrastructure.

Consequently, unnecessary risks have been placed on the NARA's IT infrastructure. Specifically, the hardware platforms being used to run the current Novell software are past the end of their useful lifecycle, thereby creating increased operational risk for hardware failures and consequent business service disruptions that such failures would entail. New servers could be procured to mitigate the risk of hardware failures; however, new hardware platforms are incompatible with the outdated versions of NetWare and

[8] An IT Roadmap matches short-term and long-term goals with specific technology solutions to help meet those goals.

GroupWise currently in use across NARA. Further, the general support[9] for Novell NetWare 6.5, the current server operating system, was scheduled to end in March 2010. General support and extended support had already ended for GroupWise 6.5 (May 2007 and May 2009 respectively). Therefore, many NARANet servers have reached the end of support, causing a great operational risk to NARA's IT infrastructure.

According to a NARA official, the commitment to Novell keeps NARA from adopting the best software on the market because of compatibility issues or long periods of testing which often involve expensive patches and rework. The Novell/GroupWise system is not widely used in industry or government causing potential risks of interoperability problems with strategic partners. This conflicts with NARA's strategic goal to be attentive to customers' information technology requirements, and ensure that NARA's IT infrastructure is optimized to support those requirements. This also conflicts with NARA's goal to support an IT infrastructure that is flexible, robust, secure, and scaleable, and that serves NARA's customers, both internal and external.

Recommendation 1

We recommend the CIO continue to closely monitor the NARANet Server Upgrade project to ensure implementation deadlines are met and risks are minimized.

Management Response

Management concurred with recommendation.

Recommendation 2

We recommend the CIO develop an IT Roadmap or forward plan to include specific strategies and processes to regularly assess, upgrade, and maintain the NARANet infrastructure.

Management Response

Management concurred with recommendation.

[9] Novell's general support consists of installation and configuration support, enhancements requests, patched and fixed, and security updates.

2. Alternatives Not Fully Considered

Even though two alternatives were described in the NSU's Business Case[10], we found that a comprehensive analysis of alternatives was not completed for this project prior to its approval. This occurred because the project was classified as a Technology Refresh Investment, which was not required to complete an analysis of alternatives. As a result, NARA missed another opportunity to improve productivity and increase efficiencies by having a homogeneous server and desktop environment. NARA may also experience other limitations by staying with Novell, a system not widely used in industry or government.

As stated earlier, the Clinger-Cohen Act required the head of each agency to design and implement a process for maximizing the value and assessing and managing the risks of the information technology acquisitions. Specifically, this process should include criteria for prioritizing alterative information system investment projects. The process outlined in NARA 801 required projects classified as Medium[11] and Large[12] investments to complete a cost benefit analysis and alternatives analysis. This analysis should compare various costs associated with an investment with the benefits it proposes to return. Both tangible and intangible factors should be addressed and accounted for in this analysis. Also, NARA 801 stated technical considerations as well as financial feasibility should be used to select and eliminate alternatives. However, NARA 801 waived this in-depth analysis for projects classified as a Technology Refresh[13].

Even though two other alternatives were described in the project's Business Case, we found that a comprehensive analysis of alternatives was not completed for the NSU Project. Specifically, appropriate alternative products and solutions were not adequately and fully considered during the planning of this project and prior to its approval by the Assistant Archivist for Information Services/Chief Information Officer. Instead, a textual or theoretical analysis of alternatives was prepared without a comparison based on costs and quantifiable benefits.

[10] According to NARA 801, Business Cases are structured proposals that justify an investment for decision-makers. Business cases should at least include costs, description of business needs, strategic alignment, justification, risks, and assumptions.

[11] Medium IT Investments are classified as having Development Modernization and Enhancement (DME) costs between $1 and $10 million or annual Operations and Maintenance (O&M) costs between $500,000 and $1 million.

[12] Large IT Investments are classified as having costs of at least $10 million or annual O&M costs of at least $1 million. Also, Large Investments include financial management systems or investments that are deemed by the CIO to be mission-critical to NARA.

[13] The minimum dollar threshold for Technology Refresh Investments is $1 and there is no maximum dollar threshold.

As discussed in the NSU Business Case, three alternatives were reviewed for technical and operational feasibility. One alternative proposed upgrading Netware and eDirectory, but not upgrading the GroupWise software. However, this alternative was eliminated because of technical problems which would require duplicate servers at the field sites. The other alternative, which proposed migrating to Microsoft Active Directory and Microsoft Exchange, was eliminated because NARA alleged Microsoft could not provide migration tools necessary to prevent the loss of historical email records. Neither of these two alternatives appeared to be advantageous to NARA or an appropriate alternative to consider for this project.

When asked for supporting documentation of the analysis used to select the preferred alternative, none could be provided. NARA officials could not provide detailed support justifying the elimination of the two alternatives considered. Nor could support be provided for not considering a switch to other server platforms and products, such as Microsoft. In particular, we were interested in further support for NARA's claim there were no migration tools available to move from GroupWise to Microsoft Exchange. In our research, we found tools and vendors available to migrate organizations from Novell to Microsoft products. For example, a 2004 whitepaper published by Microsoft stated that Microsoft had created a straightforward plan for migrating Netware networks to Windows. The features, benefits, and case studies made a compelling case for existing Novell customers to consider switching to the Windows environment. Such benefits included increased productivity and reduced total cost of ownership.

After our request for supporting documentation of the analysis in the Business Case, NH tasked the contractor, SAIC, to document their decision and selection of the preferred alternative in an Information Brief or whitepaper. This whitepaper explained why NH decided to continue using Novell products for the NARANet Server Upgrade, and why it was decided not to migrate the agency's email to Microsoft Exchange. The whitepaper used two key sources to support the decision not to migrate to Microsoft Exchange: a whitepaper titled *Comparing the Cost of Email Systems*[14], and a meeting with NARA's technical account services manager at Microsoft. The supporting whitepaper was based on research conducted by Osterman Research, Inc, but was commissioned and sponsored by Novell. The meeting with NARA's Microsoft representative was informal and notes were not taken by the NARA attendees. Further, the purpose of this meeting was to obtain background material for a section in NH's Strategic Plan and not to obtain information to make an informed decision about alternatives for the NSU Project. Thus, NARA officials cannot provide independent, reliable documentation to support that they fully considered other alternatives or different platforms prior to approving and beginning the NSU Project.

By not requiring the analysis of alternatives requirements and not placing a dollar limit or threshold for Technology Refresh projects, NARA 801 created a loophole for projects such as the NSU Project to not complete an in-depth cost benefit analysis and alternatives

[14] For a copy of the whitepaper, see: http://www.novell.com/docrep/2009/05/Comparing%20the%20Cost%20of%20Email%20Systems_en.pdf

analysis. NARA 801 allows for the CIO to move an investment to a more appropriate threshold level based upon identified risks, impact and/or scope. However, this discretion was not exercised for the NSU Project. Given the size and impact of this investment, the NSU Project would have been classified as a Medium Investment, which would have required a full analysis of alternatives prior to its approval.

As a result, NARA officials may not have selected the best project to maximize value or minimize risk. By not exploring other platforms or alternatives, NARA may have missed an opportunity to improve productivity and increase efficiencies by having a homogeneous server and desktop environment. We found several examples of other government and non-government organizations that benefited from migrating from Novell to Microsoft. Realized benefits included increase in productivity; reduction in total cost of ownership; and creation of high returns on investment. By migrating to Microsoft, these organizations also realized reduced redundancy and cost; increased system availability and reliability; improved efficiency; and increased interoperability. For instance, one organization found the homogeneous server environment greatly simplified their network management and enabled total control of their desktop environment. As a result, the organization reduced support and administration costs, and laid the foundation to achieve significant end-user productivity gains. These examples are not given to say that migrating to Microsoft would necessarily be better for NARA, but highlight benefits others have reported and which have never been fully explored by NARA.

Further, since NARA missed another opportunity to switch to a more stable environment, limited resources may have been wasted. Instead of investing limited resources to migrate to another environment now, we are investing in a product supported by a company whose future has been in flux for years and recently has been offered a buy-out from one of its shareholders, which according to some news outlets could mean the end of Novell's products. As the future of Novell and its current products remains unstable, the need to migrate to another platform could become essential, requiring additional resources for NARA to migrate or upgrade again. The increased risk of having to expend additional resources may have been avoided had the appropriate analysis of alternatives been conducted. NARA could have avoided the current upgrade project and put the estimated $2.9 million towards a transition to a more flexible, robust, and scaleable infrastructure system.

Despite the current Archivist's support for an advanced technology infrastructure, NARA continues with a project using the product of a company whose future remains uncertain. By staying with Novell, NARA will continue to trail in its ability to communicate with core constituencies and fulfill its mission. The Novell/GroupWise system is not widely used in industry or government. Because there is less software compatible with Novell, NARA may be stuck with inferior and problematic products, which could limit the NARA's ability to implement its strategic plans.

Recommendation 3

We recommend the CIO establish objective thresholds for projects classified as Technology Refreshes to ensure alternatives for critical projects are fully reviewed and considered prior to project approval.

Management Response

Management concurred with recommendation.

Recommendation 4

We recommend the CIO ensure alternatives are fully considered and analysis documented when planning and executing the next NARANet Upgrade.

Management Response

Management concurred with recommendation.

3. Project Costs Not Adequately Reported

NSU Project costs were underreported in the Monthly Status Reports. NARA 801 requires project managers to prepare regular status reports to monitor investment scope, cost, risk, and schedule. However, total project costs were incorrectly reported because NARA's Control Phase of the CPIC Process did not include verification of project costs and a formalized tracking method of IT project costs had not been established As a result, the NSU Project costs were reported as $1.4 million, much lower than the estimated costs of $2.9 million, and management was not aware the project's true costs were significantly higher than the amount ($1.25 million) approved by the CIO. Without accurate project cost projections, appropriate decisions cannot be made and management is not fully aware of the project status or the full project cost.

According to NARA policy, after an investment has been officially approved, the investment moves on to the Control Phase of the CPIC Process as detailed in NARA 801. The objective of this phase is to practice timely quality control and executive review of IT initiatives. During this phase, the CPIC Team regularly monitors the progress of ongoing IT investments against their projected costs, schedule, performance and delivered benefits. According to NARA 801, these reviews should focus on ensuring that projected benefits are being realized; cost, schedule, and performance goals are being met; risks are minimized and managed; and the investment continues to meet strategic needs.

As part of the Control Phase, Monthly Status Reports[15] are prepared by the Project Manager to regularly monitor an investment's scope, cost, risk, and schedule baselines. This process is intended to monitor and track progress and take proactive action if a project encounters obstacles or deviates from the planned schedule or budget. The Project Manager is responsible for maintaining all project documentation and monitoring the financial, technical, operational, schedule, legal and contractual, and project risks. Also, the CIO is responsible for reviewing the periodic status reports and examining any identified risks, costs, or schedule deviations.

In our review of the NARANet Server Upgrade Project's Monthly Status Reports from October 2009 to January 2010, we found that the total project costs were underreported. Specifically, the equipment costs were not included or being tracked as part of the total project costs. Instead, the total investment cost reported on the monthly status reports was $1,436,000, which only included labor, travel, and consulting services related to this project. According to the Bill of Materials, a separate proposal prepared by the contractor, Capstone Corporation, the equipment needed to complete this project totaled over $1,432,000, with optional equipment costing between $50,000 and $75,000, which would allow for encryption. Thereby, increasing the total project cost to over $2.9 million. This figure was significantly higher than the $1.25 million total implementation costs reported in the project's Business Case and approved by the CIO in August 2009.

[15] See Attachment 1 for a template of the Monthly Status Report.

This significantly higher estimated project cost was not being reported on the monthly status reports.

Further, neither the project's Business Case or the monthly status reports reflected other potential risks or costs associated with this project. For example, Capstone's Cost Proposal stated that "continued support after completion is necessary to support this initiative". These continued support costs were unknown, but Capstone wanted to provide an estimate at a later date. Also, Capstone's Bill of Materials stated that additional equipment costs would result from adding hardware encryption to all tape backup units. However, neither of these risks was identified in the project's Business Case or status reports. Therefore, the project's total cost could continue to grow to over the estimated $2.9 million without management's knowledge or approval.

During the audit, the total project cost was changed in the Monthly Status Report from $1.4 to $2.3 million. According to the Project Manager, this new project cost includes the cost of equipment. However, due to project and procurement delays, the project has to be rebaselined to revise the project's cost and schedule estimates. Previously, implementation was to be completed by November 2010, but has now been pushed back until March 2011.

According to the Contracting Office Technical Representative (COTR), the project costs were not reported in the Monthly Status Reports because the equipment was purchased directly by the government from a different vendor and was not purchased by the operations contractor, Capstone. Therefore, the equipment was considered a onetime cost. When asked about the additional costs alluded to in the Cost Proposal and Bill of Materials, the COTR stated that it was still early in the project and there have been no further discussions on these later support costs and needs.

According to NARA 801, a project's cost baseline is established after contract award. Therefore, it appears that NARA 801 does not take into consideration multiple contracts for a single project. Additionally, NARA 801 does include oversight controls for reporting project costs. Specifically, NARA 801 does not include a validation or verification process for the Monthly Status Reports. Also, NARA 801 does not assign responsibility to ensure the total costs and costs spent to date are accurate on the Monthly Status Reports. Finally, a formal tracking method of individual project costs has not been established. The CPIC Process does not include a formalized process to verify resources spent.

As a result, Monthly Status Reports for the NSU Project did not accurately reflect the full cost of the project and the progress of the project in meeting its goals. Further, these status reports did not reflect that the estimated cost of the investment was significantly higher than the amount approved by the CIO. Periodic status reports are important to the management of this project since they should be used to identify any risk, cost, or schedule deviation. Without the accurate project costs, appropriate decisions cannot be made and management is not fully aware of the project status or the full project cost.

Recommendation 5

We recommend the NSU Project Manager update the total project costs reported in the Monthly Status Reports.

Management Response

Management concurred with recommendation.

Recommendation 6

We recommend NH officials develop a formalized tracking method to accurately track individual IT project costs and indentify the total project costs when two or more contracts are used.

Management Response

Management concurred with recommendation.

Recommendation 7

We recommend the CIO assign responsibility to ensure the total costs and costs spent to date are accurate on the Monthly Status Reports and add an independent verification process to the Control Phase to verify cost figures.

Management Response

Management concurred with recommendation.

Attachment 1 – Monthly Status Report Template

Investment Name							#
Point of Contact:		Period of Performance:	Month Year	Office(s):			CPIC ID
Start Date	**O&M Date**	**Retirement Date**	**Annual Cost**	**Project Cost**	**Lifecycle Cost**	**Spent to Date**	**SDLC Phase**
							Choose One

Technical Scope and Current Status - Choose Status	Risks and Issues - Choose Status
	Risk/Issue: Severity: **None** Probability: **None** **Mitigation Strategy:**
	Risk/Issue: Severity: **None** Probability: **None** **Mitigation Strategy:**
	Risk/Issue: Severity: **None** Probability: **None** **Mitigation Strategy:**

Schedule Performance - Choose Status

Activity/Milestone	Planned	Actual

Financial Performance - Choose Status

Monthly Spending:	Planned:	Actual:
Prior Year(s) Spending	$ -	$ -
September-09	$ -	$ -
October-09	$ -	$ -
November-09	$ -	$ -
December-09	$ -	$ -
January-10	$ -	$ -
February-10	$ -	$ -
March-10	$ -	$ -
April-10	$ -	$ -
May-10	$ -	$ -
June-10	$ -	$ -
July-10	$ -	$ -
August-10	$ -	$ -
September-10	$ -	$ -
TOTAL:	$ -	$ -

Appendix A – Acronyms and Abbreviations

ARB	Architecture Review Board
CIO	Chief Information Officer
COTR	Contracting Office Technical Representative
CPIC	Capital Planning and Investment Control
IT	Information Technology
ITEC	Information Technology Executive Committee
NARA	National Archives and Records Administration
NH	Office of Information Services
NSU	NARANet Server Upgrade
OIG	Office of Inspector General

Appendix B - Management's Response to the Report

National Archives and Records Administration

8601 Adelphi Road
College Park, Maryland 20740-6001

Date: NOV 22 2010

To: Paul Brachfeld, Inspector General

From: David S. Ferriero, Archivist of the United States

Subject: Comments on OIG Revised Draft Report 10-17, Audit of the NARANet Server Upgrade Project

Thank you for the opportunity to review this draft report. We appreciate the efforts of OIG and NARA staff involved in reconciling comments and adjusting text for clarity. Although we concur with all seven recommendations in the revised draft, there are two points we feel are important to highlight here.

First, your observation on the evolving nature of IT is correct, another transition *will* be necessary. It is a fact of doing business with a technology backbone. We will continue to anticipate this evolution in our Information Resources Management (IRM) Strategic Plan. By its nature, a strategic plan is quite high level. Further detail can be found in the IT Infrastructure Segment Program Plan and Sequencing Plan, available for review under Enterprise Architecture on NARA@work.

Second, as the audit report notes, the Server Upgrade Project met the criteria for a Technology Refresh, the question of the appropriateness of the category is all that remains. We will not debate this point. NARA 801, Capital Planning and Investment Control (CPIC), sets out criteria for each of four investment categories. Based on his review, the CIO may choose to move an investment between these categories. What is lacking is documentation of the CIO review that may culminate in a decision to change the designation of any given project from one category to another. This will be addressed in our response to Recommendation 4.

If you have questions about these comments, please contact Mary Drak at 301-837-1668 or by email at mary.drak@nara.gov.

David S. Ferriero
Archivist of the United States

Appendix C - Report Distribution List

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