# Review of the LMAS Incremental Improvement Projects

**U.S. Small Business Administration**
**Office of Inspector General**
**Washington, D.C. 20416**

Date:           September 30, 2014

To:             Renee A. Macklin, Chief Information Officer

                Stephen W. Kucharski, Director, Office of Performance and Systems Management
                Office of Capital Access

Subject:        Review of the LMAS Incremental Improvement Projects

This report presents the results of our evaluation of the oversight and governance mechanisms over individual Loan Management and Accounting System (LMAS) Incremental Improvement Projects (IIPs) and the use of Enterprise Architecture. The objective of our review was to assess whether the SBA had adequate oversight of the individual LMAS IIPs and if management actions complied with the SBA's Standard Operating Procedures and federal guidance.

We conducted this evaluation in accordance with the Council of the Inspectors General on Integrity and Efficiency (CIGIE) *Quality Standards for Inspection and Evaluations*. Those standards require that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our conclusions based on our objectives.

We appreciate the courtesies and cooperation of the SBA extended to the staff during this review. Please direct any questions to me at (202) 205-6587 or Jeff Brindle, Director, Information Technology and Financial Management Group, at (202) 205-7490.

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        /s/
Robert A. Westbrooks
Deputy Inspector General

# Executive Summary

*Review of the LMAS Incremental Improvement Projects*       Report Number 14-21

## What the OIG Reviewed

This report presents the results of our review of the Loan Management and Accounting System (LMAS) Incremental Improvement Projects (IIPs). The original LMAS project was restructured in 2010 from a larger project into a series of separate but related software upgrades and data migration projects. The overall objective of these projects is to modernize existing software and move the LMAS off its legacy platform to a non-proprietary platform.

Current plans call for the full completion of the mainframe migration by December 2014 and project completion by February 2015. The SBA also anticipates that the LMAS IIPs' cost will not exceed its revised FY 2010 project estimate of $97.3 million.

The objective of our review was to assess whether the SBA had adequate oversight of the individual LMAS IIPs and if management actions complied with the SBA's Standard Operating Procedures (SOP). We also assessed the SBA's compliance with federal information technology (IT) investment controls, including use of Enterprise Architecture and IT capital investment governance mechanisms.

To accomplish our objective, we interviewed SBA personnel and examined project documentation to determine project compliance with SBA policy and the adequacy of management's oversight. To determine LMAS' adherence to the SBA's Enterprise Architecture, we interviewed project and Office of the Chief Information Officer (OCIO) personnel, and analyzed Agency and project documentation. Finally, to determine the effectiveness of the SBA's Independent Verification and Validation (IV&V) function, we interviewed OCIO personnel and reviewed meeting documentation for the SBA's governance boards.

## What the OIG Found

We found that LMAS projects continue to progress, but the overall goal of moving off the mainframe has experienced multiple schedule delays. Current plans call for the project to be completed in early 2015, instead of initial completion estimates for September 2013.

Prospectively, the LMAS project needs to ensure that users follow the user acceptance testing protocols outlined in its system development guidance.

Additionally, the SBA's project oversight can be improved. The SBA's IT governance boards need to actively oversee projects and utilize tools when necessary, such as IV&V services—which assess progress and initiate accountability reviews—or TechStats—which redresses underperforming projects.

Finally, the SBA needs to ensure its Enterprise Architecture serves as the Agency roadmap for integrating proposed business requirements and technology solutions.

## OIG Recommendations

We recommend that:

- The LMAS Project Manager, in coordination with the Chief Financial Officer, develop and utilize a requirements traceability matrix to document user acceptance of the LMAS IIPs.
- The Business Technology Investment Council (BTIC) approve all project baselines and re-baselines, and perform project oversight functions as mandated in SOP 90-52, *IT Investment Performance Baseline Management Policy*.
- The Chief Information Officer (CIO) affirm the viability of current LMAS project milestones and conduct TechStats in accordance with SOP 90-52.
- The CIO modify its Enterprise Architecture Roadmap to include all provisions of the LMAS IIPs.
- The CIO provide interim reports of IV&V activity to oversight committees when significant variances to material thresholds warrant disclosure.

## Agency Comments

On September 18, 2014, management submitted formal comments and concurred with our findings and recommendations.

## Actions Taken

In their response, the Office of Capital Access stated that the project team has implemented recommended testing protocols. The OCIO has agreed to implement recommended oversight controls.

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# Introduction

The Loan Management and Accounting System (LMAS) Incremental Improvement Projects (IIPs) are a series of information technology (IT) projects intended to upgrade existing financial software and application modules in the SBA's Loan Accounting System.  These projects include:

- Migrating these modules off of the SBA's outdated mainframe environment; and
- Developing and migrating user interface screens from the SBA's mainframe to newer technology (in its most recent iteration).

In conforming with the Office of Management and Budget's (OMB) Memorandum 10-26, *Immediate Review of Financial Systems Projects*, agencies split large development projects into smaller, simpler segments with clear deliverables.  The SBA conformed with the memorandum by establishing the LMAS IIPs.

Our objective was to assess whether the SBA has adequate oversight of the individual LMAS IIPs, and if management actions comply with the SBA's Standard Operating Procedures (SOP) and related federal guidance.  We also assessed whether the SBA complied with federal IT investment controls, including use of IT Enterprise Architecture, and whether the governance mechanisms that monitor IT capital investments were effective.

Our project scope encompassed active LMAS IIPs and related project oversight practices between March 2013 and June 2014.  (The status of these IIPs is outlined on Appendix II.)  Our review areas included:

- Systems Development Life Cycle deliverables and documentation for LMAS incremental projects,
- Capital Planning controls (IT governance, baseline management),
- Enterprise Architecture, and
- Operation of a Quality Assurance (QA) program and an Independent Verification and Validation (IV&V) program for the LMAS IIPs.

We also communicated, by memorandum, certain project matters relating to the Funds Control and COBOL Port IIP that represented potential risks to a particular IIP.

# Background

The Loan Accounting System, the existing COBOL application, is the core data system used to account for the SBA's $106.8 billion loan portfolio.  In November 2005, the SBA initiated the LMAS project.  Since 2010, the LMAS modernization effort has been structured into multiple components—or IIPs.  This project was also reviewed by the Government Accountability Office (GAO),[1] and the subject of a Congressional hearing in 2012.  The SBA has issued reports to Congress regarding project progress, with the most recent issued in March 2014.

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[1] Report GAO-12-295, *SBA Needs to Strengthen Oversight of Its Loan Management and Accounting System Modernization,* issued January 2012.

In March 2013, we issued an audit briefing report detailing our assessment of the planning, management, and oversight of the SBA's migration efforts.[2] During the period of the current review, we also reported on the SBA's progress on the LMAS project through Audit Report No. 14-01, *Most Serious Management and Performance Challenges Facing the Small Business Administration In Fiscal Year 2014*, Challenge 8, "The SBA needs to modernize its Loan Accounting System and migrate off the mainframe."

The Transition to Production Planning IIP is critical to success of the overall LMAS project because its completion is needed to move all of the SBA's financial data off a mainframe COBOL production environment to a Micro Focus COBOL software server-based environment.

Current plans call for the full completion of the mainframe migration by December 2014 and project completion by February 2015. The SBA also anticipates that the LMAS IIPs' cost will not exceed its revised FY 2010 project estimate of $97.3 million.

## Results

The LMAS project, including the Transition to Production Planning IIP, continues to experience schedule delays.[3] These delays could have been mitigated had the Agency utilized control procedures as outlined in the SBA's SOPs, including formal baseline reviews and TechStats when projects missed their completion dates by more than 10 percent.[4] Additionally, the use of Enterprise Architecture would aid in strategically planning capital investment decisions. The lack of these controls contributed to multiple project risks or obstacles,[5] which delayed the rollout schedule of the Transition to Production Planning IIP.

## Finding 1: The Transition to Production Planning IIP Needs to Ensure All Requirements are Tested Prior to System Acceptance

During our review of the LMAS IIPs, we found that the Transition to Production Planning IIP did not identify a plan for full or complete user acceptance testing. This occurred because the SBA did not fully document a Requirements Traceability Matrix in this IIP, which would have ensured critical functional requirements were identified, designed, built, and tested before the system was accepted for production. According to the SBA's SOP, a Requirements Traceability Matrix is a required part of the SBA's System Development Methodology (SDM); the SOP also outlines that the IT project manager is responsible for developing and maintaining the IT project management baseline in accordance with this SDM.[6]

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[2] Audit Briefing Report 13-11, *The SBA's Loan Accounting and Management System — Incremental Improvement Projects*, issued March 12, 2013.

[3] The SBA projected completion of the entire LMAS project by September 2013 in its report to OMB in March 2012. Currently, the project is scheduled to conclude in December 2014.

[4] The SBA's *IT Investment Performance Baseline Management (PBM) Policy,* SOP 90-52.

[5] Migration of all user mainframe interfaces, timing of data center migration, and completion of a full test environment.

[6] The SBA's SOP 90 41 0, *Procedures for Managing and Assessing the Quality of SBA Information Technology Projects,* requires that quality assurance on IT projects shall be performed for key milestones in accordance with the SBA SDM. The SBA's SOP 90 52 establishes that the IT project manager is responsible for developing and maintaining the IT project management baseline in accordance with SBA's SDM. See Appendix III for a summary of SDM requirements.

However, we found that the SBA did not fully document a Requirements Traceability Matrix in this IIP. Instead, the original test plan compared output files and did not use a Requirements Traceability Matrix to document test results against functional requirements. As a result of this weakness, the SBA may have limited assurance that the loan accounting system for its $106.8 billion portfolio is performing properly. Subsequent to our review, the LMAS Project Manager incorporated traceability matrices into planned acceptance testing procedures. We will evaluate these RTMs and related testing protocols in a subsequent review.

## Conclusion

Our review of the LMAS IIPs found that the Project Manager needs to adhere to published guidance in the SBA's System Development Methodology. We also found that the Transition to Production Planning IIP did not include key documentation such as the Requirements Traceability Matrix. Without the Requirements Traceability Matrix, the SBA has limited assurance through acceptance testing that key financial processing and reporting requirements are functioning properly in the new application. This assurance is critical for the Office of Capital Access, the project owner, and the Chief Financial Officer,[7] a primary stakeholder, who rely on the accuracy and integrity of the SBA's financial data. The LMAS IIP Project Manager has taken steps to meet the requirements of the SBA's System Development Methodology.

## Recommendation

1. We recommend that the LMAS Project Manager, in coordination with the Chief Financial Officer, develop and utilize a Requirements Traceability Matrix to document user acceptance of the LMAS IIPs.

# Finding 2: The SBA Needs to Improve Oversight of LMAS Incremental Improvement Projects

The SBA currently has two governance bodies responsible for oversight of the LMAS development effort: the Business Technology Investment Council (BTIC) and the LMAS Executive Steering Committee (ESC). We found that these oversight bodies did not periodically review the LMAS modernization's cost and schedule baselines. This project performance monitoring process is required for the BTIC and is inherent in the mission of the ESC.

The OMB Memorandum 10-27, *IT Investment Baseline Management Policy*, defines a baseline as the approved work breakdown structure, costs, schedule, and performance goals for a given investment. In this regard, the baseline functions as a snapshot or image of the original plan. This can later provide the basis for comparison and for assessing program impacts between the planned information or snapshot, and actual performance of a project. An investment baseline encompasses the budget/cost formulation and ongoing management of those costs throughout all phases of the project lifecycle. The SBA's SOP 90-52, Section 5, includes the Agency's policy for managing project baselines.

Section 4.5 of the SOP also identifies that the BTIC serves as the senior executive review body, providing oversight advice, and making recommendations to the SBA Administrator, who has the final approval on the Agency's IT Investment Portfolio. The BTIC: (1) monitors and evaluates the health and performance

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[7] Under the provisions of the CFO Act the agency's Chief Financial Officer is responsible for developing and maintaining an integrated agency accounting and financial management system, including financial reporting and internal controls.

of the Agency's IT programs; and (2) advises the Administrator whether to continue, modify, or terminate a program or project that is baselined or re-baselined.

In a 2012 audit, *SBA Needs to Strengthen Oversight of its Loan Management and Accounting System Modernization*, GAO identified that:

> [The SBA] had the overall direction of the IIP effort approved by an executive review committee. However, SBA did not address other capital planning requirements for the program, including approving a schedule baseline or reviewing its risk management plan, or provide evidence that it approved the subsequent changes to the budget estimates reported to Congress.

To address these issues, GAO recommended that "[the SBA's] executive bodies conduct and document executive review and approval of the LMAS modernization's cost and schedule baselines, including ongoing oversight of progress against those baselines."[8]

However, the SBA has not yet fully implemented this recommendation.  We found that minutes and presentations for BTIC and ESC meetings did not document approval or review of initial project schedule baselines or re-baselines of the projects identified above.  Moreover, interim project communications were not disseminated periodically to allow adjudication of project results by the BTIC and ESC.

Additionally, during our review of IIPs, we identified the following instances where the project baseline schedules incurred significant variances.

- The Funds Control Module – LMAS Implement Improvements IIP schedule was re-baselined three times from a planned full implementation of October 2013.
- The LMAS Transition to Production Planning IIP had an initial schedule baseline completion date of August 2014.  Project management subsequently modified the tentative completion date to December 2014 due to (1) problems in setting up a test environment at the SBA, and (2) migration of mainframe transactions to the web environment.

## Conclusion

We found that the SBA's governance boards are not fully exercising their oversight responsibilities to review cost and schedule performance for the LMAS IIPs.  In 2012, GAO recommended the SBA's executive bodies review and approve the LMAS cost and schedule baselines.  However, the SBA has not yet fully implemented this recommendation.  Further, our review of board meeting materials did not find any documentation indicating the review of cost and schedule re-baselines.

## Recommendation

2. We recommend that the BTIC approve all project baselines and re-baselines, and perform project oversight functions as mandated in SOP 90-52.

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[8] Report GAO-12-295, *SBA Needs to Strengthen Oversight of Its Loan Management and Accounting System Modernization*, issued January 2012.

# Finding 3: The SBA Needs to Utilize TechStats When Projects Underperform

The SBA had not utilized a TechStat to reevaluate or redirect the LMAS Project and related IIPs.  The completion date for moving LMAS into a new production environment is December 2014, which represents a 50 percent schedule variance from the originally planned completion date of September 2013.

According to the SOP, a TechStat Board focuses on underperforming major IT investments[9] and is responsible for deploying a five-phased process to include discovery, analysis, preparation, facilitation, and follow-up approach for underperforming major investments.[10]  Remediation steps include (depending on project risk):  reduction of current spending, re-planning, re-baselining, or termination of various IT projects.

We interviewed the director of the Productivity Enhancement Staff and identified that the SBA has not held a formal TechStat since 2011.  The director stated that although the SBA does not perform formal TechStats, management meets with project owners, establishes corrective action plans, and follows up on those plans.  However, the results and action items of these meetings regarding the LMAS IIPs were not documented or tracked by OCIO personnel.

Consequently, the project schedule completion variance (September 2013 to February 2015) has had limited transparency regarding cost impact, root causes, and remediation steps.  For example, the schedule delay necessitated that the SBA extend its existing Loan Accounting System hosting contract.

## Conclusion

While OCIO officials have adopted a form of the OMB TechStat model, OCIO reviews do not include documented remediation plans and follow-up accountability as recommended in existing SBA and OMB TechStat guidance.

## Recommendation

3. We recommend the CIO affirm the viability of current LMAS project milestones and conduct TechStats in accordance with SOP 90-52.

# Finding 4: The SBA's Enterprise Architecture Roadmap Does Not Accurately Describe the LMAS Systems

OMB Circular No. A-130, *Management of Federal Information Resources*, identifies Enterprise Architecture as the vehicle or roadmap to integrate the current IT environment into a targeted IT environment.  Our review found that the SBA's LMAS project design structure and functionality were not accurately depicted in the SBA's current Enterprise Architecture Roadmap.  This occurred because the SBA Enterprise Architect did not actively participate in BTIC or ESC oversight board meetings and related project design decisions.

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[9] SOP 90-52, Section 4.5
[10] SOP 90-52, Section 5.7

In response to a 2012 report issued by GAO,[11] the SBA agreed to integrate the SBA enterprise architecture into the design and structure of subsequent IIPs. However, the existing SBA Enterprise Architecture does not effectively align technical requirements and business needs for the LMAS project. For example, the most recent SBA Enterprise Architecture Roadmap, issued on April 14, 2014 (see figure below), has significant differences from the specified architecture for the LMAS project.

**Figure 1: Enterprise Architecture Roadmap Variances**

| LMAS Incremental Improvement Project | The SBA's Current Architecture and Operating Environment | The SBA's Future Architecture and Operating Environment |
|---|---|---|
| Not specified for individual IIPs. | No integrated architecture and related design specified for overall LMAS project. | Common Architecture Service Environment Project – Microsoft Dynamics & .NET Environment operating at a Department of Homeland Security Data Center. |

## Conclusion

Without a relevant Enterprise Architecture Roadmap, future capital investment decisions may not be strategically aligned with business needs, and the SBA is at risk for not meeting federal guidelines. We believe that including IIP-specific architecture in the SBA Enterprise Architecture Roadmap would better reflect the current status, as suggested in the figure below.

**Figure 2: Current vs. Future Enterprise Architecture**

| LMAS Incremental Improvement Projects | The SBA's Current Architecture and Operating Environment | The SBA's Future Architecture and Operating Environment |
|---|---|---|
| I – R12 Upgrade | Oracle/UNIX operating at SAVVIS. | Oracle/UNIX operating at SAVVIS. |
| II – Migration of User Interfaces | Was mainframe, migrated to Oracle/UNIX operating at the SBA? | Oracle/UNIX operating at SAVVIS. |
| III – Migrate to New Version of COBOL | Currently COBOL mainframe operating at Unisys. | Future migration to Oracle/UNIX operating at SAVVIS. |
| IV – Migrate Denver Financial from Sybase to Oracle | Was Microsoft/Sybase at SBA, migrated to Oracle/UNIX operating at SAVVIS. | Oracle/UNIX operating at SAVVIS |
| V – Document Loan Accounting | N/A – Is a documentation exercise. | N/A |
| VI – Root Cause Analysis | N/A – Are analytical procedures. | N/A |
| VII – Implement Improvements (Funds Control) | Primarily Oracle/UNIX operating at SAVVIS. | Future migration to Oracle/UNIX operating at SAVVIS. |
| VIII – Transition to UNIX Production Planning | Currently COBOL mainframe operating at Unisys. | Future migration to Oracle/UNIX operating at SAVVIS. |

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[11] The GAO recommended that the SBA ensure that the enterprise architecture segments related to the IIPs are managed appropriately, including the development, prioritization, and maintenance of the segments.

4.  We recommend that the CIO modify its Enterprise Architecture Roadmap to include all provisions of the LMAS IIPs.

# Finding 5: Independent Verification and Validation Needs to Provide Interim Reports When Necessary

The OCIO's IV&V oversight program did not report significant schedule variances for two IIPs to the SBA's executive committees.  This occurred because OCIO contractors reported monthly on the progress of the LMAS project within the OCIO,[12] but project variances and related causes affecting project baselines were not systematically conveyed to the BTIC and ESC oversight committees outside of scheduled meetings.[13]  As a result, significant time intervals elapsed before the oversight committees received important information relating to variances in the project schedule.

The OCIO's Project Management Office oversees the SBA QA and IV&V oversight program and monitors adherence to project baseline guidance.[14]  SBA has identified a minimal requirement that will trigger a re-baseline in accordance with standards identified in OMB Circular No. A -11, *Preparation, Submission, and Execution of the Budget*.  If either the scope of the project has changed from the original plan, or the performance measurement baseline is no longer valid, a re-baseline will be triggered.  Requests for baseline changes of major IT investments must be approved by the IT governance board.

Also, according to SOP 90-41, *Procedures for Managing and Assessing the Quality of SBA Information Technology Projects*, the purpose of the IT QA program is to provide clear guidance and oversight in the delivery of quality IT deliverables.  This SOP further provides for communication of results to senior management.

As previously noted, the first IIP—the Funds Control Project—was re-baselined multiple times without an IV&V report to the oversight committees.  Additionally, the SBA's Transition to Production Planning IIP was re-baselined twice because the implementation of the test environment was behind schedule.  This schedule slippage was also not reported to the oversight committees.

## Conclusion

Due to infrequent oversight meetings, the SBA oversight committees were not receiving actionable information that allowed corrective recommendations and appropriate remediation actions.  Also, the absence of IV&V reporting meant that the ESC and BTIC were not receiving independent assurance that project development efforts were proceeding according to established timelines, quality, or functionality of major deliverables.

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[12] According to the director of the Productivity Enhancement staff, reports were submitted to the oversight committees when they met.

[13] See Finding 2 for specific discussion on changes to project scheduling.

[14] The *IT Investment Performance Baseline Management (PBM) Policy* (SOP 90 52) establishes this group's role in ensuring project management baseline guidance is followed.  IT Investments are measured by a project's cost, schedule, and performance goals, which are also known as the performance measurement baseline.

5. We recommend that the OCIO provide interim reports of IV&V activity to the oversight committees when significant variances to project timelines or other material thresholds warrant disclosure.

# Agency Comments and OIG Response

On September 8, 2014, we provided a draft copy of this report to SBA management for comment. On September 18, 2014, SBA management provided formal comments, which are included in their entirety in Appendix IV. Management agreed with the findings and recommendations. A summary of management's comments and our response follows.

**Recommendation 1 - We recommend that the LMAS Project Manager, in coordination with the Chief Financial Officer, develop and utilize a Requirements Traceability Matrix (RTM) to document user acceptance of the LMAS IIPs.**

### *Management Comments*

OCA concurs that the Transition to Production Planning IIP needs to ensure all requirements are tested prior to system acceptance. OCA has implemented the requirement to complete RTMs prior to executing testing. OCA delivered approved RTMs to the OIG for three (out of four) phases of testing.

OCA requests that the OIG's report reflect that RTMs were completed prior to testing. OCA's implementation of the recommendation remediated OIG's concerns which should be noted in the report.

### *OIG Response*

Management's comments were responsive to our recommendation. As noted in Finding 1 and its related Conclusion, the LMAS IIP Project Manager has taken steps to meet the RTM requirements of the SBA's System Development Methodology. We will evaluate these RTMs and related testing protocols in a subsequent review.

**Recommendation 2 - We recommend that the BTIC approve all project baselines and re-baselines, and perform project oversight functions as mandated in SOP 90-52.**

### *Management Comments*

OCIO concurs with the OIG's assessment that the SBA needs to improve oversight of the LMAS IIPs. OCIO has implemented the recommendation that the BTIC perform oversight of the LMAS IIPs. As of July 24, 2013, the statuses of the LMAS IIPs are reported on at all BTIC meetings.

### *OIG Response*

Management's comments were responsive to our recommendation. We consider this recommendation resolved but open, pending completion of final action.

**Recommendation 3 - We recommend the CIO affirm the viability of current LMAS project milestones and conduct TechStats in accordance with SOP 90-52.**

### *Management Comments*

OCIO concurs with the OIG's assessment that the SBA needs to utilize formal TechStats when projects underperform. OCIO has been reviewing the projects informally. OCIO will implement

the OIG recommendation to formalize the TechStats with minutes and documented recommendations as projects move beyond an acceptable variance for either cost or schedule.

### OIG Response

Management's comments were responsive to our recommendation.  We consider this recommendation resolved but open, pending completion of final action.

**Recommendation 4 - We recommend that the CIO modify its Enterprise Architecture Roadmap to include all provisions of the LMAS IIPs.**

### Management Comments

OCIO concurs with the OIG's assessment that SBA's Enterprise Architecture roadmap does not accurately reflect LMAS.  OCIO is updating its Enterprise Architecture roadmap to include LMAS.

### OIG Response

Management's comments were responsive to our recommendation.  We consider this recommendation resolved but open, pending completion of final action.

**Recommendation 5 - We recommend the OCIO provide interim reports of IV&V activity to the oversight committees when significant variances to project timelines or other material thresholds warrant disclosure.**

### Management Comments

OCIO concurs with the OIG's assessment that IV&V needs to provide interim reports when necessary.  OCIO has implemented the requirement by providing the Executive Steering Committee (ESC) with updates and reports at each ESC meeting for the last year.

### OIG Response

Management's comments were responsive to our recommendation.  We consider this recommendation resolved but open, pending completion of final action.

# Appendix I: Scope and Methodology

We conducted this evaluation in accordance with the Council of the Inspectors General on Integrity and Efficiency (CIGIE) *Quality Standards for Inspection and Evaluations*. Those standards require that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our conclusions based on our objectives.

## Scope

The scope of our analysis included the LMAS IIPs and related project oversight practices between March 2013 and June 2014. Our review areas included:
- Systems Development Life Cycle deliverables and documentation for LMAS incremental projects.
- Capital Planning controls (IT governance, baseline management).
- Enterprise Architecture.
- Operation of a QA program and an IV&V program for the LMAS IIPs.

## Methodology

We reviewed LMAS Transition to Production Planning IIP project documentation to determine whether the project complied with the SBA's System Development Methodology requirements. We also attended project status meetings and reviewed project cost and scheduled documentation provided by the project manager. To determine whether the SBA had adequate oversight of the individual LMAS IIPs, we reviewed meeting materials from BTIC and ESC meetings, and interviewed Agency and project officials. To determine whether the LMAS IIPs conformed to the SBA's Enterprise Architecture, we analyzed LMAS project documentation and compared it with the SBA's Enterprise Architecture Roadmap and interviewed the SBA's chief architect.

## Use of Computer-Processed Data

We relied on the budget and spending data prepared by the SBA's Office of Capital Access for LMAS IIP costs.

## Nature of Limited or Omitted Information

No information was omitted due to confidentiality or sensitivity, nor were there limitations to information on this evaluation.

## Prior Coverage

*U.S. Government Accountability Office Audit Reports*
> Report GAO-12-295, *SBA Needs to Strengthen Oversight of Its Loan Management and Accounting System Modernization*, issued January 2012.

*Small Business Administration-Office of Inspector General Reports*
> Audit Report 8-13, *Planning for the Loan Management and Accounting System Modernization and Development Effort,* issued May 14, 2008.
>
> Evaluation Report 9-17, *Review of Allegations Concerning How the Loan Management and Accounting System Modernization Project is Being Managed,* issued July 30, 2009.

Audit Report 10-14, *Adequacy of Quality Assurance Oversight of the Loan Management and Accounting System Project,* issued September 13, 2010.

Audit Briefing Report 13-11, *The SBA's Loan Management and Accounting System – Incremental Improvement Projects,* issued March 12, 2013.

# Appendix II: The Status of the LMAS Project as Included in Our Scope

| | | |
|---|---|---|
| **I – Complete the R12 Upgrade** | Upgrade the SBA's administrative accounting and management system to Oracle Financials. | Completed in 2011. |
| **II – Migrate Denver Finance from Sybase to Oracle** | Migrate the SBA's legacy databases at its Denver office to its current database infrastructure. | Completed in 2013. |
| **III –Migration of user interfaces** | Migrate all user interface components from the legacy mainframe platform to the SBA's current web-based infrastructure. | Completed in 2013, except for SBIC transactions, scheduled for July 2014. |
| **IV – COBOL Port** | Convert the Unisys proprietary COBOL code to a version of COBOL compatible with UNIX. | Completed in 2013. |
| **V –Document Loan Accounting** | Document the new processes in order to capture and transfer knowledge about the new LMAS environment. | Completed June 2014. |
| **VI – Root Cause Analysis** | Analyze remaining issues and develop plans to prioritize additional projects to address the SBA's most important business needs. | Analysis fully completed in 2014. Component projects remain to be implemented.[15] |
| **VII – Implement Improvements** | Implement the improvements identified by the root cause analysis and the analysis of new processes. | Three projects were undertaken:<br>(1) Funds Control was partially completed in 2014.<br>(2) Document the Loan Accounting Environment was completed in 2014.<br>(3) ETRAN infrastructure upgrade has been approved. |
| **VIII – COBOL Transition to Production Planning** | Implement the COBOL Port into a UNIX environment. | Project has been delayed and the schedule re-baselined. The SBA estimates completion in December 2014. |

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[15] Eight potential projects were identified in two Root Causes Analyses:
    (a)    Funds Control,
    (b)    Financial Data Dictionary,
    (c)    Small Business Investment Company Transaction Entry,
    (d)    Small Business Investment Company Accounting System,
    (e)    Electronic Loan Processing/Servicing Upgraded Environment,
    (f)    Electronic Loan Processing/Servicing Alternate Processing Site,
    (g)    Document Loan Accounting Environment, and
    (h)    Loan Accounting Sync Issues.

# Appendix III: The SBA's System Development Methodology

The SBA System Development Methodology (SDM) provides a structured and integrated approach to acquiring IT solutions. The use of this approach is required on all IT system development projects and is intended to be flexible so that it can be tailored to meet the needs of the project. Following the SDM ensures that a project progresses in a structured manner and a comprehensive project plan is developed. Additionally, the SDM requires the documentation of results and decisions.

The SDM needs a requirements traceability matrix to ensure that requirements are defined in the functional specification, and preserved through the design, build, and evaluation stages. According to the SDM:

- Creating a traceability matrix requires the following steps:
  - Decomposition of requirements into discrete statements.
  - Creation of a requirements table, indicating source(s) for each discrete requirement.
  - Identification of requirements though each stage of development, with emphasis on design, build, and evaluation.
  - Development of tests to ensure that requirements are fully met.
- Requirements traceability is facilitated by placing them in a tabular format. Because requirements are often initially captured in business or operational terms, they must be thoroughly reviewed and decomposed into discrete, consistent elements that can be tested/ demonstrated in the operational system. By identifying each requirement with an individual statement, those needs may be more effectively traced throughout the development process.
- The first traceability may occur as soon as the Work Breakdown Structure (WBS) is complete. Each requirement is reviewed to ensure that there is a task defined for fulfilling that requirement. Such allocation of requirements to the WBS helps define WBS elements and indicates the scope of work covered by each item. In turn, a more careful estimate of schedule, budget, and resources is possible.
- The traceability matrix should be delayed no later than the design stage, as it is essential reference for the technical specifications and testing strategy development.

# Appendix IV: Agency Comments



**U.S. SMALL BUSINESS ADMINISTRATION**
WASHINGTON, D.C. 20416

To:        Robert Westbrook
           Deputy Inspector General


From:      Renee Macklin
           Chief Information Officer
           Office of the Chief Information Officer (OCIO)

           Steve Kucharski
           Director, Office of Performance and Systems Management
           Office of Capital Access (OCA)

Subject:   Agency Response to *Review of the LMAS Incremental Improvement Projects (Project 12012a)*

The LMAS IIP is an enterprise initiative requiring projects and deliverables to be owned by several offices. The table below highlights the office that owns each finding/recommendation. The response to the finding/recommendation will be in the appropriate office's section.

| Finding | Recommendation | Owner |
|---|---|---|
| Finding 1: The Transition to Production Planning IIP Needs to Ensure All Requirements are Tested Prior to System Acceptance | We recommend that the LMAS project manager, in coordination with the Chief Financial Officer, Develop and utilize a Requirements Traceability Matrix (RTM) to document user acceptance of the LMAS IIPs. | OCA |
| Finding 2: The SBA Needs to Improve Oversight of LMAS Incremental Improvement Projects (IIPs) | We recommend that the BTIC approve all project baselines and re-baselines, and perform project oversight functions as mandated in SOP 90-52. | OCIO |
| Finding 3: The SBA Needs to Utilize TechStats When Projects Underperform | We recommend the CIO affirm the viability of current LMAS project milestones and conduct TechStats in accordance with SOP 90-52. | OCIO |
| Finding 4: The SBA's Enterprise Architecture Roadmap Does Not Accurately Describe the LMAS Systems | We recommend that the CIO modify its Enterprise Architecture Roadmap to include all provisions of the LMAS IIPs. | OCIO |
| Finding 5: Independent Verification and Validation (IV&V) Needs to Provide Interim Reports When Necessary | We recommend the OCIO provide interim reports of IV&V activity to the oversight committees when significant variances to project timelines or other material thresholds warrant disclosure. | OCIO |

**I. OCIO Response**

The Office of the Chief Information Officer (OCIO) appreciates the opportunity to respond to the draft report "Review of the LMAS Incremental Improvement Projects." OCIO concurs with the OIG's assessment that the SBA needs to improve oversight of the LMAS IIPs (Finding 2). OCIO has implemented the recommendation that the BTIC perform oversight of the LMAS IIPs. As of July 24, 2013, the statuses of the LMAS IIPs are reported on at all BTIC meetings.

OCIO concurs with the OIG's assessment that SBA needs to utilize formal TechStats when projects underperform (Finding 3). OCIO has been reviewing the projects informally. OCIO will implement the OIG recommendation to formalize the TechStats with minutes and documented recommendations as projects move beyond an acceptable variance for either cost or schedule.

OCIO concurs with the OIG's assessment that SBA's Enterprise Architecture roadmap does not accurately reflect LMAS (Finding 4). OCIO is updating its' Enterprise Architecture roadmap to include LMAS.

OCIO concurs with the OIG's assessment that IV&V needs to provide interim reports when necessary (Finding 5). OCIO has implemented the requirement by providing the Executive Steering Committee (ESC) with updates and reports at each ESC meeting for the last year.

**II. OCA Response**

The Office of Capital Access (OCA) appreciates the opportunity to respond to the draft report. With OIG's oversight assistance, 99.5% of all loan transactions have been migrated off of the mainframe loan accounting system.

OCA concurs that the Transition to Production Planning IIP needs to ensure all requirements are tested prior to system acceptance (Finding 1). OCA has implemented the requirement to complete RTMs prior to executing testing. OCA delivered approved RTMs to the OIG for three (out of four) phases of testing.

OCA requests that the OIG's report reflect that RTMs were completed prior to testing. OCA's implementation of the recommendation remediated OIG's concerns which should be noted in the report.