MICHIGAN

OFFICE OF THE AUDITOR GENERAL

# AUDIT REPORT

PERFORMANCE AUDIT
OF THE

## BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT

DEPARTMENT OF STATE AND
DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET

July 2012

THOMAS H. MCTAVISH, C.P.A.
AUDITOR GENERAL

231-0590-11

The auditor general shall conduct post audits of financial transactions and accounts of the state and of all branches, departments, offices, boards, commissions, agencies, authorities and institutions of the state established by this constitution or by law, and performance post audits thereof.

– Article IV, Section 53 of the Michigan Constitution

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Michigan

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# REPORT SUMMARY

*Performance Audit*

*Business Application Modernization (BAM) Project*

*Department of State and Department of Technology, Management, and Budget*

**Report Number:**
**231-0590-11**

**Released:**
**July 2012**

*The purpose of the BAM project was to modernize and improve Department of State (DOS) business processes and replace the legacy information systems that support DOS business operations, including driver licensing, identification card issuance, vehicle titling, vehicle registration, and voter registration. In October 2011, the Secretary of State announced the release of the Web portion of BAM called ExpressSOS <www.expresssos.com>.*

***Audit Objective:***

To assess the effectiveness of DOS and the Department of Technology, Management, and Budget's (DTMB's) efforts to provide oversight of the development of the BAM project.

***Audit Conclusion:***

DOS and DTMB's efforts to provide oversight of the development of the BAM project were not effective. We noted six material conditions (Findings 1 through 6), six reportable conditions (Findings 7 through 12), and one observation (Observation 1).

***Material Conditions:***

DOS and DTMB need to continue their efforts to implement an effective governance structure over the BAM project (Finding 1).

DOS did not ensure that all payments to its development contractor were made in compliance with contract terms or BAM project procedures (Finding 2).

DOS and DTMB should enforce contract provisions that were designed to protect the State and to compensate it for unsatisfactory contractor performance (Finding 3).

DOS and DTMB did not sufficiently assess the impact of significant changes to the BAM project (Finding 4).

DTMB did not ensure that the procurement process for the BAM project development contract and the technical project manager contract was competitive and unbiased (Finding 5).

DOS did not report complete and accurate information about the cost and status of the BAM project to the Legislature (Finding 6).

***Reportable Conditions:***

DOS and DTMB did not prepare, or ensure that the development contractor prepared and sufficiently updated, all required project documentation (Finding 7).

DTMB's Project Management Methodology (PMM) did not require independent assessments to identify and recover troubled projects (Finding 8).

DOS and DTMB had not implemented all aspects of an effective quality management function for the BAM project (Finding 9).

DOS and DTMB need to improve their risk management processes for the BAM project (Finding 10).

DOS and DTMB need to improve the development contract terms and conditions for future contracts and amendments to better protect the State's interests (Finding 11).

DOS and DTMB did not identify all costs associated with the BAM project. In addition, DTMB needs to improve its guidance to State agencies for accounting for information technology (IT) project costs and for identifying which IT development costs should be capitalized and reported in accordance with Governmental Accounting Standards Board (GASB) Statement No. 51, *Accounting and Financial Reporting for Intangible Assets* (Finding 12).

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***Audit Objective:***
To prepare a summary of the development costs of the BAM project.

***Audit Conclusion:***
We prepared a summary of the development costs of the BAM project. Our audit report does not include any reportable conditions related to this audit objective. Our audit was not directed toward expressing an opinion on these costs and, accordingly, we express no opinion on them.

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***Audit Objective:***
To report on the status of the development and implementation of the BAM project.

***Audit Conclusion:***
As of the end of our audit fieldwork (November 2011), DOS and DTMB continued to work on the development and implementation of the BAM project. In October 2011, DOS and DTMB implemented selected BAM Web functionality under the name of ExpressSOS. Other functionality of BAM remained under development. Our audit report does not include any reportable conditions related to this audit objective. However, we made one observation (Observation 2) and prepared four exhibits (Exhibits 3 through 6). Our audit was not directed toward expressing a conclusion on the exhibits and, accordingly, we express no conclusion on them.

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***Agency Response:***
Our audit report contains 12 findings and 15 corresponding recommendations. DOS and DTMB's preliminary response indicated that they generally agree with all of the recommendations and have complied or will comply with them.

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A copy of the full report can be obtained by calling 517.334.8050 or by visiting our Web site at: http://audgen.michigan.gov

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THOMAS H. MCTAVISH, C.P.A.
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July 19, 2012

The Honorable Ruth Johnson
Secretary of State
Richard H. Austin Building
Lansing, Michigan
and
John E. Nixon, C.P.A., Director
Department of Technology, Management, and Budget
George W. Romney Building
Lansing, Michigan
and
Mr. David B. Behen, Chief Information Officer
Department of Technology, Management, and Budget
Lewis Cass Building
Lansing, Michigan

Dear Secretary Johnson, Mr. Nixon, and Mr. Behen:

This is our report on the performance audit of the Business Application Modernization (BAM) Project, Department of State and Department of Technology, Management, and Budget.

This report contains our report summary; description of project; audit objectives, scope, and methodology and agency responses; comments, findings, recommendations, agency preliminary responses, and observations; various exhibits, presented as supplemental information; and a glossary of acronyms and terms.

Our comments, findings, recommendations, and observations are organized by audit objective. The agency preliminary responses were taken from the agencies' response subsequent to our audit fieldwork. The *Michigan Compiled Laws* and administrative procedures require that the audited agencies develop a plan to comply with the audit recommendations and submit it within 60 days after release of the audit report to the Office of Internal Audit Services, State Budget Office. Within 30 days of receipt, the Office of Internal Audit Services is required to review the plan and either accept the plan as final or contact the agencies to take additional steps to finalize the plan.

We appreciate the courtesy and cooperation extended to us during this audit.

Sincerely,

Thomas H. McTavish, C.P.A.
Auditor General

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## DEPARTMENT OF STATE AND
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GLOSSARY

## Description of Project

In September 2003, the Department of State (DOS) initiated a multi-year Business Application Modernization (BAM) project*. The purpose of the BAM project was to modernize and improve DOS business processes and replace the legacy information systems that support DOS business operations, including driver licensing, identification card issuance, vehicle titling, vehicle registration, and voter registration.

Effective July 2004, the Department of Technology, Management, and Budget (DTMB) contracted with Electronic Data Systems (EDS) to reengineer DOS's business processes and to develop requirements for the BAM project. EDS completed the requirements definition phase (BAM II) of the project and DTMB awarded to EDS a five-year contract*, effective September 2005, with an estimated value of $49.4 million, for the development* and implementation* of BAM. The development contract called for EDS to validate BAM business and technical requirements and to design, develop, and implement BAM in four phases named 3A, 3B, 3C, and 3D. EDS worked on Phase 3A until February 2008, at which time, the BAM Steering Committee allowed EDS to change development approaches and assigned the development contract to Saber Software, Inc. (Saber), a software company that had been recently purchased by EDS. Saber replaced EDS's custom developed software with Department of Motor Vehicle (DMV) software, called the Comet framework, that Saber was developing for another state. Saber planned to modify the Comet framework to meet the BAM project's requirements.

In August 2008, the Hewlett-Packard Company (HP) purchased EDS.

In July 2009, DTMB processed a change notice (Change Notice 1) that amended the development contract to reflect the substitution of the Comet framework. The change notice modified the BAM project's scope, deliverables*, time lines, and payment schedule. Specifically, the change notice combined Phase 3A and Phase 3B into Release 1 and Release 2. Also, the change notice reduced the scope of Phase 3C and eliminated Phase 3D. To reflect the reduction in scope, DTMB reduced the contract's estimated value to $35.6 million.

* *See glossary at end of report for definition.*

In July 2010, the BAM Steering Committee decided to focus the BAM project's development efforts on developing and implementing the Web portion of Release 1.

In October 2011, the Secretary of State announced the release of the Web portion of BAM called ExpressSOS <www.expresssos.com>. ExpressSOS provides Michigan residents with new on-line services, including renewal and replacement of driver's licenses and State identification cards, ordering of vehicle registration and titles, and improved renewal of on-line vehicle license plate and watercraft registration.

The BAM Steering Committee is responsible for overseeing the BAM project. The BAM Steering Committee is composed of senior executives from DOS, DTMB, and EDS who are responsible for making business decisions, communicating project information, and ensuring the availability of resources for the BAM project. In addition, DOS selected a BAM project manager* who serves as the project leader and is responsible for ensuring the success of the project.

DTMB has the overall responsibility for the State's information technology* (IT) contracts and acts as a liaison between State agencies and IT contractors*. Also, DTMB is responsible for developing the State's system development standards and for ensuring the implementation of project management* principles within the State's executive branch agencies.

DTMB's Bureau of Agency Services serves as the liaison between DOS and DTMB. For the BAM project, the Bureau of Agency Services was responsible for providing expertise on DOS's legacy systems and interfaces and for participating in the testing of BAM. In addition, DTMB contracted for a technical project manager to oversee the technical aspects of the project and a project manager to coordinate and report on the activities of DOS, DTMB, and the development contractor.

DTMB Purchasing Operations is responsible for administering the BAM contracts.

Through June 30, 2011, expenditures for the BAM project, including DOS and DTMB personnel costs, were $49.6 million (see summary of BAM project expenditures on page 46).

* *See glossary at end of report for definition.*

## Audit Objectives

Our performance audit* of the Business Application Modernization (BAM) Project, Department of State (DOS) and Department of Technology, Management, and Budget (DTMB), had the following objectives:

1. To assess the effectiveness* of DOS and DTMB's efforts to provide oversight of the development of the BAM project.

2. To prepare a summary of the development costs of the BAM project.

3. To report on the status of the development and implementation of the BAM project.

## Audit Scope

Our audit scope was to examine the information processing and other records related to the Business Application Modernization project. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Our audit procedures, conducted from June through November 2011, generally covered the period September 2005 through August 2011.

As part of our audit, we prepared supplemental information that relates to our audit objectives (Exhibits 1 through 6). Our audit was not directed toward expressing a conclusion on this supplemental information and, accordingly, we express no conclusion on it.

* *See glossary at end of report for definition.*

Audit Methodology

We conducted a preliminary review to obtain an overview of the BAM project's history. We reviewed DTMB policies and procedures for project management, system development, and purchasing. We also identified industry best practices for project management and system development. These included Carnegie Mellon Software Engineering Institute's Capability Maturity Model® Integration (CMMI) for Development*, Control Objectives for Information and Related Technology* (COBIT), and other information technology project management best practices. We used the results of our preliminary review to determine the extent of our detailed analysis and testing.

To accomplish our first objective, we interviewed DOS and DTMB staff to obtain an understanding of the organization structure of the BAM project and to identify key project roles and responsibilities. We reviewed contract provisions of the development contractor and the technical project manager. We tested a judgmental selection of payments made to the development contractor for proper approvals and for compliance with contract provisions and BAM project procedures. We reviewed judgmentally selected BAM project documentation to determine whether the documentation had been prepared in accordance with State standards. We also reviewed the BAM project's staffing plan, communication plan, and quality management* and risk management* practices.

To accomplish our second objective, we obtained purchase orders and contracts from DOS and BAM project expenditure data from the State's financial systems and summarized the information.

To accomplish our third objective, we interviewed DOS and DTMB staff and reviewed documentation to report on the status of the development and implementation of the BAM project.

We focused our review primarily on project management activities and project deliverables from the initiation, planning, and requirements definition phases of the BAM project's system development life cycle. Our audit did not include a review of project management activities and project deliverables from the functional design, system design, programming, testing, and implementation phases.

* *See glossary at end of report for definition.*

When selecting activities or programs for audit, we use an approach based on assessment of risk and opportunity for improvement. Accordingly, we focus our audit efforts on activities or programs having the greatest probability for needing improvement as identified through a preliminary review. Our limited audit resources are used, by design, to identify where and how improvements can be made. Consequently, we prepare our performance audit reports on an exception basis.

Agency Responses

Our audit report contains 12 findings and 15 corresponding recommendations. DOS and DTMB's preliminary response indicated that they generally agree with all of the recommendations and have complied or will comply with them.

The agency preliminary response that follows each recommendation in our report was taken from the agencies' written comments and oral discussion subsequent to our audit fieldwork. Section 18.1462 of the *Michigan Compiled Laws* and the State of Michigan Financial Management Guide (Part VII, Chapter 4, Section 100) require DOS and DTMB to develop a plan to comply with the audit recommendations and submit it within 60 days after release of the audit report to the Office of Internal Audit Services, State Budget Office. Within 30 days of receipt, the Office of Internal Audit Services is required to review the plan and either accept the plan as final or contact the agencies to take additional steps to finalize the plan.

# COMMENTS, FINDINGS, RECOMMENDATIONS, AGENCY PRELIMINARY RESPONSES, AND OBSERVATIONS

# EFFECTIVENESS OF EFFORTS TO PROVIDE OVERSIGHT OF THE DEVELOPMENT OF THE BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT

## COMMENT

**Background:** The Department of State (DOS) and the Department of Technology, Management, and Budget's (DTMB's) ability to successfully develop and implement a large, complex information technology (IT) project, such as the BAM project, depends on the effectiveness of the State's project management, system development, and contract management* practices.

At the time that DOS initiated the BAM project in 2003, the State had issued the second release of its Project Management Methodology* (PMM) (May 2001) and the Systems Development Lifecycle* (SDLC) (December 2001) to formalize best practices for project management and system development. DTMB Administrative Guide procedure 1380.02 required all State agencies to use the PMM and SDLC methodologies for all new IT projects.

In 2004, DTMB began the State Unified Information Technology Environment* (SUITE) project to update and standardize the State's project management and system development methodologies, procedures, training, and tools. As a result of the SUITE project, the State updated the PMM and replaced the SDLC with the Systems Engineering Methodology*. Effective April 1, 2008, DTMB required all new projects in the planning and requirements definition phases to use SUITE.

Many of the findings reported in this audit report can be attributed to control weaknesses in the State's enterprise project management, system development, and contract management practices. Our previously issued performance audits, such as SUITE Project Management and System Development Controls (084-0507-10), Information Technology Investment Management Practices (084-0595-07), and Statewide Information Technology Contracting Practices (50-510-05), identified numerous audit findings pertaining to the State's enterprise-wide project management, system development, and contract management processes. For example, we reported

* *See glossary at end of report for definition.*

in our audit of SUITE that SUITE was an unfunded initiative and that DTMB had not fully established an organizational training plan for project management and system development processes. Also, we reported in our audit of Information Technology Investment Management Practices that DTMB needed to use the State's accounting system to efficiently track project costs. In addition, we reported in our audit of Statewide Information Technology Contracting Practices that DTMB did not proactively evaluate and document vendor* performance information and had not established a standard process to track and monitor contract requirements and deliverables. Further, we reported that State law does not prohibit vendors involved in creating technical proposals and requirements from bidding on resulting projects.

Until DTMB remediates these audit findings, it is likely that the State will continue to experience problems developing and implementing complex information systems such as BAM.

**Audit Objective:** To assess the effectiveness of DOS and DTMB's efforts to provide oversight of the development of the BAM project.

**Audit Conclusion: DOS and DTMB's efforts to provide oversight of the development of the BAM project were not effective.** Our assessment disclosed six material conditions*. DOS and DTMB need to continue their efforts to implement an effective governance structure over the BAM project (Finding 1). Also, DOS did not ensure that all payments to its development contractor were made in compliance with contract terms or BAM project procedures (Finding 2). In addition, DOS and DTMB should enforce contract provisions that were designed to protect the State and to compensate it for unsatisfactory contractor performance (Finding 3). Further, DOS and DTMB did not sufficiently assess the impact of significant changes to the BAM project (Finding 4). Also, DTMB did not ensure that the procurement process for the BAM project development contract and the technical project manager contract was competitive and unbiased (Finding 5). In addition, DOS did not report complete and accurate information about the cost and status of the BAM project to the Legislature (Finding 6).

* *See glossary at end of report for definition.*

Our assessment also disclosed six reportable conditions* related to project documentation, independent assessment of troubled projects, quality management function, project risk management, development contract terms and conditions, and BAM project costs (Findings 7 through 12). In addition, our assessment resulted in one observation* related to the Comet framework (Observation 1).

## FINDING

1. Governance Structure

   DOS and DTMB need to continue their efforts to implement an effective governance structure over the BAM project. During most of the BAM project, the governance structure over the project was not effective. Weaknesses in the governance structure contributed to DOS and DTMB not completing the BAM project on schedule and with all of the expected functionality.

   According to Control Objectives for Information and Related Technology (COBIT), each IT project should have a governance structure that defines the roles and responsibilities of the project sponsors, steering committee, and project manager. In addition, project management best practices identify effective executive sponsorship and experienced project management as critical success factors in ensuring a project's success.

   To provide governance for the BAM project, DOS and DTMB established the BAM Steering Committee, composed of senior executives from DOS, DTMB, and contractor management (see Exhibit 1). Examples of BAM Steering Committee responsibilities included providing project oversight, removing road blocks to the project's success, reviewing and approving changes and enhancements, resolving issues with external agencies and organizations, and communicating project issues and concerns to the BAM project managers.

   Upon initiation of the BAM project, DOS appointed a BAM project manager who was assigned the responsibility for ensuring the success of the BAM project. The BAM project manager was accountable for all aspects of the project, including the scope, schedule, issues, risks, quality, resources, communications, and finances. DTMB also contracted for a technical project manager, effective February 2004, who was responsible for the BAM project from an IT perspective, including the oversight of all coding, development, and software releases. The development

* *See glossary at end of report for definition.*

contract, effective September 2005, specified project management responsibilities for the development contractor, including oversight of the development contractor's staff and processes for ensuring the quality of project deliverables. DTMB contracted for additional project management services, effective March 2011, to coordinate and report on all project management activities from an enterprise perspective (see Exhibit 2).

Our review disclosed:

a. The BAM Steering Committee had not established processes to provide the oversight that would have prevented one member, a former DOS senior executive, from making key project decisions without the concurrence of the BAM project manager or the explicit approval of the BAM Steering Committee. For example, we noted:

   (1) The former DOS senior executive approved payments to the development contractor that were not approved by the BAM project manager. The BAM project manager was responsible for day-to-day project operations and should have approved the development contractor's invoices for payment. (See Finding 2.)

   (2) The former DOS senior executive prepared and submitted a report to the Legislature on the status of the BAM project without obtaining input from the BAM project manager or the DOS chief accountant. As a result, the report was not complete and accurate. (See Finding 6.)

   (3) The former DOS senior executive amended the development contract's scope, deliverables, time lines, and payment schedule with minimal input from the BAM project manager and the technical project manager. DOS informed us that the BAM project manager did not see the final contract amendment until after it had been executed. As a result, the contract amendment required the State to pay for software that contained errors and could not be implemented. (See Finding 11.b.)

   Project management best practices caution that overinvolvement or micromanagement by executive sponsors may create an environment that undermines the project manager's ability to successfully manage a project.

b. The BAM Steering Committee did not keep minutes of its meetings and did not document its approval of significant project decisions. For example, the BAM Steering Committee did not formally document its decision to allow the development contractor to change development approaches or its decision to halt implementation of the branch office functionality and focus development efforts on the Web functionality.

   In addition, DOS could not provide documentation that the BAM Steering Committee approved all change requests. We identified six payments to the development contractor for changes to the BAM project for which DOS did not have documentation of the BAM Steering Committee's approval of the change request.

   DOS informed us that the changes were approved by two members of the BAM Steering Committee (the former DOS senior executive and a development contractor employee). However, approval of the changes by two BAM Steering Committee members, one of which was the development contractor, was not a sufficient representation of the entire BAM Steering Committee and was not in accordance with the BAM roles and responsibilities document.

c. The development contractor's project manager changed 7 times in the 6 years after the development contract was awarded, which was effective September 2005. DOS informed us that each time the development contractor's project manager changed, the new development contractor's project manager required additional time to obtain an understanding of the BAM project. DOS also informed us that the development contractor replaced its project manager when the project fell behind schedule, when Electronic Data Systems (EDS) purchased Saber Software, Inc. (Saber), when Hewlett-Packard Company (HP) purchased EDS, and when the development contractor's project manager left employment. The numerous changes at this key position likely contributed to delays in the development and implementation of the BAM project.

In March 2011, DOS and DTMB revised the BAM project's governance structure. The new governance structure replaced the BAM Steering Committee with an Executive Committee and created separate program management and project management teams (see Exhibit 2). Also, the program management team created a charter that established goals and objectives for managing the BAM project. In addition, the Executive Committee began keeping minutes of its meetings and began documenting its approval of the BAM project changes.

## RECOMMENDATION

We recommend that DOS and DTMB continue their efforts to implement an effective governance structure over the BAM project.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendation and informed us that they have complied. DOS and DTMB informed us that they have implemented, and will continue to practice, an effective governance structure over the BAM project. As noted in the audit report, in March 2011, DOS and DTMB revised the BAM project's governance structure. The new governance structure replaced the BAM Steering Committee with an Executive Committee and created separate program management and project management teams. Also, the program management team created a charter that established goals and objectives for managing the BAM project. In addition, the Executive Committee began keeping minutes of its meetings and began documenting its approval of the BAM project changes. Although DOS and DTMB agree that the project manager is accountable for all aspects of the project, they recognize that the Executive Committee has overall authority in making decisions related to the project, which may, at times, not be in complete agreement with the project manager.

## FINDING

2. Contractor Payments

DOS did not ensure that all payments to its development contractor were made in compliance with contract terms or BAM project procedures. As a result, through June 30, 2011, DOS had authorized payments to the development contractor for

$27.6 million (78%) of its current $35.6 million development contract, even though only a small portion of BAM system functionality had been implemented (see Exhibits 5 and 6).

We judgmentally selected and reviewed 28 monthly progress payments totaling $12.1 million and 14 payments for contract deliverables totaling $13.0 million that DOS and DTMB made to the development contractor from February 2006 through April 2011. We reviewed the payments for proper approval and compliance with contract terms and BAM project procedures. Our review disclosed:

a. DOS did not ensure that all of the monthly progress payments paid to the development contractor were made in accordance with contract terms. Specifically, we noted:

(1) The development contractor missed the Phase 3A initial implementation date of August 2007; however, DOS authorized payments to the development contractor for two Phase 3A monthly progress payments totaling $732,967 for September 2007 and December 2007 invoices. Section 1.6 of the contract states:

> The State will pay for Phase 3A as follows: Fifty-five percent (55%) of total phase to be split into a monthly rate based on the total duration of the phase . . . If Contractor goes over initial timeline, monthly payments will terminate (since the monthly payments are calculated upon the original timeline).

Therefore, the development contractor was not eligible for the September and December monthly progress payments because the development contractor missed the initial implementation date of August 2007.

(2) DOS authorized payment to the development contractor for seven Phase 3B monthly progress payments totaling $3.3 million for invoices from March 2008 through September 2008 that it should not have paid. According to the payment schedule, the monthly progress payments were to compensate the development contractor for its efforts toward designing and implementing a custom developed software solution. However, the BAM Steering Committee allowed the development contractor to switch

from a custom developed software solution to the already-developed Comet framework. DOS should have immediately notified DTMB Purchasing Operations of the need to revise the payment schedule to reflect the new development approach and eliminate progress payments. In addition, DOS should not have authorized these monthly progress payments because the development contractor had not implemented Phase 3A. Effective July 2009, DTMB Purchasing Operations issued a contract change notice (Change Notice 1) that no longer included monthly progress payments.

b. A former DOS senior executive overrode internal control* by approving eight payments totaling $4.5 million without first obtaining approval of the BAM project manager or by approving payments that the BAM project manager disapproved. The former DOS senior executive was a member of the BAM Steering Committee and, based on his position in DOS, had the authority to approve payments for DOS. However, according to the development contract, the BAM project manager was responsible for approving all project deliverables and for ensuring that the development contractor made acceptable monthly progress. To signify her approval, the BAM project manager would approve the development contractor's invoices for payment. Specifically, we noted:

(1) The former DOS senior executive approved 4 payments totaling $2.7 million without approval from the BAM project manager. DOS informed us that the BAM project manager did not receive invoices for 2 of the payments until after the former DOS senior executive approved the payments and did not receive an invoice for 1 of the 4 payments.

(2) The former DOS senior executive approved 4 payments totaling $1.8 million for invoices that the BAM project manager disapproved. DOS informed us that the BAM project manager disapproved the invoices because the invoices did not contain sufficient information about the work performed or the deliverables did not meet acceptance criteria.

* *See glossary at end of report for definition.*

c. DOS authorized payments for three invoices totaling $115,000 that were for work performed by a subcontractor that was not preapproved by DTMB Purchasing Operations and was not approved by the BAM project manager. The development contract prohibited the development contractor from using subcontractors that were not named in the contract without first obtaining written approval from the director of DTMB Purchasing Operations.

## RECOMMENDATION

We recommend that DOS ensure that all payments to its development contractor are made in compliance with contract terms or BAM project procedures.

## AGENCY PRELIMINARY RESPONSE

DOS agrees and informed us that it has complied with the recommendation. DOS and DTMB indicated that they will continue to ensure that all payments to the development contractor are made in compliance with contract terms or BAM project procedures, as the payment process is a joint responsibility. DOS and DTMB informed us that members of the BAM Executive Committee discuss and approve payments and that, since January 2011, initial approvals are obtained by the program management team prior to executive approval. DOS and DTMB informed us that all payments are authorized by appropriate levels in both DOS and DTMB, and final payments are issued to the vendor by DTMB.

However, DOS and DTMB disagree with part a. of the finding related to the Office of the Auditor General's (OAG's) interpretation of the contract regarding monthly invoice payments. DOS and DTMB stated that there are no provisions in the contract to permanently withhold payments on monthly vendor invoices, as the liquidated damages* section was included in the contract to offset damages to the State for missed dates. DOS and DTMB stated that payments on monthly invoices were stopped when any implementation dates were missed, according to the contract, and payments on monthly invoices were reinstated when the contractor delivered a new time line and showed progress to a new date.

For example, payments for September 2007 were withheld until the end of November 2007 and payment for the October 2007 invoice was withheld until January 2008. In addition, the March through June 2008 payments were not made

** See glossary at end of report for definition.*

until September 2008. DOS and DTMB informed us that all invoices were paid upon receipt of a new delivery plan and when the vendor met project milestones.

## OFFICE OF THE AUDITOR GENERAL EPILOGUE

In the agency preliminary response, DOS and DTMB stated that they disagree with part a. of the finding related to the OAG's interpretation of the contract regarding monthly invoice payments. The contract states that, if the contractor goes over the initial time line, monthly payments will terminate. Because the contractor went over the initial time line of August 2007, the contract stipulates that the monthly payments for September 2007 and December 2007 should not have been paid. Also, DOS and DTMB stated in their response that the liquidated damages section was included in the contract to offset damages to the State for missed dates. However, as noted in Finding 3, DOS and DTMB did not collect liquidated damages when the contractor missed the implementation dates.

## FINDING

3. Enforcement of Contract Provisions

DOS and DTMB should enforce contract provisions that were designed to protect the State and to compensate it for unsatisfactory contractor performance. Failure to enforce contract provisions in a timely manner may impact the State's ability to hold the development contractor accountable to the contract provisions and may have contributed to the BAM project's delayed implementation.

Our review of the BAM project development contract disclosed the following examples in which the State did not enforce contract provisions:

a. DOS and DTMB should collect liquidated damages resulting from the development contractor failing to meet the agreed-upon implementation dates for BAM. For BAM Phases 3A, 3B, and 3C, the development contract specified that liquidated damages would be assessed at $200,000 per month if the development contractor failed to meet the agreed-upon implementation dates for Phases 3A, 3B, and 3C. For Phase 3D, liquidated damages would be assessed at $138,000 per month if the development contractor failed to meet the agreed-upon implementation dates. Effective July 2009, the State

amended the contract to combine and rename Phase 3A and Phase 3B to Release 1 and Release 2 and to increase the amount of monthly liquidated damages to $505,765.

The development contractor missed the initial implementation date of August 2007 for Phase 3A (renamed as Release 1). As a result, we calculated that through July 2011 the development contractor owed the State liquidated damages of approximately $12.5 million. Although DOS and DTMB have not collected the liquidated damages yet, the contract states that any delay by the State in assessing or collecting the liquidated damages will not waive the State's rights. DOS and DTMB should collect the liquidated damages to offset payments and any damages the State has incurred.

b. DOS and DTMB did not conduct formal contractor performance reviews in conjunction with DTMB Purchasing Operations (formerly the Acquisition Services, Department of Management and Budget). The contract required DOS and DTMB (formerly the Michigan Department of Information Technology), in conjunction with DTMB Purchasing Operations, to conduct a review of the development contractor's performance quarterly, semiannually, or annually depending on the development contractor's past performance with the State. The purpose of the performance reviews was to evaluate and document the development contractor's performance and to provide the development contractor with the opportunity to take corrective action.

Although DOS and DTMB notified the development contractor of its performance deficiencies, only DTMB Purchasing Operations has the authority to seek legal remedies from the development contractor for poor performance. Specifically, the contract states that, upon a finding of poor performance as documented by DTMB Purchasing Operations, the development contractor will be given an opportunity to respond and take corrective action. However, if the development contractor does not take corrective action in a reasonable amount of time, DTMB Purchasing Operations may cancel the contract for default.

In October 2007, the BAM project manager drafted a notice to cure letter for DTMB Purchasing Operations to send to the development contractor that cited development contractor deficiencies, such as missing the Phase 3A implementation deadline and poor project oversight practices. However, the letter was not sent because, in February 2008, the development contractor had proposed an alternative solution, using the Comet framework, to move the BAM project forward. As of March 2010, the BAM project had not been implemented and DOS notified the development contractor that DOS and DTMB did not agree with the development contractor's proposed plan for the implementation of BAM Release 1 and Release 2.

In February 2011, the Secretary of State and Attorney General sent a letter to the development contractor requesting assurances that the development contractor would provide a stable and functioning application and an outline of the steps that the development contractor planned to take to bring the BAM project into compliance with contract obligations.

c. DOS did not formally document its approval of the development contractor's removal of key contractor personnel. According to the development contract, the development contractor shall not remove or reassign key personnel without first obtaining the State's prior written approval. Although DOS indicated that it believed that the development contractor had a reasonable basis for removing key personnel, the development contractor did not obtain prior written approval from the State for the removal of 18 key personnel.

## RECOMMENDATIONS

We recommend that DOS and DTMB enforce contract provisions that were designed to protect the State and to compensate it for unsatisfactory contractor performance.

We also recommend that DOS and DTMB collect the liquidated damages to offset payments and any damages that the State has incurred.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendations. DOS and DTMB informed us that the departments have ensured that appropriate steps are in place for offsetting liquidated damages and the completion of performance reviews through the contract amendment process. In addition, DOS and DTMB informed us that the program management team will be documenting changes in key personnel.

## FINDING

4. Impact of Significant Changes

DOS and DTMB did not sufficiently assess the impact of significant changes to the BAM project. Specifically, the BAM Steering Committee did not sufficiently assess the risks associated with replacing the development contractor's custom design solution with the Comet framework. In addition, the BAM Steering Committee did not sufficiently review Saber's project management qualifications and practices prior to reassigning EDS's project management responsibilities to Saber. Consequently, Saber continued to miss the BAM project's implementation deadlines and the BAM system that was eventually implemented, ExpressSOS, contained only a portion of the expected functionality.

DOS informed us that, after EDS missed its implementation deadline for Phase 3A, the BAM Steering Committee communicated to EDS that it was responsible for proposing a solution to get the project back on schedule.

In February 2008, EDS presented to the BAM Steering Committee an overview of Saber's Comet framework as its proposed solution to get the project back on schedule. At that time, the BAM Steering Committee agreed to allow EDS to replace the development contractor's custom design solution with the Comet framework (see Observation 1 for additional information about the Comet framework).

According to COBIT, for significant project changes, management should assess key risks and the impact of the changes on the project's scope, costs, and schedule. However, our review disclosed that the BAM Steering Committee did not require BAM project management to formally assess the risks associated with

allowing a new development team to take over the project or with changing development approaches. For example, we noted:

a. DOS and DTMB did not prepare a feasibility study and did not evaluate the design of the Comet framework to ensure that the Comet framework was the best solution for the State. As a result, the State underestimated the amount of customization that would be required to implement the Comet framework.

b. DOS and DTMB did not document whether Saber met the minimum project management requirements of the original request for proposal*, such as attaining the Capability Maturity Model® Integration (CMMI) maturity level 3* certification and having experience in implementing a phased legacy system migration project. In addition, DOS and DTMB did not document whether Saber had successfully implemented the Comet framework in another state with business processes and transactions comparable to the State of Michigan.

   DOS informed us that it contacted the state where Saber was implementing the Comet framework and, at that time, the state had not identified any issues with Saber or the Comet framework. However, as of October 2011, the Comet framework had not been successfully implemented in that state.

c. DOS and DTMB did not evaluate the risks and costs associated with Saber using a different development team and development tools than those used by EDS.

   At the time that the development contract was assigned to Saber, Saber represented to the State that the assignment would result in only minor changes to the project. Saber also stated that the same employees would be working on the project and that it would utilize EDS's global experience, industry expertise, and resources. However, our review disclosed that Saber brought in new project managers and development staff and used different development tools.

* *See glossary at end of report for definition.*

Also, DOS informed us that the new development staff required additional time to gain an understanding of the BAM project and that Saber found the large quantity of EDS's requirements documentation to be difficult to sort through and decided to recreate some of the documentation. In addition, DOS and DTMB informed us that Saber's use of different requirements management tools contributed to its inability to complete the requirements traceability matrix (RTM).

## RECOMMENDATION

We recommend that, for future changes, DOS and DTMB sufficiently assess the impact of significant changes to the BAM project.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendation and informed us that they will formally assess the impact of significant changes to the BAM project.

## FINDING

5. Procurement Process

DTMB did not ensure that the procurement process for the BAM project development contract and the technical project manager contract was competitive and unbiased. As a result, DTMB's procurement process may have discouraged qualified vendors from bidding on the project.

Act 431, P.A. 1984, requires DTMB to solicit competitive bids for all purchases unless DTMB determines that another procurement method is in the State's best interest.

Our review disclosed:

a. DTMB awarded the BAM project development contract to the same vendor that prepared the business requirements documents and the logical and technical design documents upon which the BAM project development contract was bid. Consequently, the vendor had an unfair advantage in the selection process because of the vendor's extensive prior knowledge of the

business requirements and design documents. In addition, several members of the joint evaluation committee worked with the vendor to develop the business requirements, which may have created an unfair advantage for the vendor.

For federal contracts, in order to avoid the appearance of favoritism and to ensure that the federal government receives unbiased advice, federal purchasing regulations prohibit vendors who prepare federal IT project specifications, such as business requirements and design documentation, from bidding on subsequent projects to avoid situations in which the vendor prepares the specifications to favor its own products or capabilities. Although DTMB awarded the development contract to the same vendor that prepared the requirements and design documents, we still identified numerous problems with system development as reported in Findings 7.b., 9, and 11.c. DTMB informed us that it has since revised its purchasing practices to prevent vendors who assist in the development of business requirements from bidding on the subsequent development projects.

b. DTMB did not comply with its Short Term Augmentation for Resources in Technology (START) and Revised Short Term Augmentation for Resources in Technology (Re:START) programs when it awarded the contract for the BAM technical project manager.

According to DTMB staff and DTMB Policy and Procedure Manual policy 600.05, DTMB uses a prequalified IT vendor program for the START program that includes 250 vendors that the State is allowed to obtain bids from for a contract amount of less than $250,000 and a duration of 12 months or less. In 2006, DTMB revised the policy criteria to allow for contracts with a maximum duration of 3 years but required DTMB to bid subsequent contracts.

Effective February 2004, DTMB awarded a 1-year contract for technical project manager services valued at $192,000. DTMB extended the vendor's contract several times for an additional 3.5 years with a final value of $949,600, exceeding both the amount and duration criteria of the START and Re:START programs. Effective August 2008, DTMB issued a second contract to the same vendor for an additional 3 years valued at $644,000. DTMB's use

of the START and Re:START programs to obtain technical project management services totaling $1.6 million over 7.5 years did not meet the intent of the programs. The BAM project development contract and the BAM Implementation Strategy document provided an estimated implementation time line for BAM Phase 3 of approximately 5 years, beginning in September 2005 and continuing through June 2010, with technical project manager duties occurring throughout the entire project. DTMB should have bid the contract for technical project manager services for the expected duration of the project.

## RECOMMENDATION

We recommend that DTMB ensure that the procurement process for all future procurements for BAM and other information systems is competitive and unbiased.

## AGENCY PRELIMINARY RESPONSE

DTMB agrees and informed us that it has fully complied with the recommendation. DTMB informed us that it will continue to ensure that all procurements for BAM and other information systems are competitive and unbiased and align with the intent of all programs. In 2007, DTMB revised its procurement practices to prevent vendors that assist in the development of business requirements from bidding on the subsequent development projects. In addition, DTMB agrees that its procurement practices would be enhanced by imposing standards that reflect federal guidelines.

However, DTMB disagrees with part b. of the finding and the OAG's conclusion that it did not award the technical project manager contract in compliance with the START and Re:START programs, that the programs bypassed the bidding process, and that they are not competitive and unbiased. DTMB stated that the START and Re:START programs followed competitive bidding requirements and required the utilization of the invitation-to-bid process, which represents a formal competitive solicitation process. DTMB stated that, although START and Re:START bidding was limited to prequalified bidders (under the START program there were approximately 200 prequalified bidders and under the Re:START program there are approximately 400 prequalified bidders), the solicitation process remained highly competitive.

## OFFICE OF THE AUDITOR GENERAL EPILOGUE

In the agency preliminary response, DTMB stated that it disagrees with part b. of the finding regarding compliance with the START and Re:START programs. However, as stated in part b., the BAM project development contract and the BAM Implementation Strategy document provided an estimated implementation time line for BAM Phase 3 of approximately 5 years, beginning in September 2005 and continuing through June 2010. Therefore, DTMB's use of the START and Re:START programs for technical project manager services was not appropriate as the need for the services exceeded the 1-year and 3-year duration criteria for the START and Re:START programs, respectively.

## FINDING

6. Information Reported to the Legislature

DOS did not report complete and accurate information about the cost and status of the BAM project to the Legislature. Without complete and accurate information, the Legislature cannot provide appropriate oversight of the BAM project.

Section 716b, Act 191, P.A. 2010, required DOS to provide a report to the Legislature by January 1, 2011 including the total amount of funds expended to date for the BAM project. Also, the Act required DOS to report the original start and completion dates for the project, the original cost to complete the project, and a listing of all revisions to project completion dates and costs. In addition, the Act required DOS to include the total amount of funds paid to the State by the contractor for "penalties" (i.e., liquidated damages).

Our review of the report prepared and submitted on December 22, 2010 disclosed:

a. DOS did not report all information as required by Section 716b, Act 191, P.A. 2010. DOS did not include the total expenditures for the BAM project, a listing of all revisions to the project completion dates and costs, and the total paid to the State by the contractor for liquidated damages.

b. DOS did not report complete and accurate information about the cost and status of the BAM project. For example:

(1) DOS reported that the "contract is a fixed price contract payable for deliverables only." However, our review disclosed that, in addition to payments for deliverables, the contract also required monthly progress payments that were not based on deliverables. From February 2006 through October 2008, DOS paid the development contractor monthly progress payments totaling $12.1 million. Effective July 2009, DTMB processed a contract change notice (Change Notice 1) that modified the payment schedule to include payments for only deliverables.

(2) DOS reported that the State did not make payments to the contractor when the project was stalled. Although the report did not indicate the exact time period that DOS considered the project stalled, DOS informed us that the project was stalled from approximately April 2007 through September 2007. Our review disclosed that, from July 2007 through December 2007, DOS paid the development contractor monthly progress payments totaling $2.2 million for invoices for the April 2007 through September 2007 time period.

(3) DOS reported that the "contractual delay penalty clause has generated $8.2 million owed to the State as a result of vendor delays to date." However, our review disclosed that, as of December 22, 2010, the State had not generated any revenue or offset payments to the development contractor because DOS had not collected any liquidated damages from the development contractor (see Finding 3).

## RECOMMENDATION

We recommend that DOS report complete and accurate information about the cost and status of the BAM project to the Legislature.

## AGENCY PRELIMINARY RESPONSE

DOS agrees with the recommendation and informed us that it has complied. DOS informed us that its 2011 report to the Legislature complied with the recommendation and followed the requirements in the legislation.

However, regarding part b.(1), DOS believed that its report accurately reflected that BAM was a fixed price contract when the report to the Legislature was written. Also, regarding part b.(2), related to payments made when the project was stalled, DOS and DTMB believed that it made the payments when a plan was put in place and there was progress to the plan. See agency preliminary response to Finding 2.

## OFFICE OF THE AUDITOR GENERAL EPILOGUE

As stated in part b.(1) of the finding, DOS reported to the Legislature that the contract was a fixed price contract payable for deliverables only. However, DOS did not disclose to the Legislature that, prior to Change Notice 1, it had paid the development contractor monthly progress payments of $12.1 million.

In addition, as stated in part b.(2), although DOS withheld payments for contractor's invoices at the time the project was stalled, DOS subsequently paid the invoices.

## FINDING

7. Project Documentation

DOS and DTMB did not prepare, or ensure that the development contractor prepared and sufficiently updated, all required project documentation. Failure to prepare required project documentation likely contributed to BAM's delayed implementation and limited functionality.

We judgmentally selected six project documents that DOS and DTMB should have prepared, or ensured that the development contractor prepared, during the initiation, planning, and requirements definition phases of the BAM project. Our review disclosed:

a. DOS and DTMB did not prepare a feasibility study. As a result, DOS and DTMB cannot ensure that they identified and selected the best information system alternative to meet the project's business and technical requirements.

   At the time of the BAM project's initiation, the State's SDLC methodology required DOS and DTMB to perform a feasibility study to identify and evaluate alternative development solutions, such as purchasing and modifying commercial off-the-shelf software or developing a custom designed system.

A feasibility study includes a comprehensive evaluation of possible software and hardware alternatives. According to the SDLC methodology, the feasibility study should include an evaluation of the costs, benefits, and return on investment for each alternative and should identify any constraints on resources, schedule, and compatibility with the State's enterprise architecture. DOS and DTMB should have prepared a feasibility study prior to the start of the procurement process.

As part of BAM II, the development contractor and the technical project manager prepared documentation that included an overview of the proposed technical architecture and identification of several high-level technical hardware and system software options. However, DOS and DTMB did not prepare an evaluation of application software alternatives.

b. DOS and DTMB did not ensure that the development contractor prepared and updated the RTM throughout each development phase. As a result, DOS and DTMB increased the risk that the BAM project could not be adequately tested and would not function as intended.

According to the State's SDLC methodology, the RTM is a tool used to ensure that each requirement is addressed in the functional and technical design documentation, program code, test plans, and test results. The development contractor was required by contract to prepare the initial RTM and to update it for each development phase.

For the Comet framework, the development contractor documented the requirements but did not ensure that the requirements were carried through to the functional and technical design documentation, program code, test plans, and test results.

DOS and DTMB informed us that they made numerous requests for the development contractor to complete the RTM, and in August 2011, the contractor proposed a plan for completing the RTM. In the event that the development contractor does not complete the RTM in a timely manner or to the State's satisfaction, DOS and DTMB should work with DTMB Purchasing Operations to take formal action against the development contractor for noncompliance with contract requirements.

## RECOMMENDATION

We recommend that DOS and DTMB prepare, or ensure that the development contractor prepares and sufficiently updates, all required project documentation.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendation. DOS and DTMB informed us that they will continue to ensure that the development contractor prepares quality and acceptable project documentation. In addition, DOS and DTMB informed us that they will take appropriate actions when required documentation is not received from the vendor.

## FINDING

8. Independent Assessment of Troubled Projects

DTMB's PMM did not require independent assessments to identify and recover troubled projects. Consequently, DTMB did not conduct an independent assessment to determine the status of the BAM project after the BAM project became troubled. Without an independent assessment, DOS and DTMB may continue to risk the State's limited resources and place unwarranted reliance on the development contractor's ability to implement the BAM project.

The independent assessment discussed in this finding is different from the independent quality assurance* (QA) or independent verification and validation (IV&V) function discussed in Finding 9. DTMB should perform independent assessments of troubled projects regardless of whether or not an individual project such as BAM utilizes an independent QA or IV&V function. According to project management best practices, organizations should establish criteria and processes for identifying and recovering troubled projects to help organizations minimize potential losses. In 2005, DTMB drafted a guide for applying the State's PMM to troubled projects to assist in getting troubled projects back on track. However, DTMB had not implemented the guide.

* *See glossary at end of report for definition.*

A project is troubled and in need of recovery if one or more of the following occurs:

a. Estimated budget, schedule, or scope will not be met.

b. Overall quality will not be acceptable.

c. Project customers will not be satisfied.

The BAM project was troubled because the development contractor missed every significant implementation deadline, the software code submitted for user acceptance testing consistently had high error and defect rates, and all aspects of a quality management function had not been implemented (Finding 9). For these reasons, DTMB should conduct an independent assessment to ensure that management's decisions regarding the future of the BAM project are made based on accurate, unbiased information.

## RECOMMENDATIONS

We recommend that DTMB's PMM require independent assessments to identify and recover troubled projects.

We also recommend that DTMB conduct an independent assessment to determine the status of the BAM project.

## AGENCY PRELIMINARY RESPONSE

DTMB agrees and informed us that it has complied with the recommendations. DTMB indicated that it has taken significant proactive steps to address troubled projects. DTMB also indicated that, at the request of the new DTMB executive team, effective January 11, 2012, it implemented a monthly Mi-TechStat process that identifies and assesses select troubled projects using consistent standardized criteria based on PMBOK (Project Management Body of Knowledge). According to DTMB, the Mi-TechStat Review Committee determines corrective actions for the projects. Also, DTMB informed us that it has put steps in place, as part of DTMB's PMM, which require that corrective action plans be submitted, approved, and independently monitored by DTMB for all troubled projects.

In addition, DOS and DTMB informed us that, in March 2011, at the request of the new DOS executive team, DOS and DTMB pursued an IV&V to ensure that the work deliverables and processes generated by the team meet project goals and requirements. DOS and DTMB informed us that, in January 2012, the IV&V contract was put out for bid.

## FINDING

9. Quality Management Function

DOS and DTMB had not implemented all aspects of an effective quality management function for the BAM project. Without an effective quality management function, DOS and DTMB did not have a mechanism to identify and correct, as early as possible, deficiencies in BAM project management processes and project deliverables.

An organization's quality management function includes the policies, procedures, and activities to help ensure that a project will satisfy the needs for which it was undertaken. An effective quality management function includes quality planning*, QA, and quality control* processes.

For high-risk and complex IT projects such as BAM, some federal agencies and state governments use an IV&V function to provide an objective assessment of the project's products and processes. Verification is a quality control technique for evaluating an information system to determine whether or not the information system will satisfy the project's requirements. Examples of verification activities include structured walk-throughs of requirements, design documents, and software code. Validation is the process of reviewing documented evidence to ensure that the information system accomplishes the intended results. Examples of validation activities include processes to ensure that requirements are adequately defined, design documentation complies with requirements, data is processed correctly, and test results are accurate.

According to the State's PMM and project management best practices, QA or IV&V activities should begin at the project's inception and continue throughout the project's system development life cycle.

* *See glossary at end of report for definition.*

Our review disclosed:

a. DOS and DTMB had not established an independent QA or IV&V function for the BAM project. Rather, DOS and DTMB relied on the development contractor and the technical project manager to provide certain quality management functions, e.g., developing the quality plan and reviewing contract deliverables. As a result, the State did not have the means to independently and objectively assess whether the project management practices of the BAM project complied with the State's PMM. To provide for an appropriate segregation of duties, an independent QA or IV&V function should report to the BAM Steering Committee as well as to the BAM project manager.

   DOS informed us that, at the time the BAM project development contract was awarded, DTMB (formerly Acquisition Services, Department of Management and Budget) did not require DOS to contract for an independent QA or IV&V contractor. Although DOS was not required to contract for independent QA or IV&V services, the State's project management and system development policies and procedures required DOS and DTMB to establish effective QA processes over the BAM project.

b. DTMB did not perform structured walk-throughs of the BAM software code. A structured walk-through is a QA process in which a group of subject matter experts review a deliverable (such as software code) to identify errors. According to the State's SDLC methodology, a structured walk-through should include a review of the software code for compliance with system design, programming standards, program specifications, and the configuration management plan.

   DTMB informed us that it relied on the development contractor to perform structured walk-throughs of its software code. However, the development contractor's QA processes for ensuring the quality of the software code were not effective. As of June 2010, the software code contained over 2,800 defects. Approximately 48% of the defects were classified as critical or high. As a result, in July 2010, the BAM Steering Committee significantly reduced the scope of the BAM project to be implemented in BAM Release 1 (now called Web 1.0).

## RECOMMENDATION

We recommend that DOS and DTMB implement all aspects of an effective quality management function for the BAM project.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendation. DOS and DTMB informed us that, prior to the audit, in March 2011, DOS leadership requested the engagement of an IV&V to ensure effective and efficient quality management functions for the BAM project. DOS and DTMB informed us that, in January 2012, the IV&V contract was put out for bid.

## FINDING

10. Project Risk Management

DOS and DTMB need to improve their risk management processes for the BAM project. Without effective risk management processes, DOS and DTMB cannot ensure that all risks to the BAM project's success have been identified and that appropriate measures have been taken to avoid or minimize the risk.

DOS and DTMB assigned certain risk management responsibilities to the development contractor. According to the development contract, the development contractor was responsible for establishing a risk management process, including identifying and documenting risks, prioritizing risks, defining mitigation strategies, monitoring risks, and periodically reviewing risk assessments with the State. Also, the development contract stated that the development contractor and the State were each responsible for mitigating or eliminating the risks assigned to them.

Our review disclosed that DOS and DTMB did not ensure that the development contractor established an effective risk management process. For example, we noted:

a. DOS and DTMB did not ensure that risks were identified and documented in the risk database throughout the entire BAM project. For example, in the four months following the State's February 2008 decision to modify the development approach, the project team* documented only one risk in the risk

* *See glossary at end of report for definition.*

database. However, modifying the development approach would have introduced numerous new risks to the project associated with a new project management team, new development staff, and new software.

Similarly, in July 2010, when the State made the decision to focus on the Web functionality, the development contractor identified in the Web implementation plan several risks pertaining to the conversion of legacy data that the BAM project had not documented in the risk database. Also, the BAM project documentation pertaining to future software releases identified risks that the project team had not documented in the risk database. Identifying and documenting risks help to ensure that the project team takes adequate measures to address potential problems that could impact the BAM project's success.

b. DOS and DTMB did not ensure that the development contractor assigned all risks to a responsible individual. Our review of the risk database identified 5 (22%) of 23 open risks that the project team had not assigned to an individual responsible for monitoring and mitigating the risk.

c. DOS and DTMB did not ensure that all risks had contingency plans. A contingency plan is an action plan to be executed in the event the risk actually occurs. According to the development contractor's risk management plan, all risks categorized as medium or high should have a contingency plan. Our review of documentation for 15 risks identified that 2 of 15 risks did not have a contingency plan.

d. DOS and DTMB did not ensure that the development contractor's risk management plan included provisions for performing risk assessments and risk analysis throughout the life of the project. The development contractor's initial risk management plan included procedures for risk assessments and risk analysis. However, when the development contractor updated the risk management plan in March 2008, it no longer contained provisions for performing risk assessments and risk analysis. The lack of risk assessment and risk analysis procedures may have contributed to the control weaknesses identified in parts a. and c. of this finding.

## RECOMMENDATION

We recommend that DOS and DTMB improve their risk management processes for the BAM project.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree and informed us that they have complied with the recommendation. DOS and DTMB stated that, as a result of the revised project governance structure implemented in March 2011, project management processes have been improved, including the Risk Management Plan.

## FINDING

11. Development Contract Terms and Conditions

DOS and DTMB need to improve the development contract terms and conditions for future contracts and amendments to better protect the State's interests. Without such improvements, there is an increased likelihood that expectation gaps will arise between the State and the development contractor that may result in the BAM system failing to meet all the business requirements and not performing as expected.

According to COBIT, contracts should contain language that permits the evaluation of vendor performance, establishes the right to audit, requires payments to be made based on performance, provides for issue monitoring, and includes other key performance indicators and legal assurances.

Our review of the BAM project development contracts and contract amendments disclosed the following examples of contract language that DOS and DTMB should strengthen to better protect the State's interests:

a. The development contract language did not link a portion of the development contractor's compensation to the effectiveness of the development contractor's project control office* responsibilities. Consequently, the State found it difficult to ensure that the development contractor fulfilled its project management responsibilities for configuration management, risk management, and the

* *See glossary at end of report for definition.*

preparation of the RTM. DTMB informed us that it no longer issues IT contracts that combine project control office and development services.

b. Change Notice 1 amended the BAM project acceptance criteria which resulted in the State accepting and paying for Release 1 software code even though the software code contained errors and did not pass the State's integration testing*. Consequently, the State paid $6.8 million for software code, much of which the State has not been able to implement.

According to the change notice, the State agreed to use the unit test results of the software code as its basis for payment. Although the acceptance criteria allowed the State to reject errors categorized as critical, the State agreed to accept software code with errors categorized as high.

The change notice defined a high error as a defect with no work-around that significantly impairs the end users' normal business operations or causes the BAM system to be out of compliance with federal or State laws or regulations. Because the State cannot implement a system with defects that significantly impair normal business operations and for which there is no work-around, DOS should not have agreed to accept and pay for software containing these types of errors.

c. The development contract required the development contractor to use an iterative development approach*; however, the contractor's response to this requirement did not include a sufficient explanation of what the contractor intended to accomplish in each iteration. An iterative development approach is a process in which small portions of functionality are delivered and tested in short development cycles. The contractor indicated that it planned to develop Phase 3A in two iterations. However, if the contractor had provided sufficient details about its iterative development approach, DOS and DTMB could have anticipated that developing a system with the complexity and size of BAM would have required more than two iterations to complete Phase 3A.

* *See glossary at end of report for definition.*

## RECOMMENDATION

We recommend that DOS and DTMB improve the development contract terms and conditions for future contracts and amendments to better protect the State's interests.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree and informed us that DTMB has already taken actions to address the recommendation. DTMB stated that, since 2005, it has required that development and implementation contracts be awarded to different vendors. Also, DTMB informed us that it has developed a Contract Management Toolkit. DTMB expects that the toolkit, once fully implemented, will provide DTMB and State agency staff a consistent method to determine whether deliverables and objectives are being met and whether payments are made in accordance with contract provisions, and not for inoperable deliverables.

In addition, DTMB informed us that it will address the cited issues in future bidding and contracting and, specifically, in the upcoming BAM contract amendment. DTMB indicated that contract language will be modified to include criteria that reflect industry best practices.

Regarding part b. of the finding, DOS and DTMB indicated that the code drops in the amended contract were the methodology utilized by the vendor for its iterative process. DOS and DTMB also indicated that the code drops were planned functionality releases that were not intended to be "production" ready (user acceptance testing was later in the process) and, therefore, required the code to be free of critical defects. In addition, DOS and DTMB indicated that, although the contract amendment allowed for payment of code with high defects, it did not allow the code to be implemented without fixing all critical and high defects.

Regarding part c. of the finding, DOS and DTMB indicated that they believe that the development contractor's iterative approach brought industry best practices to the State. DOS and DTMB informed us that they believe that the bids provided sufficient detail in order to determine what was involved in each of the iterations and then the initial plan, delivered by the contractor (with input by the State), required sufficient details as to what was to be included in each drop.

## OFFICE OF THE AUDITOR GENERAL EPILOGUE

In the agency preliminary response, DOS and DTMB indicated that they disagree with parts b. and c. of the finding regarding errors in the software code and the iterative development approach, respectively. As noted in part b. of the finding, the acceptance criteria identified in Change Notice 1 required the State to accept and pay for software that contained high errors. Although Change Notice 1 required the software to be free of "critical errors," high errors (defects with no work-around that significantly impair the end users' normal business operations or cause the system to be out of compliance with federal or State laws or regulations) were acceptable. Consequently, the State paid for defective software that could not be implemented.

In the agency preliminary response regarding part c. of the finding, DOS and DTMB stated that they believe that the development contractor's bids provided sufficient detail to determine what was involved in each of the iterations. However, as noted in part c. of the finding, we believe that developing a system with the complexity and size of BAM would require more than two iterations to complete Phase 3A.

## FINDING

12. BAM Project Costs

DOS and DTMB did not identify all costs associated with the BAM project. In addition, DTMB needs to improve its guidance to State agencies for accounting for IT project costs and for identifying which IT development costs should be capitalized and reported in accordance with Governmental Accounting Standards Board* (GASB) Statement No. 51, *Accounting and Financial Reporting for Intangible Assets*. As a result, DOS and DTMB cannot ensure that they have identified and reported all of the BAM project costs.

According to COBIT, management should establish procedures to ensure that all project-related costs, including personnel costs, are recorded and reported in accordance with generally accepted accounting principles. In addition, GASB Statement No. 51 requires the State to capitalize development costs, including payroll costs, incurred during an IT project's application development stage after the State expects the cost of the IT project to exceed $5 million. Fiscal year

* *See glossary at end of report for definition.*

2009-10 was the first year that DTMB was required to report BAM project development costs in accordance with GASB Statement No. 51.

Our review disclosed:

a. DOS and DTMB did not include payroll-related costs for the time that DOS and DTMB employees spent working on the BAM project in the total cost of the BAM system. We obtained a listing of DOS and DTMB employees who worked on the BAM project and asked DOS and DTMB to estimate the time that each employee worked on the project. Using this information, we estimated employee payroll-related costs for the BAM project of $15.3 million through June 30, 2011.

b. DTMB needs to improve its guidance to State agencies regarding the proper accounting and reporting of IT development costs. Specifically, DTMB should provide guidance to State agencies for recording payroll-related costs for IT projects and provide examples of which personnel costs should be capitalized and reported in accordance with GASB Statement No. 51. Of the $15.3 million in payroll-related costs identified in part a., DTMB should have capitalized $4.8 million.

## RECOMMENDATIONS

We recommend that DOS and DTMB identify all costs associated with the BAM project.

We also recommend that DTMB improve its guidance to State agencies for accounting for IT project costs and identifying which IT development costs should be capitalized and reported in accordance with GASB Statement No. 51.

## AGENCY PRELIMINARY RESPONSE

DOS and DTMB agree with the recommendations and will continue to account for all BAM costs and will implement any required changes from DTMB's Office of Financial Management on aligning to GASB Statement No. 51. DTMB informed us that it is implementing project management software that will improve total project cost identification and tracking. In addition, DTMB informed us that it will review policies and procedures to ensure that the capitalization of IT development costs is consistent with GASB Statement No. 51.

## OBSERVATION

1. Comet Framework

BAM is being developed based on a software solution called the Comet framework that, in August 2005, the State rejected during the bidding for the BAM project development contract. DOS informed us that, in February 2008, the BAM Steering Committee approved replacing the development contractor's custom design solution with the Comet framework. The Comet framework was based on Department of Motor Vehicle (DMV) software that Saber was developing for the state of Vermont. We contacted the information technology (IT) manager for Vermont's Agency of Transportation who informed us that Vermont originally contracted with Covansys in 2005 to develop a DMV system. Subsequently, in June 2006, Saber purchased the government consulting practice of Covansys. Vermont's IT manager informed us that Saber continued developing Covansys' software, known as VT Drives, for Vermont. As of October 2011, Vermont's DMV system was still in development and had not been implemented.

Covansys was one of the original vendors that bid for the BAM project development contract. According to joint evaluation committee (JEC) documentation, the JEC rejected Covansys' bid because Covansys did not pass the technical evaluation portion of JEC. Specifically, JEC documentation indicated that Covansys' work plan did not provide adequate time for customization and relied heavily on systems transferred from other states. Also, JEC documentation indicated that Covansys had not fully implemented a DMV system in the other states. As a result, it is possible that the Comet framework currently being implemented by the State is based, at least in part, on Covansys' proposed software solution that was previously rejected by the JEC.

# SUMMARY OF DEVELOPMENT COSTS

## COMMENT

**Audit Objective:** To prepare a summary of the development costs of the BAM project.

**Audit Conclusion: We prepared a summary of the development costs of the BAM project.** Our audit report does not include any reportable conditions related to this audit objective. Our audit was not directed toward expressing an opinion on these costs and, accordingly, we express no opinion on them.

UNAUDITED

Summary of BAM Project Expenditures
February 10, 2004 through June 30, 2011

| Purchase Order/ Contract Number | Vendor | Purpose | Expenditures | Purchase Order/ Contract Effective Date | Contract End Date |
|---|---|---|---|---|---|
| 071B4200147 | Electronic Data Systems | Michigan Master Computing Contract | $ 2,101,822 | 02/10/2004 | 04/10/2009 |
| 071B4200153 | Lazer Technologies, Inc. | Technical Project Management | 898,580 | 02/17/2004 | 07/31/2008 |
| 071B4200323 | Electronic Data Systems | Develop Business and Technical Requirements for BAM Phase II | 1,774,466 | 07/12/2004 | 09/30/2005 |
| 071B5200396 | Electronic Data Systems | Develop and Implement the BAM Application for BAM Phase 3 | 13,797,915 | 09/13/2005 | 09/30/2010 |
| 071B6200136 | Mac Townsend, Jr. | External Interface Programming | 78,651 | 02/06/2006 | 02/05/2011 |
| 071B6200219 | Compuware Corporation | Hardware/Software | 103,320 | 03/31/2006 | 03/31/2011 |
| 071B6200307 | L-1 Secure Credentialing, Inc. | System Development - Change Controls and External Interface Programming | 196,000 | 04/01/2006 | 12/31/2009 |
| 084N6204787 | Standard Register Co. | Hardware/Software | 4,052 | 09/06/2006 | |
| 084N6204793 | Compuware Corporation | BAM Training | 14,000 | 09/06/2006 | |
| 071B7200145 | OpTech, LLC | System Development - Change Controls | 47,952 | 02/06/2007 | 05/27/2007 |
| 071B8200086 | Office Max, Inc. | Hardware/Software | 40,664 | 01/10/2008 | 09/30/2011 |
| 071B8200173 | Saber Software, Inc. | Develop and Implement the BAM Application for BAM Phase 3 | 13,834,369 | 04/01/2008 | 09/30/2011 |
| 071B8200189 | Haworth, Inc. | Office Furniture | 45,917 | 06/01/2008 | 06/01/2013 |
| 084N8203398 | Lazer Technologies, Inc. | Project Management | 18,400 | 07/14/2008 | |
| 071B8200243 | Lazer Technologies, Inc. | Project Management | 551,456 | 08/19/2008 | 09/30/2011 |
| 084N9201392 | R L Polk & Co. | Hardware/Software | 18,000 | 12/19/2008 | |
| 071B9200192 | EDS, an HP Company | Michigan Master Computing Contract | 275,798 | 04/10/2009 | 04/09/2014 |
| 084N0201283 | R.L. Polk & Co. | Hardware/Software | 23,000 | 01/12/2010 | |
| 084N9204154 | Tidal Software, Inc. | Hardware/Software | 24,684 | 04/13/2010 | |
| 071B1300228 | Senior Technology Partners, Inc. | Project Management | 43,670 | 03/21/2011 | 03/20/2012 |
| Various | Various | Miscellaneous, CSS&M, and Travel identified by DOS | 377,547 | | |
| | | Total purchase order/contract expenditures | $ 34,270,263 | | |
| | | Estimated State of Michigan employee salary costs | 15,300,613 | | |
| | | Total BAM project expenditures | $ 49,570,876 | | |

Source: Created by the Office of the Auditor General from purchase orders and contracts provided by DOS and from BAM project expenditure data taken from the State's financial systems.

# STATUS OF DEVELOPMENT AND IMPLEMENTATION

## COMMENT

**Audit Objective:** To report on the status of the development and implementation of the BAM project.

**Audit Conclusion: As of the end of our audit fieldwork (November 2011), DOS and DTMB continued to work on the development and implementation of the BAM project.** In October 2011, DOS and DTMB implemented selected BAM Web functionality under the name of ExpressSOS. Other functionality of BAM remained under development.

Observation 2 provides additional details regarding the BAM project time line and status. Exhibits 3 and 4 present the original and actual BAM development and implementation time lines. Exhibits 5 and 6 present the implementation status of BAM functionality (i.e., customer business processes and transactions). Our audit was not directed toward expressing a conclusion on the exhibits and, accordingly, we express no conclusion on them.

Our audit report does not include any reportable conditions related to this audit objective.

## OBSERVATION

2. Project Time Line and Status

   We documented the original and actual BAM development and implementation time lines in Exhibits 3 and 4 and the implementation status of BAM functionality (i.e., customer business processes and transactions) in Exhibits 5 and 6.

   In September 2003, the Department of State (DOS) and the Department of Technology, Management, and Budget (DTMB) started a multi-year Business Application Modernization (BAM) project. The purpose of the BAM project was to reengineer and update DOS's business processes and information systems in order for DOS to better prepare for current and future business needs. DOS intended for BAM to replace multiple mainframe batch applications with an integrated on-line real-time application that could interact with the Internet and other new technologies.

In July 2004, DOS and DTMB contracted with Electronic Data Systems (EDS) to, among other things, reengineer DOS's business processes. The contract also required EDS to develop BAM business requirements and prepare technical design documents that DOS and DTMB incorporated into its bid documentation for the BAM project development contract.

In September 2005, EDS was awarded a five-year contract to validate BAM business and technical requirements and to design, develop, and implement BAM in four phases named 3A, 3B, 3C, and 3D.

In November 2007, EDS purchased Saber Software, Inc. (Saber), which had a motor vehicle licensing software framework called the Comet framework. In February 2008, EDS demonstrated an overview of the Comet framework to the BAM Steering Committee. According to the technical project manager's February 2008 status report, the BAM Steering Committee agreed that the BAM system would be developed using the Comet framework. Also, the February status report indicated that DOS and DTMB began meeting with Saber to transition the project from a custom design and build-from-scratch approach to a modification of the Comet framework.

In June 2008, DTMB Purchasing Operations reissued the BAM project development contract to change the vendor's name from EDS to Saber. However, DTMB Purchasing Operations did not process a change notice to officially change the scope of the project until July 2009, approximately 18 months after the BAM Steering Committee approved the use of the Comet framework in February 2008. The change notice should have been processed before the vendor started working on the Comet framework. In August 2008, the Hewlett-Packard Company (HP) purchased EDS.

The July 2009 change notice (Change Notice 1) modified, among other things, the contract's deliverables, time lines, and payment schedule. According to the change notice, DOS and DTMB agreed to combine the functionality from Phase 3A and Phase 3B into two software releases called Release 1 and Release 2. Also, the change notice reduced the scope and customization of the Phase 3C functionality and dropped all Phase 3D functionality from the scope of the project. In addition, the change notice established a March 2010 implementation date for Release 1, which HP subsequently missed.

In July 2010, DTMB Purchasing Operations processed a change notice (Change Notice 2) that extended HP's development contract through September 2011. Also in July 2010, the BAM Steering Committee decided to focus the State's efforts on developing and implementing the Web functionality from Release 1.

According to the technical project manager's status reports, HP originally expected to implement the Web functionality in October 2010. However, DOS extended the implementation date for the Web functionality to December 2010. HP missed the December 2010 implementation date. DOS again extended the implementation date for the Web functionality to March 2011. HP missed the March 2011 implementation date for the Web functionality.

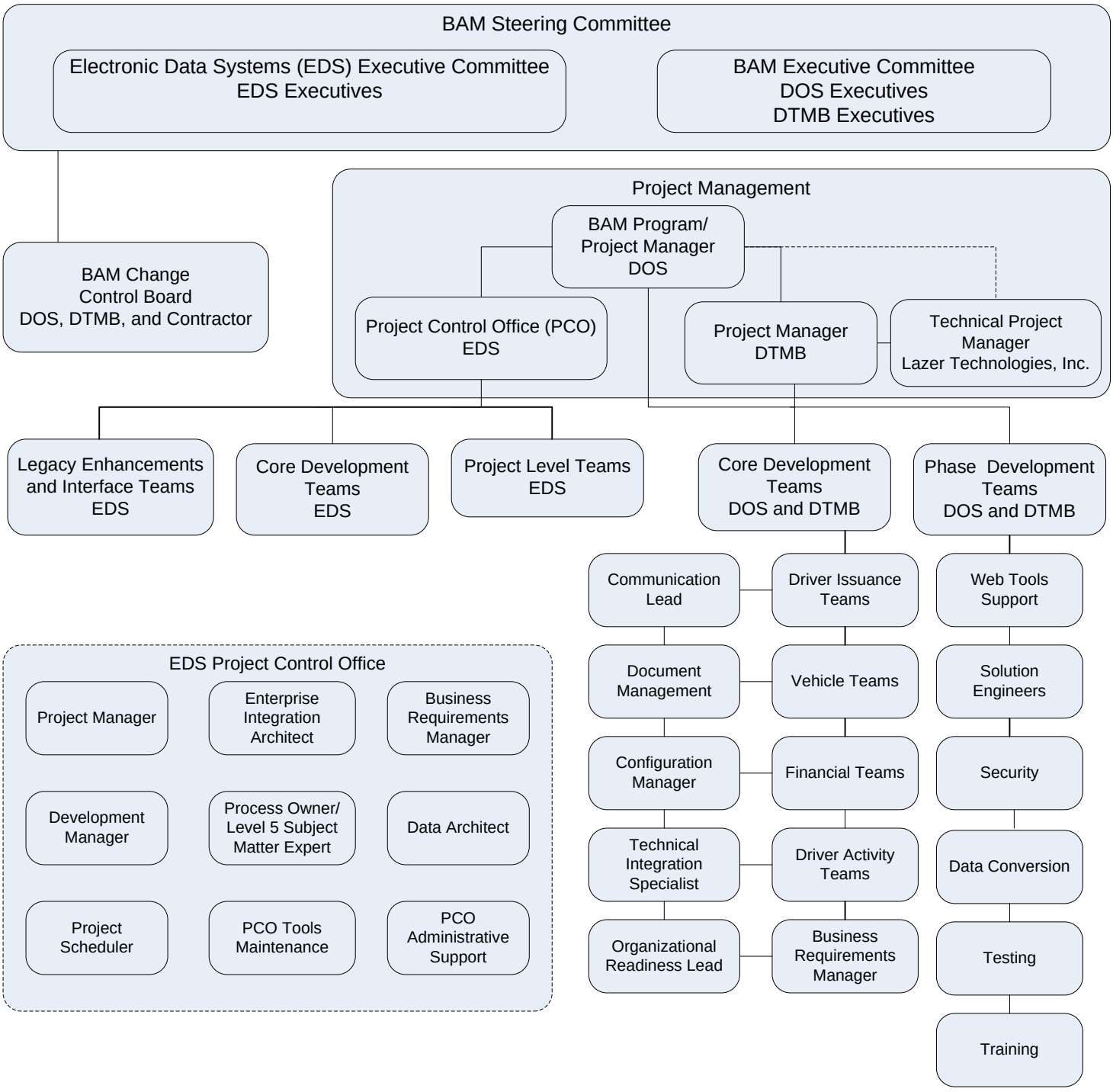
In August 2011, DOS and DTMB implemented BAM's Web functionality to a limited group of DOS and DTMB friends and family. In October 2011, the Secretary of State announced to the public the implementation of BAM Web functionality under the name of ExpressSOS.

On September 29, 2011, DTMB Purchasing Operations processed a change notice (Change Notice 3) that extended HP's development contract through March 2012. (Subsequent to our audit fieldwork on March 30, 2012, DTMB Purchasing Operations processed another change notice [Change Notice 4] that extended HP's development contract through May 2012.)

# SUPPLEMENTAL INFORMATION

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

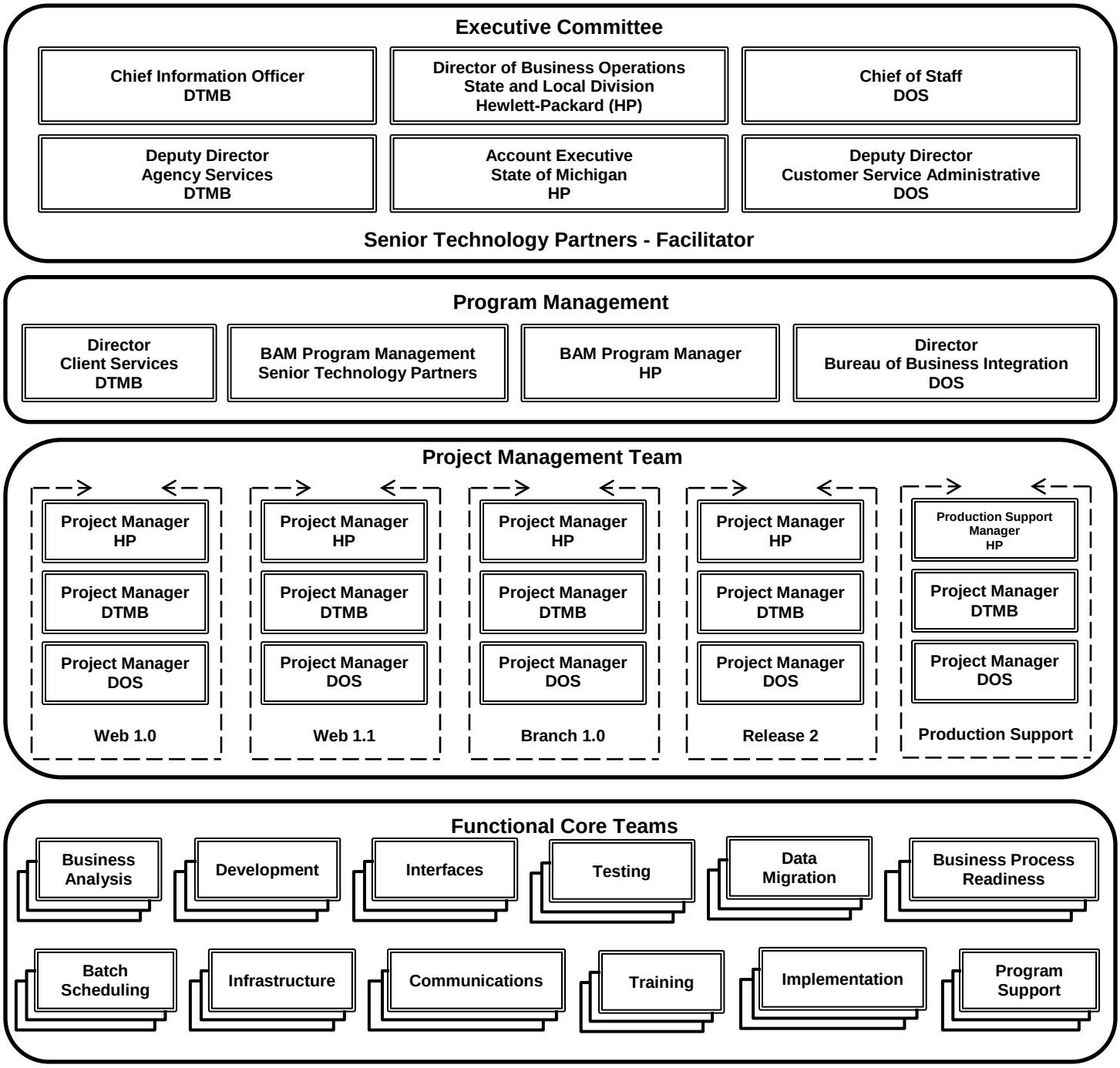
Original BAM Organization Structure
At September 2005




Source: Created by the Office of the Auditor General from information and project documentation provided by DOS and DTMB.

UNAUDITED
Exhibit 2

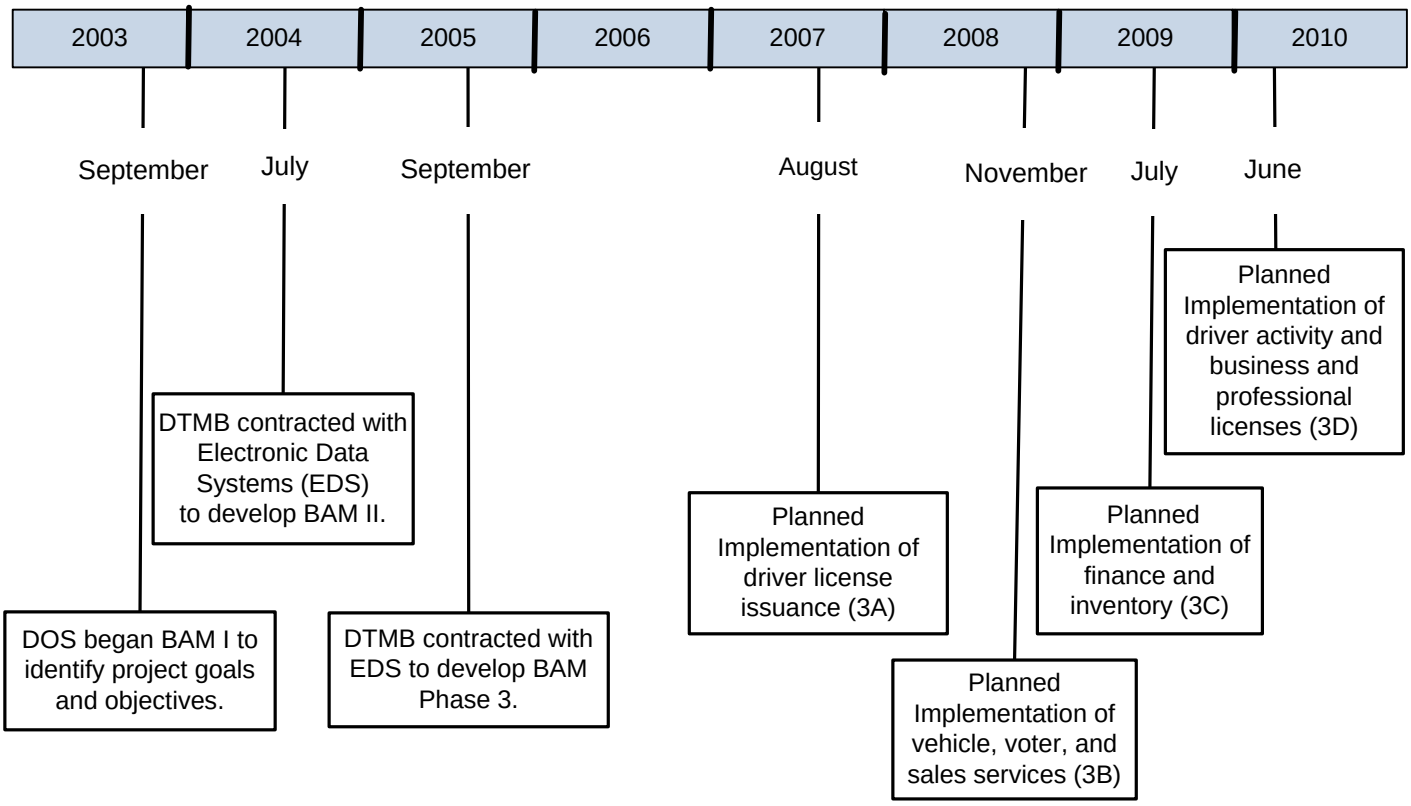
BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)
Revised BAM Organization Structure
Effective March 2011




Source: Created by the Office of the Auditor General from information contained in the BAM Program Management Team Charter.

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Original BAM Project Planned Development and Implementation Time Line
At September 2005




BAM I - Created the vision for DOS and the BAM project and developed strategic business objectives to guide the project.

BAM II - Developed future business processes (business process reengineering).
- Developed business requirements and technical environment, including a technical build plan.
- Assessed human resource change management requirements.
- Developed change process and requirements.

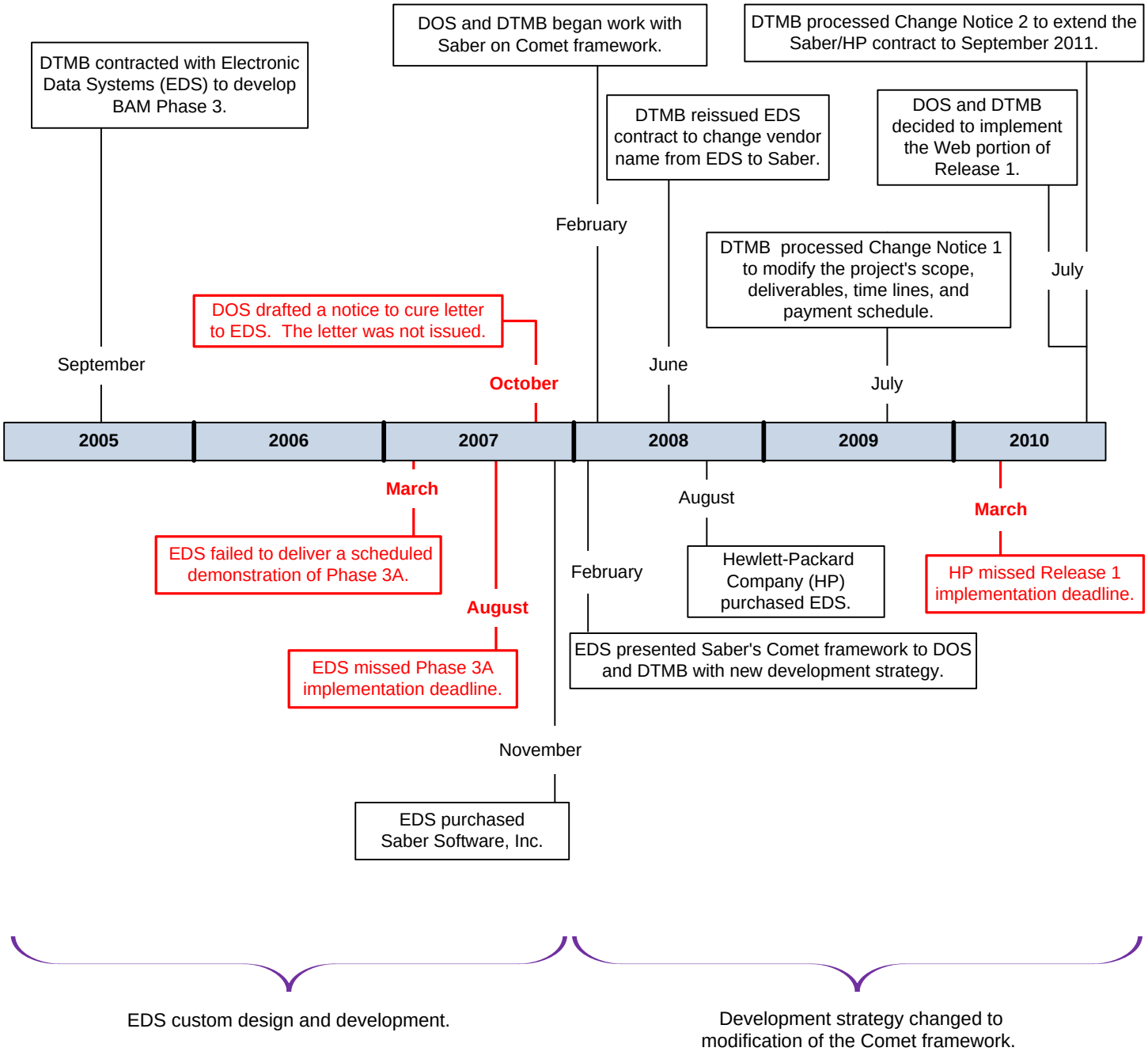
BAM Phase 3 - Validate, design, build, and implement an enterprise application for DOS business processes. BAM Phase 3 included four phases named 3A, 3B, 3C, and 3D. Examples of business processes expected to be included in each phase:

3A - Driver license issuance, personal identification card, and disability placard processes.
3B - Vehicle titling and registration, voter registration, and list sales services.
3C - Finance and inventory processes.
3D - Driver activity and business and professional licensing processes.

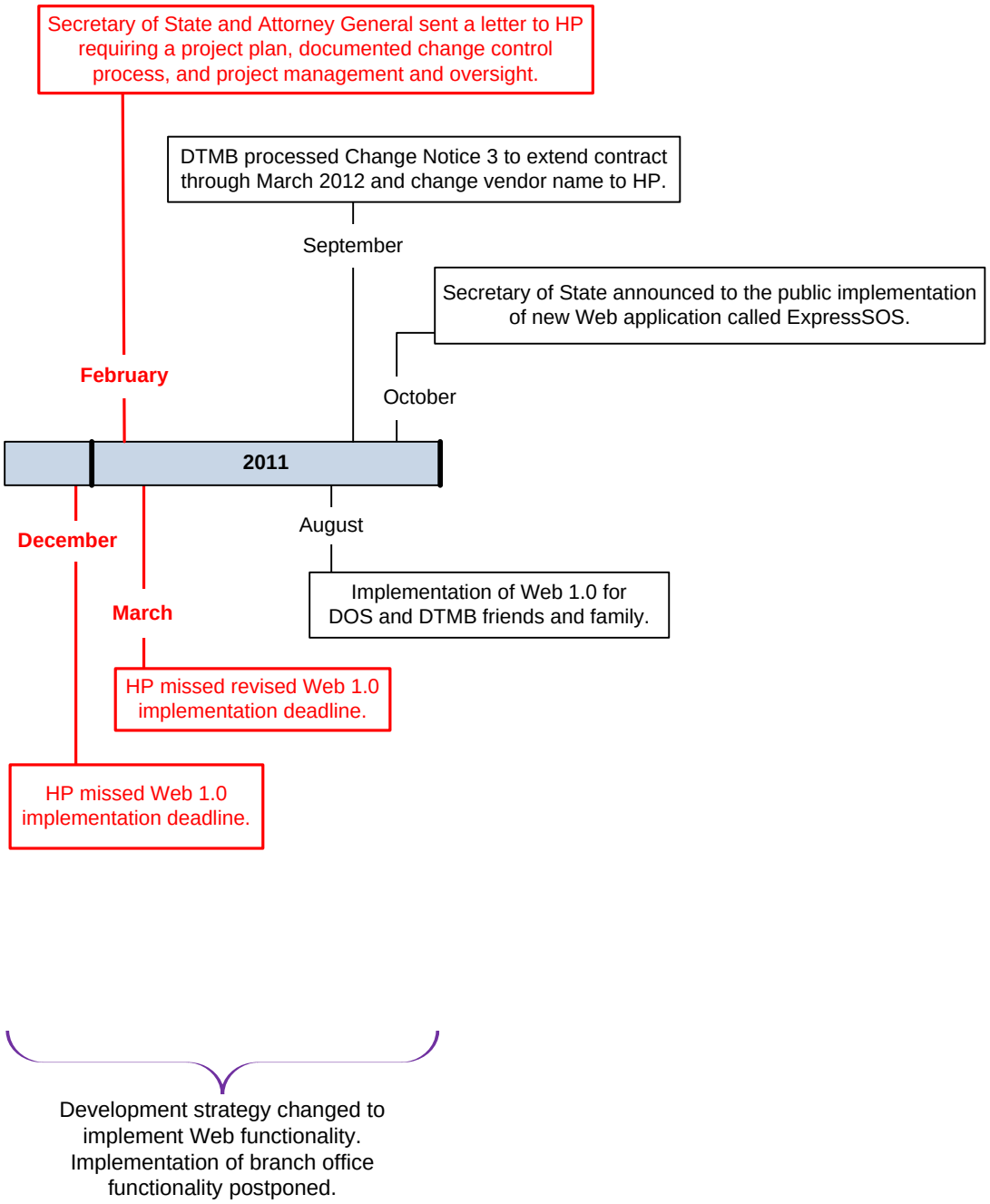
Source: Created by the Office of the Auditor General from BAM contracts and project documentation provided by DOS and DTMB.

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Actual BAM Phase 3 Development and Implementation Time Line
Through October 2011



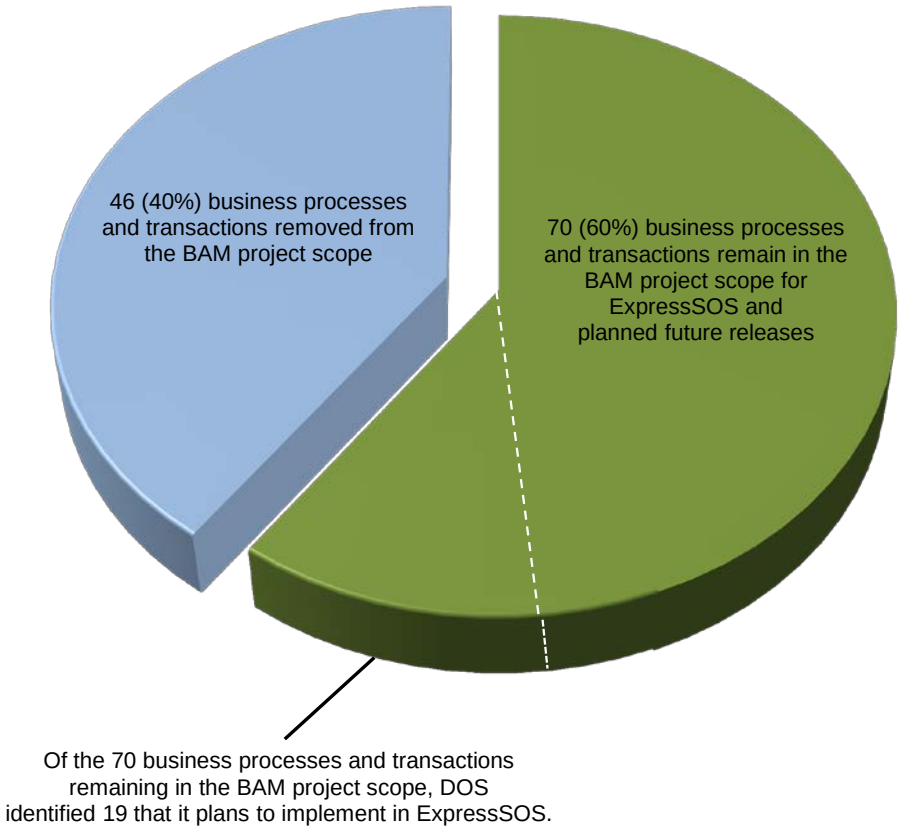

Source: Created by the Office of the Auditor General from information and project documentation provided by DOS and DTMB.


Secretary of State and Attorney General sent a letter to HP requiring a project plan, documented change control process, and project management and oversight.
DTMB processed Change Notice 3 to extend contract through March 2012 and change vendor name to HP.
September
Secretary of State announced to the public implementation of new Web application called ExpressSOS.
February
October
2011
December
August
March
Implementation of Web 1.0 for DOS and DTMB friends and family.
HP missed revised Web 1.0 implementation deadline.
HP missed Web 1.0 implementation deadline.
Development strategy changed to implement Web functionality. Implementation of branch office functionality postponed.

UNAUDITED
Exhibit 5

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Summary of the Implementation Status of the 116 Customer Business Processes and Transactions in the Original BAM Project Scope
As of August 8, 2011




The original BAM project scope included 116 business processes and transactions for Phases 3A, 3B, 3C, and 3D. Change Notice 1, dated July 2009, reduced the scope of Phase 3C and removed from the scope all of Phase 3D. See Exhibit 6 for details.

Source: Created by the Office of the Auditor General from information provided by DOS.

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Implementation Status of the 116 Customer Business Processes and Transactions in the Original BAM Project Scope
As of August 8, 2011

| Function Number | Phase/Business Process or Transaction | Planned Implementation in ExpressSOS* | Planned Future Releases in Branch Offices and Web* | Removed From Scope |
|---|---|---|---|---|
| **Phase 3A - Driver Issuance** | | | | |
| 1 | Original driver license | | X | |
| 2 | Photo capture | | X | |
| 3 | Chauffeur license renewals/duplicates | X | X | |
| 4 | Commercial driver license (CDL) renewals | | X | |
| 5 | Seasonal commercial driver license | | X | |
| 6 | Driver license renewals | X | X | |
| 7 | Driver license duplicates | X | X | |
| 8 | CDL original (branch) and duplicates (branch and Web) | X | X | |
| | **Graduated Driver License (GDL1/GDL2/GDL3)** | | | |
| 9 | Original | | X | |
| 10 | Duplicate | X | X | |
| 11 | GDL advancement | | X | |
| 12 | Minor restricted license | | X | |
| 13 | Moped license | X | X | |
| 14 | Motorcycle endorsement (branch) and duplicates (Web) | X | X | |
| 15 | 180-day extensions | | X | |
| 16 | Driver license renewal for residents out-of-state | X | X | |
| 17 | Personal identification (PID) card - original | | X | |
| 18 | PID card renewal/duplicate | X | X | |
| 19 | Instant temporary (emergency) driver license/PID | | | X |
| 20 | Disability placard (branch and Web) | | X | |
| 21 | Disability placard renewals (branch and Web) | | X | |
| 22 | Disability placard duplicates (branch and Web) | | X | |
| 23 | Corrections | | X | |
| 24 | License cancellations | | X | |
| 25 | PID card cancellations | | X | |
| **Phase 3B - Vehicle Services** | | | | |
| 26 | Over-the-counter title issuance | | X | |
| 27 | New title issuance batch | | X | |
| 28 | Duplicate title batch | X | X | |
| 29 | International Registration Plan (IRP) | | X | |
| | **Issue Registration** | | | |
| 30 | Original | | X | |
| 31 | Renewal | X | X | |

*This exhibit continues on next page.*

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Implementation Status of the 116 Customer Business Processes and Transactions in the Original BAM Project Scope
As of August 8, 2011
*(Continued)*

| Function Number | Phase/Business Process or Transaction | Planned Implementation in ExpressSOS* | Planned Future Releases in Branch Offices and Web* | Removed From Scope |
|---|---|---|---|---|
| | **Issue Registration *(Continued)*** | | | |
| 32 | Transfer | | X | |
| 33 | Correction | | X | |
| 34 | Replacement of decal | | X | |
| 35 | Replacement of plates | | X | |
| 36 | Order new plates | | X | |
| 37 | Duplicate registration | X | X | |
| 38 | 30/60-day temporary permits via Web | | | X |
| 39 | Voter registration via branch offices | | | X |
| 40 | Mechanism to permit list sales services | | X | |
| 41 | Driver record sales | | X | |
| 42 | Automate list sales services | | X | |
| 43 | Direct access (vehicle/driver) | | X | |
| 44 | Parking ticket lookup | | X | |
| 45 | MiFleet | | X | |
| 46 | Beginning-of-day processing | | X | |
| 47 | End-of-day processing | X | X | |
| | **Phase 3C - Financial** | | | |
| 48 | Collect fees, cash payments | | X | |
| 49 | Electronic funds transfers | | X | |
| 50 | E-Check processing | | X | |
| 51 | Collect fees, credit cards | X | X | |
| 52 | Collect other payments | | X | |
| 53 | Late payments | X | X | |
| 54 | Lift financial suspension | | X | |
| 55 | Produce receipt | X | X | |
| 56 | Reconciliations and financial adjustments | X | X | |
| 57 | End-of-day payment distribution | | | X |
| 58 | Revenue distribution | | | X |
| 59 | Refunds | | | X |
| 60 | Installments (assigned claims) | | | X |
| 61 | Billing and receivables | | | X |
| 62 | Release inventory | | X | |
| 63 | Destroy inventory | | | X |
| 64 | Assign inventory | | X | |
| 65 | Update inventory | | X | |
| 66 | Warehouse stocking | | | X |
| 67 | Customer pre-registration | | X | |

*This exhibit continues on next page.*

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Implementation Status of the 116 Customer Business Processes and Transactions in the Original BAM Project Scope
As of August 8, 2011
*(Continued)*

| Function Number | Phase/Business Process or Transaction | Planned Implementation in ExpressSOS* | Planned Future Releases in Branch Offices and Web* | Removed From Scope |
|---|---|---|---|---|
| **Phase 3C - Financial *(Continued)*** | | | | |
| 68 | Investigate fraud - Employees | | | X |
| 69 | Investigate fraud - Customer (driver and vehicle) | | | X |
| 70 | Investigate fraud - External organizations | | | X |
| 71 | Perform audit - Centralized | | | X |
| 72 | Perform audit - Centralized IRP | | | X |
| 73 | Perform audit - Decentralized | | | X |
| 74 | Perform audit - External organizations | | | X |
| 75 | Non-sufficient funds | | X | |
| 76 | Consolidated renewal notice | | X | |
| 77 | Lift suspension/reinstatement | | X | |
| 78 | Reports | X | X | |
| 79 | Adjust fees | | X | |
| 80 | Fee calculation | X | X | |
| **Phase 3D – Driver Activity** (Certain driver activities are still required at branch offices. The driver activities will be performed by legacy systems) | | | | |
| 81 | Restricted driver license | | X | |
| 82 | Driver responsibility | | | X |
| 83 | Reinstate driver privileges | | | X |
| 84 | Registration denials | | | X |
| 85 | Financial responsibility | | | X |
| 86 | Crashes | | | X |
| 87 | Non-driving convictions | | | X |
| 88 | Clear repeat offenders/vehicle identification number hold | | | X |
| 89 | Abstract of conviction and sentencing | | | X |
| 90 | Termination of failed to appear in court/failed to comply with judgment | | X | |
| 91 | Court-ordered suspensions | | | X |
| 92 | Implied consent | | | X |
| 93 | 625G permits | | | X |
| 94 | Ignition interlock violations | | | X |
| 95 | Cancel driver privileges | | | X |
| 96 | Child support suspensions | | | X |
| 97 | Warning letters | | | X |
| 98 | Mandatory actions | | | X |
| 99 | Circuit court appeals/scheduling | | | X |
| 100 | Administrative appeals/scheduling | | | X |

*This exhibit continues on next page.*

BUSINESS APPLICATION MODERNIZATION (BAM) PROJECT
Department of State (DOS) and Department of Technology, Management, and Budget (DTMB)

Implementation Status of the 116 Customer Business Processes and Transactions in the Original BAM Project Scope
As of August 8, 2011
*(Continued)*

| Function Number | Phase/Business Process or Transaction | Planned Implementation in ExpressSOS* | Planned Future Releases in Branch Offices and Web* | Removed From Scope |
|---|---|---|---|---|
| **Phase 3D – Driver Activity *(Continued)*** | | | | |
| 101 | Request for re-examination/medical referrals/evaluations/resolution | | | X |
| 102 | DI4P and DI4V | | X | |
| 103 | Referred 95/98 | | | X |
| 104 | Re-examination/scheduling | | | X |
| 105 | Forwarding convictions of out-of-state drivers | | | X |
| 106 | Suspensions/revocations | | | X |
| 107 | FAC termination billing | | | X |
| 108 | Status checking (driver, vehicle, financial, other) | | X | |
| 109 | Record lookup | | X | |
| 110 | Notary sales | | | X |
| 111 | Automotive occupational list sales services | | | X |
| 112 | Subscription services | | X | |
| 113 | Driver training schools, driving instructors, third party skills testing organizations, and examiners | | X | |
| 114 | Dealers, repair facilities, mechanics, mechanic trainees, and salvage agents | | | X |
| 115 | Licensing notary | | | X |
| 116 | Motorcycle Safety Program | | | X |
| | | 19 | 70 | 46 |

* DOS plans to implement certain business processes and transactions in ExpressSOS and at its branch offices.

Source: Created by the Office of the Auditor General from information provided by DOS.

# GLOSSARY

| | |
|---|---|
| BAM | Business Application Modernization. |
| Capability Maturity Model® Integration (CMMI) for Development | A process improvement maturity model for the development of products and services. It consists of best practices that address development and maintenance activities that cover the product lifecycle from conception through delivery and maintenance. |
| CMMI maturity level 3 | A CMMI organizational maturity level that ensures use of consistent processes across the organization. |
| contract | An agreement between two or more competent parties or persons that creates an obligation to do or not to do a particular thing. Two meanings are incorporated within this definition: the first is the concept of the *relationship* between the agreeing parties and the second refers to the written *document* describing the particulars of this relationship. |
| contract management | The management of contracts made with customers, vendors, partners, or employees. Contract management includes negotiating the terms and conditions in contracts and ensuring compliance with the terms and conditions, as well as documenting and agreeing on any changes or amendments that may arise during its implementation or execution. |
| contractor | A business entity or individual that has a contract to provide goods or services; used interchangeably with the term "vendor." |

| | |
|---|---|
| Control Objectives for Information and Related Technology (COBIT) | A framework, control objectives, and audit guidelines published by the IT Governance Institute as a generally applicable and accepted standard for good practices for controls over information technology. |
| CSS&M | contractual services, supplies, and materials. |
| deliverable | A discrete type or increment of work. The work may involve the delivery of goods or services. |
| development | The actual work performed to develop an information technology project. |
| DMV | Department of Motor Vehicle. |
| DOS | Department of State. |
| DTMB | Department of Technology, Management, and Budget. |
| EDS | Electronic Data Systems. |
| effectiveness | Success in achieving mission and goals. |
| Governmental Accounting Standards Board (GASB) | An arm of the Financial Accounting Foundation established to promulgate standards of financial accounting and reporting with respect to activities and transactions of state and local governmental entities. |
| HP | Hewlett-Packard Company. After the purchase of EDS, HP formally changed its name to HP Enterprise Services, LLC. |
| implementation | The movement of software from testing into production. |

| | |
|---|---|
| information technology (IT) | Any equipment or interconnected system that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. It commonly includes hardware, software, procedures, services, and related resources. |
| integration testing | A type of testing in which individual software and/or hardware components are combined and tested to confirm that they interact according to their requirements. |
| internal control | The organization, policies, and procedures adopted by management and other personnel to provide reasonable assurance that operations, including the use of resources, are effective and efficient; financial reporting and other reports for internal and external use are reliable; and laws and regulations are followed. Internal control also includes the safeguarding of assets against unauthorized acquisition, use, or disposition. |
| IRP | International Registration Plan. |
| iterative development approach | An approach to building software in which the overall lifecycle is composed of several iterations in sequence. Each iteration is a self-contained mini-project composed of activities such as requirements analysis, design, programming, and testing. |
| IV&V | independent verification and validation. |
| JEC | joint evaluation committee. |
| liquidated damages | An amount of money agreed upon by both parties to a contract which one will pay to the other upon breaching (breaking or backing out of) the agreement or if a lawsuit arises due to the breach. |

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| material condition | A reportable condition that could impair the ability of management to operate a program in an effective and efficient manner and/or could adversely affect the judgment of an interested person concerning the effectiveness and efficiency of the program. |
| OAG | Office of the Auditor General. |
| observation | A commentary that highlights certain details or events that may be of interest to users of the report. An observation differs from an audit finding in that it may not include the attributes (condition, effect, criteria, cause, and recommendation) that are presented in an audit finding. |
| performance audit | An economy and efficiency audit or a program audit that is designed to provide an independent assessment of the performance of a governmental entity, program, activity, or function to improve program operations, to facilitate decision making by parties responsible for overseeing or initiating corrective action, and to improve public accountability. |
| PID | personal identification. |
| project | An undertaking requiring concerted effort that is focused on developing or maintaining a specific software product or system. A project has its own funding, cost accounting, and delivery schedule. |
| project control office | According to the development contract, the office responsible for providing the leadership, oversight, monitoring, and reporting for activities and metrics critical for on-time delivery of the technology services that satisfy the needs of the BAM Phase 3 development and implementation. |
| project management | The application of knowledge, skills, tools, and techniques to project activities in order to meet project requirements. |

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| Project Management Methodology (PMM) | A component of SUITE that provides standard methods and guidelines to ensure that projects are conducted in a disciplined, well-managed, and consistent manner that promotes the delivery of quality products that meet the customer's needs and results in projects that are completed on time and within budget. |
| project manager | The individual with total business responsibility for all activities of a project. The project manager directs, controls, administers, and regulates a project. |
| project team | A team of individuals assigned to activities for the same project. The BAM project team is composed of DOS, DTMB, and contract employees. |
| quality assurance (QA) | A quality management process that involves the evaluation of overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards. It utilizes quality audits to ensure that quality standards and customer requirements are met. |
| quality control | A quality management process that involves monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance. |
| quality management | A collection of quality policies, plans, procedures, specifications, and requirements attained through quality assurance (managerial) and quality control (technical). |
| quality planning | A quality management process that involves identifying which quality standards are relevant to the project and determining how to satisfy them. The activities within the quality planning process basically translate existing quality policy and standards into a Quality Plan through a variety of tools and techniques. |

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| reportable condition | A matter that, in the auditor's judgment, is less severe than a material condition and falls within any of the following categories: an opportunity for improvement within the context of the audit objectives; a deficiency in internal control that is significant within the context of the audit objectives; all instances of fraud; illegal acts unless they are inconsequential within the context of the audit objectives; significant violations of provisions of contracts or grant agreements; and significant abuse that has occurred or is likely to have occurred. |
| request for proposal | A document that contains more general specifications designed to outline the minimum State requirements. Bidders must submit proposals in accordance with the requirements of the request for proposal. |
| Re:START | Revised Short Term Augmentation for Resources in Technology. |
| risk management | The art and science of identifying, analyzing, and responding to risk factors throughout the life of a project and in the best interests of its objectives. |
| RTM | requirements traceability matrix. |
| Saber | Saber Software, Inc.; also known as Saber Holdings, Inc. |
| START | Short Term Augmentation for Resources in Technology. |
| State Unified Information Technology Environment (SUITE) | A DTMB initiative to standardize methodologies, procedures, training, and tools for project management and system development throughout the executive branch of State government. |

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| Systems Development Lifecycle (SDLC) | The State of Michigan's methodology that identifies the processes, activities, tasks, management responsibilities, and deliverables that are required for each software development and maintenance project. A key objective of the methodology is to provide measurable, repeatable processes to ensure that project development and maintenance methodologies are consistent throughout the agency information technology environment. The SDLC was replaced by the Systems Engineering Methodology. |
| Systems Engineering Methodology | The DTMB methodology that identifies the processes, activities, tasks, management responsibilities, and work products that are required for each system development and maintenance project. |
| vendor | A business entity or individual that has a contract to provide goods or services; used interchangeably with the term "contractor." |

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