January 19, 2010

ROSS PHILO EXECUTIVE VICE PRESIDENT AND CHIEF INFORMATION OFFICER

JOHN T. EDGAR VICE PRESIDENT, INFORMATION TECHNOLOGY SOLUTIONS

SUBJECT: Audit Report – Enterprise Architecture Within Information Technology (Report Number IS-AR-10-004)

This report presents the results of our audit of enterprise architecture (EA) within Information Technology (IT) (Project Number 09RG018IS000). We conducted this self-initiated audit to determine whether IT has a mature EA framework in place to support future U.S. Postal Service initiatives. This audit addresses strategic and operational risks. See Appendix A for additional information about this audit.

Conclusion

The existing EA framework within IT has not reached a level of maturity¹ to facilitate repeatable, defined, managed, and optimized processes and systems for the benefit of its stakeholders and in support of future Postal Service initiatives. Management has taken positive action toward implementation of EA within IT, such as designating a manager of IT Strategy and Architecture, establishing an Enterprise Architecture Committee (EAC), and identifying and eliminating some obsolete and redundant processes. However, we believe further emphasis on EA within IT will benefit the Postal Service. Specifically, senior level IT executives may not fully appreciate the benefits of EA that would move IT to a higher level of maturity where activities cross business areas horizontally. Further, although management formed an EAC, the committee does not have the level of authority necessary to effectively govern all EA IT solutions and projects. As a result, management may not fully and properly use Postal Service information resources and information technologies to support its business strategies and processes in order to achieve the business goals.

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¹ Based on comparisons with the Carnegie-Mellon University Capability Maturity Model (CMM) and the Government Accountability Office (GAO) Enterprise Architecture Management Maturity Framework (EAMMF). See Appendix C for a comparison of the frameworks.

EA Awareness

The Postal Service's IT management has taken positive steps to create EA awareness by establishing and staffing the IT Strategy and Architecture Office and appointing a chief architect as suggested by best practices.² However, IT executives may not fully appreciate the benefits of EA that would move IT to a higher level of maturity where processes are defined, managed, and optimized. This occurred because EA goals, strategies, and objectives have not been established, documented, or effectively communicated throughout IT. As a result, management may experience delays in realizing the benefits of EA.³ See Appendix B for our detailed analysis of this topic.

We recommend the executive vice president, chief information officer, direct the vice president, Information Technology Solutions, and manager, Information Technology Strategy and Architecture, to:

- 1. Establish and document goals, strategies, and objectives that outline sponsorship and commitment to implementing Enterprise Architecture.
- 2. Communicate the established goals, strategies, and objectives throughout IT to ensure that the services provided align and support future Postal Services initiatives.

EA Governance

The EAC currently cannot enforce Postal Service EA policy. EA policy states that the EAC must approve all Postal Service IT solutions that use new hardware or software technologies and the development of new business technology solutions, in accordance with the EAC review process. Although IT implemented and follows EA policy, it should also encompass all IT solutions throughout the Postal Service. However, the Executive Committee (EC) has not provided the EAC with the level of authority needed to govern all IT solutions. As a result, while the EAC reviews and approves most commercial off-the-shelf software products, it does not review all IT projects. By strengthening the authority of the EAC, management can ensure the Postal Service is fully and properly using information resources and technology to support business strategies and processes. See Appendix B for our detailed analysis of this topic.

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² Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Report Number GAO-03-584G, dated April 2003), and best practices conveyed to us in our benchmarking initiative with a major transportation company.

³ EA benefits include improvements in interoperability and integration through increased efficiencies; reduced or eliminated duplications, cost, and technical risks; agility; and improved security.

⁴ EA policy provided on Postal Service Corporate Technology; Policy, Process, and Standards website

⁵ All IT projects include hardware and software technologies necessary to develop a new business solution. An example of an IT project the EAC did not review is the Information Based Indicia/Revenue Protection Program.

We recommend the executive vice president, chief information officer, request the Executive Committee to:

3. Provide the Enterprise Architecture Committee with the level of authority commensurate with its responsibility to effectively govern (direct and oversee) all Postal Service information technology solutions in accordance with Enterprise Architecture policy.

EA Implementation

Corporate IT Portfolio managers have demonstrated their commitment to EA by implementing some elements of integrated application development within their individual business silos. For example, they have identified and eliminated some obsolete and redundant processes. However, management has not fully evaluated all IT projects and activities to determine commonalities between systems to leverage efficiencies across business silos and to avoid redundant processes, as suggested by best practices. This is occurring because management does not have a consistent method for collaborating, assessing, and identifying commonalities (data and processes) across the business silos. As a result, IT solutions may be duplicative, incompatible, and more costly than necessary. See Appendix B for our detailed analysis of this topic.

We recommend the vice president, Information Technology Solutions, direct the manager, Corporate Information Technology Portfolio, to:

 Establish a methodology and procedures for collaborating, assessing, and identifying commonalities (data and processes) to leverage efficiencies across the business silos.

Management's Comments

Management agreed with our recommendations. In response to recommendation 1, management is defining steps to establish goals, strategies, and objectives that outline sponsorship and awareness for implementing EA. In addition, management is building a 5-year roadmap for the business, information, and operational architectures. The targeted completion date is March 31, 2010.

To address recommendation 2, management developed a series of tapings that communicate EA goals, strategies, and objectives which were also communicated to headquarters IT at their year-end town hall meeting. Management also plans to provide

⁶ Silos are business operations, systems, or data that are not integrated or are considered "stove piped" and can be duplicative and incompatible. These conditions prevent or require an expensive custom developed interface to facilitate the sharing of data.

additional EA communications regarding EA activities within the TSLC. In addition, the Enterprise Solutions Investment Board (ESIB) will communicate the purpose and value of EA efforts to executive management, including how IT will align with and support business initiatives. The targeted completion date is March 31, 2010.

In response to recommendation 3, the Executive Committee has given the ESIB the authority to review, recommend, and prioritize IT investments. The Executive Committee intends for the ESIB to work in cooperation with the IT EA to review projects involving a significant investment to ensure solutions fit into the strategic EA direction. The EAC will review ESIB-approved projects to ensure they adhere to best practices, standards, and controls. The chief information officer has authorized the EAC to review and make determinations for projects that fall outside the minimum threshold for ESIB review and to provide EA governance and oversight for corporate IT solutions. IT EA is drafting a new EA process to incorporate this authority and oversight which will become a part of the overall IT governance documentation and incorporated into policy. The targeted completion date is June 30, 2010.

To address recommendation 4, management has taken steps to assess and identify commonalities across the business units by leveraging a postal process reference model. This model defines the business context of the Postal Service by business type and is similar to models used in other posts. Management plans to accomplish this in two phases, with phase 1 completion planned for March 2010, and phase 2 completion planned for June 2010.

See Appendix D for management's comments in their entirety.

Evaluation of Management's Comments

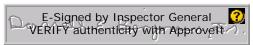
The U.S. Postal Service, Office of Inspector General (OIG) considers management's comments responsive to the recommendations, and their corrective actions should resolve the issues identified in the report.

The OIG considers recommendations 1 and 3 significant, and therefore requires OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. These recommendations should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

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⁷ Technology Solutions Life Cycle.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Frances E. Cain, director, Information Technology, or me at (703) 248-2100.



Darrell E. Benjamin, Jr.
Deputy Assistant Inspector General for Revenue and Systems

Attachments

cc: Richard H. Epstein Charles L. McGann, Jr. Harold E. Stark Sally K. Haring

APPENDIX A: ADDITIONAL INFORMATION

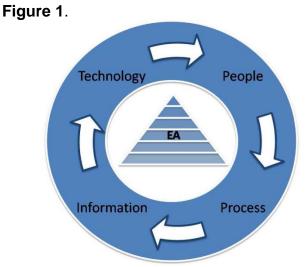
BACKGROUND

EA is a blueprint, defined largely by interrelated models, that describes (in both business and technology terms) an entity's current or "as is" environment, an entity's future or "to be" environment, and a plan for transitioning from the current to the future environment. EA principles are designed to ensure that business strategies and IT investments are aligned with, and support, an organization's strategic plan. A mature EA framework promotes decision making to improve performance, maximize the value of investments, exploit innovation, and develop and further refine business and information systems. Although there are various frameworks, all promote classifying and organizing complex information and data structures. Examples of EA frameworks include, but are not limited to:

- The Open Group Architecture Framework (TOGAF)
- The Carnegie-Mellon University CMM
- The Enterprise Architecture Maturity Model Framework (EAMMF)

See Appendix C for a comparison of the CMM and EAMMF.

The Postal Service has elected to use their own customized agile framework rather than following a specific pre-defined model. The Postal Service bases their framework primarily on TOGAF. Regardless of which framework is used, EA encompasses people, processes, information, and technology as depicted below.⁸



⁸ Culture, Communication and Enterprise Architecture. Presentation by Tom Lucas at the Digital Government Institute Enterprise Architecture Conference, June 19, 2009.

Since the Postal Service's IT department began their EA activities, they have taken steps to:

- Create awareness by establishing and staffing the IT Strategy and Architecture office.
- Appoint a chief architect.
- Provide EA funding.
- Gain efficiencies within individual business portfolios by reducing the number of applications supported by identifying and eliminating duplicate data and redundant or obsolete processes.

Postal Service IT groups that impact EA activities include:

- The IT Strategy and Architecture Office (established in 2009) responsible for identifying existing architectures and adding rigor to the EA process, as practiced by the Postal Service. The office is staffed with the enterprise architect and two support staff members.
- The EAC responsible for reviewing and approving all new or expanded uses of IT services or technology solutions.
- Corporate IT Portfolios responsible for developing and implementing IT systems that support all Postal Service business functions and executive offices. There are eight portfolios that correlate with the business units.
- Technology Support responsible for strategic acquisitions of hardware, software, and services to ensure IT aligns with demand, as well as EA and business strategies. In addition, Technology Support facilitates rapid, cost-effective project completions by its IT customers.
- Corporate Information Security responsible for developing, implementing, and managing the Postal Service information security program.
- SOX/Postal Reform Group responsible for standardizing IT policies and processes to support an IT governance program.

OBJECTIVE, SCOPE, AND METHODOLOGY

Our objective was to determine whether IT has a mature EA framework in place to support future Postal Service initiatives.

To accomplish our objective, we held meetings with IT vice presidents to determine the history of EA implementation in the Postal Service. We also met with other IT managers to determine the status, progression, and implementation of EA within IT and the business portfolios. In addition, we reviewed and analyzed documentation on business systems, EAC minutes, current IT portfolio architectures, and relevant policies and procedures.

We consulted with a benchmarking contractor regarding preliminary activities for conducting future benchmarking work. We also conducted research and identified two potential benchmarking candidate companies with a mature EA framework — one a major retail company and the other a major transportation company. We initiated benchmarking with the major transportation company to identify best practices used in this report. We also analyzed two EA frameworks and used prior reports and assessments the GAO conducted in 2001 and 2003 to determine best practices for implementing EA.

We conducted this performance audit from April 2009 through January 2010 in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. 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 the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We discussed our observations and conclusions with management officials on December 14, 2009, and included their comments where appropriate. We determined that the computer-generated data used to support our findings was sufficiently reliable for the purposes of this audit.

PRIOR AUDIT COVERAGE

Report Title	Report Number	Final Report Date	Report Results
Enterprise Architecture in Postal Service Engineering	DA-MA-07-001	July 17, 2007	Postal Service Engineering is in the "awareness" category as measured against the GAO's EAMMF 1.1 framework. To increase its capability for technology investment, Engineering, in conjunction with other areas of the Postal Service, must establish business processes that are consistent and effective. We made two suggestions in the report. Management disagreed with the suggestion to consider the value of EA opportunities and adopt practices relevant for complying with applicable laws. Management agreed with the suggestion to incorporate mail processing equipment technologies into the Postal Service-wide EA.

Donost Title	Report	Final Report	Donard Doorde
Report Title Information Technology: Leadership Remains Key to Agencies Making Progress on Enterprise Architecture Efforts	GAO-04-040	November 2003	The Postal Service's self-assessed EA maturity levels for 2001 and 2003 indicated their completion of the first two of five levels of the GAO's EAMMF. At the first level (Stage 1), they achieved an agency awareness of EA. In accomplishing the second level of maturity (Stage 2), the Postal Service built an EA foundation that included a committee or group (representing the enterprise) responsible for directing, overseeing, and/or approving EA; a program office responsible for EA development; a chief architect; a framework and an automated tool from which EA was being developed; EA plans that describe the Postal Service in terms of business, data, applications, or technology; and EA plans that describe the "as is" environment, the "to be" environment, or sequencing plan. This report assessed the entire federal government. As a result, recommendations were addressed to the Office of Management and Budget (OMB) and a Congressional Committee. Responses to the recommendations were general and provided by OMB. While the report stated the agencies agreed with the recommendations, it did not specify the Postal Service.

APPENDIX B: DETAILED ANALYSIS

EA Awareness

The Postal Service has pursued an effective EA framework since 2001, however, IT executives may not have appreciated the benefits of EA that would move IT to a higher level of EA maturity where processes are defined, managed, and optimized. In 2009, the chief information officer took initial steps to create EA awareness by establishing and staffing the IT Strategy and Architecture Office, appointing a chief architect, and providing EA funding. However, management has not taken the steps needed to establish and communicate EA goals, strategies, and objectives throughout IT. As a result, management may experience delays in realizing the benefits of EA.

EA best practices¹⁰ suggest that:

- Organizations should focus on delivering and demonstrating business value.
- A basic awareness of EA is essential for building the EA foundation.
- Building an EA foundation consists of a demonstrated commitment to EA; the ability to meet the commitment; a documented program management plan; and metrics for measuring progress, quality, compliance, and return on investment.
- Enterprise architects should position themselves as leaders, not followers. They should position EA as enabling and empowering senior managers and business leaders to solve issues, not as a discretionary academic effort.
- Leaders must communicate the benefits of EA in addition to providing support and sponsorship, which is essential to the success of the enterprise architectural effort.

EA Governance

The EAC currently cannot enforce Postal Service EA policy. EA policy states that the EAC must approve all Postal Service IT solutions that use new hardware or software technologies or the development of new business technology solutions, in accordance with the EAC review process. Best practices also stress the importance of having a committee or group (representing the enterprise) with the level of authority commensurate with its responsibilities to effectively govern (direct and oversee) EA. For example, the company we interviewed during our benchmarking effort stated their EA committee must approve all IT solutions prior to funding the project. Further, if a project were to be submitted to finance without EA approval, it would be automatically

⁹ The *Financial Performance Report* expense goal for fiscal year (FY) 2009 was established at \$43,103.

¹⁰ GAO-03-584G and best practices conveyed to us in our benchmarking initiative with a major transportation company.

rejected. However, the EC has not provided the EAC with the level of authority needed to govern all IT solutions. As a result, while the EAC reviews and approves most commercial off-the-shelf software products, they are not reviewing all IT projects. By strengthening the authority of the EAC, management can ensure the Postal Service fully and properly uses information resources and technologies to support business strategies and processes.

EA Implementation

Corporate IT Portfolios have worked with the business units to implement some elements of integrated application development within the individual silos. For example, multiple portfolio managers have reduced the number of applications they support by identifying and eliminating obsolete and redundant processes. However, not all IT projects and activities have been fully evaluated to determine commonalities between systems to leverage efficiencies across business silos, as suggested by best practices. IT projects and activities that cut across business areas horizontally are limited to a few projects, such as those the Telecommunications group administers and the Phoenix initiative¹¹ which the Shipping and Services Portfolio administers. Projects that did not meet EA standards include, but are not limited to, the Information Based Indicia/Revenue Protection Program; Systems, Applications, and Products in Data Processing systems; and the Intelligent Mail and Address Quality's high-speed computer. According to IT managers, these systems conflict with EA standards by allowing duplication, decreasing the capability of data sharing, and creating additional security and privacy costs and risks.

According to best practices, the EA process is valuable in:

- Assisting in the selection and design of systems that align with the enterprise mission and strategic objectives.
- Helping improve the consistency, accuracy, timeliness, integrity, quality, and availability of data across the enterprise.
- Providing a holistic approach for evaluating the enterprise to ensure consistency with continuous improvement.

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¹¹ Phoenix is a multi-channel, customer experience, improvement project. This effort includes all software as a service architecture that will support usps.com, call centers, and retail. The infrastructure will include reusable services that will be exposed to each of these channels.

APPENDIX C: EA FRAMEWORK COMPARISON

The following table outlines the various stages of EA defined by the Carnegie-Mellon University CMM and the GAO EAMMF. We used these models to identify best practices that define a mature EA framework.

Stage	СММ	EAMMF
One	Initial (Ad-Hoc)	<u>Awareness</u>
	Processes at this level are (typically) undocumented and in a state of dynamic change.	At this stage, some EA activities exist, but efforts are ad hoc, unstructured, and lacking in institutional leadership and direction.
Two	Some processes are repeatable, possibly with consistent results. Process discipline is unlikely to be rigorous, but where it exists it may help ensure that existing processes are maintained during times of stress.	 Building the EA Management Foundation The organization has: Committed necessary resources for developing architecture (people, processes, and tools). For example, there is an architect, an EA office with staff, a group who represents an entire enterprise and is responsible for directing, overseeing, or approving EA; and EA development that uses a framework, methodology, and tools. Established goals/plans for developing some EA products. For example, the "as is," "to be," and transition plans for environments in terms of business, performance, information/data, application/service, technology, and security addressed for each environment. The plans also call for developing metrics for measuring EA progress, quality, compliance, and return on investment.
Three	 Defined Sets of defined and documented standard processes established and subject to some degree of improvement over time. These standard processes are in place and used to establish consistency of process performance across the organization. 	 Developing EA Products Focuses on developing architecture products according to the selected framework, methodology, tools, and established management plans. Applies resources to develop actual EA products. Defines the scope of the architecture to encompass the entire enterprise. Products describe the current ("as-is") and future ("to-be") states and the plan for transitioning from the current to the future state (the sequencing plan).
Four	Managed Using process metrics, management can effectively control process metrics. Management can identify ways to adjust and adapt the process to particular projects without measurable loss of quality or deviation from specifications.	 Completing EA Products EA products and management processes are completed and undergo independent verification and validation. EA products collectively describe the enterprise in terms of business, performance, information/data, service/application, and technology for current and future operating states; and the products include a transition plan for sequencing from the current to the future state. Business, performance, information/data, application/service, and technology descriptions address security. Evolution of the approved products is governed by a written EA maintenance policy approved by the organization head.

Stage	СММ	EAMMF
Five	Optimized Processes focus on	Leveraging the EA to Manage Change Written and approved organization policy exists for IT
	continually improving performance through both incremental and innovative technological changes and improvements.	 investment compliance with EA. Process exists to formally manage EA change and EA is an integral component of the IT investment management process. EA products are periodically updated, IT investments comply with EA, and organization head has approved current version of EA. Both return on EA investment and compliance with EA are measured and reported.

APPENDIX D. MANAGEMENT'S COMMENTS

ROSS PHILO EXECUTIVE VICE PRESIDENT CHEEF INFORMATION OFFICER



January 11, 2010

Lucine M. Willis Director, Audit Operations Office of Inspector General 1735 N. Lynn Street, Room 11044 Arlington, VA 22209-2020

SUBJECT: Transmittal of Draft Audit Report – Enterprise Architecture within Information Technology (Report Number IS-AR-10-DRAFT) Project Number 09RG018IS000

Thank you for the opportunity to review and comment on the subject draft audit report. We are in general agreement with the recommendations with some changes as noted in the attached response.

The subject report and this response contain information related to potential security vulnerabilities that, if released, could possibly be exploited and cause substantial harm to the U.S. Postal Service. The Manager, Corporate Information Security will work with you to determine what portions of this report should be considered as classified and restricted and exempt from disclosure under the Freedom of Information Act.

If you have any questions or comments regarding this response please contact Gerri Wallace, Corporate Information Security at (202) 268-6821.

Ross Philo

Attachment

cc: John T. Edgar Deborah J. Judy Richard H. Epstein Charles L. McGann, Jr. Harold E. Stark Sally K. Haring audittracking@uspsoig.gov

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We recommend the Executive Vice President, Chief Information Officer; direct the Vice President, Information Technology Solutions, and Manager, Information Technology Strategy and Architecture, to:

 Establish and document goals, strategies, and objectives that outline sponsorship and awareness to implementing Enterprise Architecture.

Management agrees with the recommendation. Management is currently defining steps to establish goals, strategies and objectives that outline sponsorship and awareness for implementing Enterprise Architecture. Enterprise Architecture is building a five-year roadmap which involves goals and strategies for the business, information and operational architectures. IT has established and documented at a high level goals, strategies and objectives and will obtain review and approval.

Anticipated Completion Date: March 31, 2010.

Communicate the established goals, strategies and objectives throughout IT to ensure that services provided align and support future Postal Services initiatives.

Management agrees with the recommendation. A series of IT3 tapings have been made and are available for viewing. The EA goals, strategies and objectives were also communicated to Headquarters IT at the year-end Town Hall meeting. Other briefings will be scheduled as well, and EA activities within the TSLC will be reviewed, revised, and communicated as appropriate.

The Enterprise Solutions Investment Board (ESIB) will continue to communicate the purpose and value of the Enterprise Architecture effort to executive management, including the means by which Information Technology can more closely align with and support the Postal Service business initiatives. The Enterprise Architecture team is already involved in several strategic initiatives such as Five Day Delivery and Hybrid Mail. This involvement will continue in other such strategic efforts.

Anticipated Completion Date: March 31, 2010.

We recommend the Executive Vice President, Chief Information Officer, request the Executive Committee to:

 Provide the Enterprise Architecture Committee with the level of authority commensurate with its responsibility to effectively govern (direct and oversee) all Postal Service Information Technology solutions in accordance with Enterprise Architecture policy.

Management agrees with the recommendation. The Executive Committee (EC) has given the Enterprise Solutions Investment Board (ESIB) authority to review, recommend and prioritize IT investments. We intend that the ESIB, with recommendations from IT Enterprise Architecture, will review projects involving a significant investment (actual threshold yet to be determined by the ESIB) to ensure the solution fits into the strategic enterprise architecture direction. The Enterprise Architecture Committee (EAC) will review ESIB-approved projects to ensure they adhere to best practices, standards and controls as required by the Technology Solutions Life Cycle (TSLC). The CIO has given the EAC authority to review and make determinations for projects that fall outside the minimum threshold for ESIB review and to provide EA governance and oversight for corporate IT solutions. IT EA is drafting a new EA process to incorporate this authority

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and oversight. The process when completed will become part of the overall IT governance documentation and incorporated within the TSLC.

Anticipated Completion Date June 30, 2010.

We recommend the Vice President, Information Technology Solutions; direct the Manager, Corporate Information Technology Portfolio, to:

 Establish a methodology and procedures for collaborating, assessing, and identifying commonalities (data and processes) to leverage efficiencies across the business silos.

Management agrees with the recommendation. We have taken steps to assess and identify commonalities across the business units by leveraging a postal process reference model. This model defines the business context of the Postal Service by business type (retail operations, transport logistics, etc.) and is similar to models used in other posts.

This will be accomplished in two phases:

Anticipated Completion Date: Two phases anticipated:

(1) Map high and medium criticality applications to down as many as three levels of detail in the postal process reference model.

Anticipated Completion Date: March 31, 2010.

(2) Map the remaining low priority applications to the postal process reference model down to as many as two levels.

Anticipated Completion Date: June 30, 2010.