March 26, 2002

CHARLES E. BRAVO
SENIOR VICE PRESIDENT, CHIEF TECHNOLOGY OFFICER

ROBERT L. OTTO
VICE PRESIDENT, INFORMATION TECHNOLOGY

SUBJECT: Audit Report – Facilities Database Application Development Review (Report Number EM-AR-02-003)

This report presents the results of our audit of the Facilities Database Application Development (Project Number 01BS009IS003). This audit was a self-initiated review that was included in our fiscal year 2002 Audit Workload Plan.

The audit did not reveal any high-level requirements definition or security deficiencies. However, we found for the concept solution and program definition process point, program management did not always follow an established systems development life cycle methodology, and did not produce a key deliverable. As a result, the Postal Service assumed a risk that the proposed solution for the Facilities Database will not meet the established business needs. Additionally, the Postal Service has no assurance the benefits of the Facilities Database effort will outweigh the costs of developing a new system or the detriments of remaining with the existing systems which do not completely meet the needs of the Postal Service. Management agreed to our recommendations and has planned corrective actions addressing the issues identified in this report. Management's comments and our evaluation of these comments are included in this report.

We appreciate the cooperation and courtesies provided by your staff during the review. If you have any questions or need additional information, please contact Robert Batta, director, Electronic Commerce and Marketing, at (703) 248-2100, or me at (703) 248-2300.

Ronald D. Merryman
Acting Assistant Inspector General
for eBusiness

Attachment

cc: James W. Buie
Wayne H. Orbke
James L. Golden
Susan M. Duchek

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EXECUTIVE SUMMARY

Introduction

There are five major stages in the systems development life cycle. Each stage has several process points that need to be accomplished to develop a successful project. This report presents the results of our self-initiated audit of the concept solution and program definition, as well as the high-level requirements definition process points of the Facilities Database application. This is the third report in a series of Office of Inspector General (OIG) reviews of Postal Service initiatives in the early phases of development. By early involvement in the process, the OIG can make recommendations to resolve issues in the initial stages of development prior to system implementation. Studies indicated that it is up to 100 times more costly to make changes after a system is placed into production.

Our objective was to determine if Postal Service management: (1) followed sound systems development life cycle processes; (2) produced key deliverables; and (3) included key security features during systems development.

Results in Brief

Our review of the Facilities Database did not reveal any high-level requirements definition or security deficiencies. However, we found for the concept solution and program definition process point, program management did not always follow an established systems development life cycle[1] methodology, and did not produce a key deliverable. This occurred because program management did not always understand and follow existing Postal Service policies, procedures, and guidelines.

As a result, the Postal Service assumed a risk that the proposed solution for the Facilities Database will not meet the established business needs. Additionally, the Postal Service has no assurance the benefits of the Facilities Database effort will outweigh the costs of developing a new system or the detriments of remaining with the existing

[1] A systems development life cycle is a logical process by which systems analysts, software engineers, programmers, and end users build information systems and computer applications to solve business problems and needs.

systems which do not completely meet the needs of the Postal Service.

Summary of Recommendations	We determined that the Facilities Database development effort should remain in the concept phase until the corrective actions are taken. Specifically, we recommended management conduct a feasibility study and cost benefit analysis. Additionally, we recommended management ensure that independent software quality assurance functions are performed throughout the Facilities Database project.
Summary of Management's Comments	Management agreed with our findings and recommendations. Corrective actions are under way to resolve the remaining items in fiscal year 2002. Management's comments, in their entirety, are included in Appendix B of this report.
Overall Evaluation of Management's Comments	Management's comments are responsive to our findings and recommendations. We agree with the planned corrective action for each recommendation.

INTRODUCTION

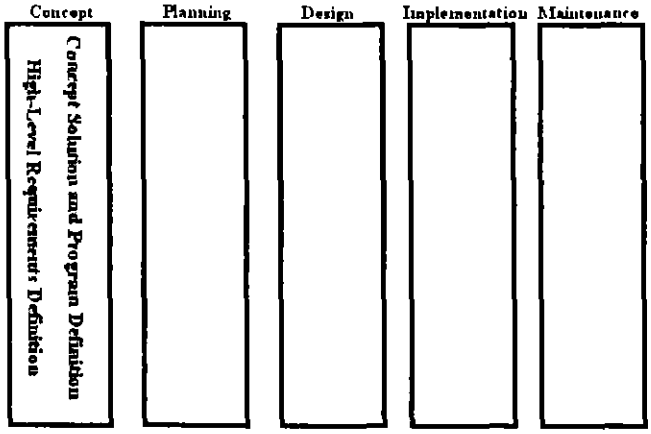
Background

The Facilities Database will provide a single, integrated database that contains accurate and up-to-date information on all Postal Service facilities. The Facilities Database is needed: (1) internally to provide accurate and consistent information to the customer, and (2) externally to be used by our major mailers and future Internet customers to improve ease of doing business with the Postal Service.

Currently, the Postal Service has numerous stand-alone databases that contain information and demographics about facilities and the services provided. Most of these databases have been built along functional lines and are of minimal use to other functions within the Postal Service. These databases have usually been populated via hard copy surveys and are poorly maintained, if at all. The Facilities Database will not replace the existing stand-alone databases, but will serve as a centralized repository for core facility related information.

Our review of the Facilities Database occurred at the end of the systems development life cycle concept phase, where it was undergoing concept solution, program definition, and high-level requirements definition.

Process Points Reviewed In Relation
to the Systems Development Life Cycle Phases



The concept phase covers the identification of a need for the system, validation of the need, and exploration of alternative functional concepts to satisfy the need. The requirements definition phase usually covers functional

requirements identification and detailed planning for the development including preparing the project plan. Technical terms used in this report are described in Appendix A.

Objective, Scope, and Methodology

The objective of this audit was to evaluate the Postal Service's Facilities Database development effort in the final stages of the concept phase in the systems development life cycle. We reviewed concept solution, program definition, and high-level requirements definition process points of the Facilities Database development effort. Specifically, for these processes we determined if Postal Service management: (1) followed sound systems development life cycle processes; (2) produced key deliverables; and (3) included key security features during systems development.

Specifically, to accomplish our objective, we reviewed the business needs statement, assessment report, project plan, high-level functional requirements, and contract documents. We interviewed key project management personnel, including the program manager, program owner, information system security officer, and end-users to determine their involvement in the development effort.

We conducted audit fieldwork at Postal Service Headquarters, the National Customer Support Center in Memphis, Tennessee, and the Processing and Distribution Center, in Merrifield, Virginia, from September through October 2001. In addition, we also reviewed applicable laws and regulations, as well as information systems industry standards and best practices. This audit was conducted from September 2001 through March 2002 in accordance with generally accepted government auditing standards and included such tests of internal controls as were considered necessary under the circumstances. We did not rely on computer-generated data to accomplish our objectives. We discussed our conclusions and observations with appropriate management officials and included their comments, where appropriate.

Prior Audit Coverage

Our September 29, 2000, report, State of Computer Security in the Postal Service (Report Number IS-AR-00-004) cited that: (1) many Postal Service managers were not fully aware of their responsibilities for computer security; and many Postal Service officials viewed computer security

as the sole responsibility of the information technology office; (2) a lack of security awareness has resulted in less than sufficient emphasis placed on planning and budgeting for computer security; (3) policies and procedures for computer security were nonexistent, outdated, or oftentimes not implemented or followed; and (4) the National Information Systems Security organization did not have computer security enforcement authority, and was understaffed, underfunded, and not visible postal-wide. Management agreed with our recommendations and indicated they are working to address the issues.

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AUDIT RESULTS

Systems Development Life Cycle Methodology

We found that Facilities Database program management did not always follow the established systems development life cycle methodology during concept solution and program definition of the Facilities Database. Specifically, program management did not perform a feasibility study or appoint an independent software quality assurance representative to oversee the project. As a result, the proposed solution for Facilities Database may not meet all the established business needs.

The objective of this audit was to evaluate the Postal Service's Facilities Database development effort in the final stages of the concept phase in the systems development life cycle. Specifically, we determined if Postal Service management followed sound systems development life cycle processes, systems development life cycle methodologies produced key deliverables, and key security features were included during systems development. Audit fieldwork was conducted from September through October 2001.

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Independent Quality Assurance Representative	Program management did not appoint an independent software quality assurance representative.[3] Further, program managers did not institute an alternate system of controls to ensure the functions of an independent quality assurance representative were accomplished. For example, program management did not ensure a software quality assurance plan was developed, an independent review of software development life cycle activities was conducted to ensure process compliance, or key deliverables were identified for review by an independent party.

[3] The software quality assurance representative independently facilitates the development of defect free products that meet all requirements and are delivered on time at the lowest possible cost.

The primary purpose of an independent software quality assurance representative is to facilitate the development of defect-free products that meet all requirements and are delivered on time at the lowest possible cost. The Postal Service Software Process Standards and Procedures guideline recommends that at project initiation an independent software quality assurance representative should be appointed to each project.

This appointment did not take place because program management did not follow existing Postal Service policies and guidelines or establish an alternate system of controls. As a result, program management cannot ensure that the development process was appropriately monitored, established standards were followed, and system inadequacies were brought to management's attention.

Recommendation

We recommend the senior vice president, chief technology officer, ensure:

2. Independent software quality assurance functions are performed throughout the Facilities Database project.

Management's Comments

Management agreed with our recommendation and will take corrective action by adding a software quality assurance representative to the project team in Quarter 3, FY 2002.

Evaluation of Management's Comments

Management's planned actions are responsive to our recommendation.

Key Deliverable

Program management did not ensure that all key deliverables were produced during the concept phase. Specifically, a cost benefit analysis, a key selection criteria for evaluating alternative solutions, was not accomplished. Further, program management did not conduct an alternate study to identify or evaluate costs and benefits of all possible solutions against predetermined criteria.

To properly manage and initiate a major program, resource cost estimates should help define the relationship with corporate direction, designing and testing the concept; implementing the program; and tracking, reviewing, and archiving program completion. The Postal Service Program Management Process guidelines, dated September 1999, recommends the program manager, with the assistance of Purchasing and Materials and Finance, and other subject matter experts, develop an approximation of the costs of the resources needed to complete program activities.

Further, the Postal Service Software Process Standards and Procedures, dated March 1995, recommends the cost estimate include costs from all information systems supporting organizations for the entire project and be prepared in conjunction with the feasibility study.

The cost benefit analysis was not prepared because the program manager believed the cost benefit analysis was part of the Decision Analysis Report[4] process that is prepared at the end of the concept phase. However, Postal Service policies recommend the cost benefit analysis be prepared at an earlier stage in the project.

As a result, the Postal Service has no assurance the benefits of the Facilities Database effort outweigh the costs of developing a new system or detriments of remaining with the existing systems which do not completely meet the Postal Service needs. In addition, the Postal Service may have unnecessarily spent time and money on a solution that is not cost beneficial.

[4] The Decision Analysis Report is a document developed by the requiring organization to justify a project investment and to assist the approval authorities in making decisions concerning the use of Postal Service funds.

Recommendation	We recommend the senior vice president, chief technology officer: 3. Complete the cost benefit analysis prior to moving forward with a request for funding.
Management's Comments	Management agreed with our recommendation and will take corrective action by including a cost benefits analysis with the funding request scheduled for Quarter 4, FY 2002.
Evaluation of Management's Comments	Management's planned actions are responsive to our recommendation.

APPENDIX A. GLOSSARY

Term	Description
Assessment Report	The assessment report was conducted to analyze the current facilities database environment.
Decision Analysis Report	The Decision Analysis Report is a document developed by the requiring organization to justify a project investment and to assist the approval authorities in making decisions concerning the use of Postal Service funds.
Commercial of the Shelf Software	Software available through lease or purchase in the commercial market from an organization representing itself to have ownership of marketing rights in the software.
Software Quality Assurance Representative	The software quality assurance representative independently facilitates the development of defect free products that meet all requirements and are delivered on time at the lowest possible cost.
Systems Development Life Cycle	A systems development life cycle is a logical process by which systems analysts, software engineers, programmers, and end users build information systems and computer applications to solve business problems and needs.

APPENDIX B. MANAGEMENT'S COMMENTS

CHARLES E. BRAVO
CHIEF TECHNOLOGY OFFICER
SENIOR VICE PRESIDENT

UNITED STATES
POSTAL SERVICE

March 11, 2002

MS. EDSALL

SUBJECT: Management Response to Draft Audit Report—Facilities Database Application Development Review (Report Number EM-AR-02-DRAFT)

This provides the management response to the Office of Inspector General (OIG) draft audit report on the Facilities Database Application Development Review. The purpose of the review was to determine if systems development life cycle processes were followed, key deliverables were produced, and key security features were included during systems development. We are pleased that the review revealed no high-level requirements definition or security deficiencies and we are addressing the recommendations related to the feasibility study, software quality assurance representative and cost benefits analysis.

The attached information is classified as "restricted" and should be exempt from disclosure under the Freedom of Information Act.

If you have any questions regarding our response and you would like to discuss them further, please contact the IT audit coordinator, Kathleen Sober at (202) 268-6158.

Charles E. Bravo

Attachment

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Restricted Information

Facilities Database Application Development Review
Management Response March 11, 2002

Recommendation 1: Complete a feasibility study on the Facilities Database prior to obtaining funding approval.

Response: We agree that a formal feasibility study does not exist; however, we feel that the combination of two previous task order efforts, Assessment (3 deliverables) and Conceptual Design (5 deliverables); have generated data sufficient to complete a formalized feasibility study. The audit report further states that a Commercial Off-The-Shelf Software package solution "was not fully evaluated." Deliverable #5, "Facilities Database COTS Research" dated February 12, 2001, evaluates the strengths and weaknesses of COTS solutions, satisfying this requirement. We will complete a formal feasibility study prior to obtaining funding approval.

Schedule: Quarter 3, FY 2002

Responsible Executive: Jeff Freeman

Recommendation 2: Ensure independent software assurance functions are performed throughout the Facilities Database project.

Response: We agree. We will add a Software Quality Assurance representative to the project team upon the initiation of the next phase of work.

Schedule: Quarter 3, FY 2002

Responsible Executive: Jeff Freeman

Recommendation 3: Complete the cost benefits analysis prior to moving forward with a request for funding.

Response: We agree. The audit report stated that "the cost benefit analysis be prepared at an earlier stage in the project." The audit report further quotes the USPS Program Management Process Guidelines (PMPG), "...develop an approximation of the costs of the resources needed to complete program activities," and the electronic Software Process Standards & Procedures (eSPSP), "...the cost estimate include all costs from all information systems supporting organizations for the entire project." We feel the requirements addressed by the PMPG and the eSPSP were satisfied with Deliverable #8, High Level Plan, which provides the cost estimates for the entire project. The request for funding for the next phase will include both an estimate of costs and the benefits.

Schedule: Quarter 4, FY 2002

Responsible Executive: Jeff Freeman